Assessment of Supply Chain performance - the case of ethio telecom

By:

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Abstract

The objective of this study is to assess supply chain performance of ethio telecom. The study used descriptive as well as explanatory research designs. In this study, census and judgmental sampling method for quantitative and qualitative methods were used respectively. Primary type of data was collected with the help of standard questionnaires and semi structured interview. In order to examine the relationships between the variables, Pearson's correlation and multiple linear regression analysis were used. The research comes up with the following findings. Although strategic supplier partnership is the key factor that has a strong positive relationship and highest effect on supply chain performance followed by customer relationship and information sharing in this study, the level of practice is not at a strong level yet. Furthermore, the result from the interview confirms that ethio telecom has supply chain management challenges related to inventory management, delivery & customer response time, inadequate planning, and communication. The supply chain management practice of ethio telecom is weak; it is not well managed, and implemented to get the maximum possible benefits resulting from effective supply chain management. Finally ethio telecom should engage in training of the work force and developing supply chain management skills through workshops and systematic training programmes and promote learning from relevant successful experiences in this area.

Key words: *Supply chain management (SCM), Supply chain management performance, strategic supplier partnership, customer relationship, information sharing*

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Iman B. Ahmed

Table of Contents

List of Tables

Acronyms

ETA	Ethiopian Telecommunications Authority
ETC	Ethiopian Telecommunication Corporation
GTP	Growth and Transformation Plan
IBTE	Imperial Board of Telecommunications of Ethiopia
ICT	Information and Communication Technology
SCM	Supply Chain Management
SCP	Supply Chain Performance.
TEP	Telecom Expansion Project

1 Introduction

1.1 Background of the Study

Today's competition is not among individual companies it is among networks of organizations that are known as supply chains (Christopher, 2005). The need for an organization to manage its supply chains stems from the market, which expects both product and service customization and optimal utilization in a global environment (Cousins and Menguc, 2006). Through the installation of co-operative relationships, organizations are able to achieve distinct competitive advantages (Lang field-Smith and Greenwood, 1998) as the adaption and execution of such networks help to reduce operating costs and maximize the effectiveness of the organization (Mason and Leek, 2008).

Integration goes in a forward as well as a backward direction (Cousins and Menguc, 2006), and the set of SCM business practices aims to add customer value and optimize the whole entity instead of single parts (Cooper and Ellram, 1993; Cooper et al., 1997;Heikkila, 2002). It is the power behind such business process integration thatallows companies to exploit the advantages of SCM and thus achieve better performance (De Treville, 2004). There is now general acceptance that the application of SCM allows firms to work in a seamless manner and that SCM is a strategic weapon which helps to improve significantly the performance of businesses (Dierickx and Cool, 1989; Narasimhan and Das, 2001).

SCM is progressively recognized as a key and vital corporate strategy, which links both suppliers and customers in order to enhance overall service flexibility. Besides, successful SCM is a prominent tool to reduce cost of operation by eliminating all non value added activities in the flow of various kinds of materials from supplier to end customer (Chan and Lee, 2005).A service Supply Chain involves the series of activities from the analysis of customer need, service design to service delivery (Mohan and Zailani, 2010). It is the conglomeration of various supply chain aspects in service sector.

Ethio Telecom is the sole telecommunication service provider company. Telecommunication is one part of Service Supply Chain and a vital infrastructure for growth of economy. Its operational purview expands from basic infrastructure to entertainment. Trade and commerce is unthinkable in the present world without telecom infrastructure. The system is highly technology driven and dynamic in nature. To keep the system operational it is very much essential to have an effective supply chain where availability of components, spares and services should be immediate and adequate.

The power of having an effective and efficient supply chain is more important now than ever beforetherefore, to reduce inefficiency factors and to ensure smooth operations, it is very important to assess supply chain performance.This thesis work is set to assess the supply chain performance of one of the country's largest company ethio telecom.

1.2 Statement of the Problem

The recent business environment is growing to be more challenging, so companies have to increase their business operations to stay competitive. To the individual firm operating in a dynamic economy, good management of Supply Chain activities is vital. Markets are often national or international in scope, whereas production or service delivery may be concentrated at relatively narrower boundaries. Supply Chain activities provide the bridge between production and market locations that are separated by time and distance (Klundert, 2003). Effective management of these activities is the major concern.

As economies around the world step back from the financial brink and begin adjusting to a new normal, companies face a different set of supply chain challenges than they did at the height of the downturn. Among them are rising pressure from global competition, consumer expectations, and increasingly complex patterns of customer demand (McKinsey 2010).

Performance assessment is vital to the success of every organization because it facilitates understanding behaviors, shaping those observed behaviors and improve competitiveness (Manian et al., 2010). The goal of supply chain practice is to improve supply chain process so as to deliver the product properly, timely and at lowest cost to the customer. The belief that supply chain practice can improve responsiveness to customers and increase profits has drawn the attention of many managers to the notion of supply chain management (Husseini et al., 2010).

The most efficient supply chain is the one that has the lowest possible cost and at the same time meet customer's expectation and beyond, which challenges companies like ethio telecom. It has to be good in identifying the factors which hamper ethio telecom to be more efficient within Supply Chain Performance.

Ethio telecom is the only telecom service provider in Ethiopia. Due to its focus is mainly on the service provision part, all telecom products and accessories ethio telecom uses are imported from abroad. That means the company needs to manage its supply chain effectively and efficiently to be successful. According to (Birtukan: 2014) longer lead times, unreliable transit times, high inventory cost, delivery reliability, availability and quality of information are among few of the main challenges.

Based on the feedback in the Growth Transformation Program (GTP) meetings, ethio telecom is facing different challenges in implementing and managing the supply chain of the company and, the following issues were some of the many concerns that ethio telecom has identified to affect the supply chain performance.These are demonstrated by the following issues:

- Lack of delivery precision: goods and services were not delivered timely and as per the prior agreements made.
- High inventory cost: requests sent to sourcing department sometimes lack proper checking of the same items at the warehouse. This usually ends up increasing the company's inventory cost.
- Information sharing practices in the supply chain of ethio telecom were weak in both degree and quality of information;

- Longer time lag in the process of delivering the goods to end customers due to delays in shipping and clearance of goods imported leading to high storage and demurrage payment and empty stock
- The supplier-customer relationship is not well developed and traditional ways of doing things are still applied.
- Lack of integration (Internal and external customers) and collaboration with partners leads to uncoordinated activities within the supply chain cycle

The above mentioned points imply that the supply chain performance is not as such satisfactory and limits the company to meet its customer's expectations. To the researchers knowledge very few literature are available in the area of telecom service supply chain practice evaluation and the existing few studies undertaken are on SCM applications between supply chain partners and companies.

Additionally, given the recent introduction of supply chainpractice in the organizational structure of businesses and also the recent establishment of supply chain and logistics management graduate studies nationally, again to the researchers knowledge there happens to be not sufficient research done in the area to assess the internal supply chainperformance among national businesses. So this study envisagesassessing the factors that affect the supply chain performance of ethio telecom.

1.3 Research Questions

In order to address the stated problem, the following research questions have beendealt with in a more specific way. The study attempts to address the following questions regarding the supply chain performance of ethio telecom:

- What factors affect the supply chain performance of ethio telecom?
- What is the level of implementation of supply chain practices at ethio telecom in terms of Strategic supplier partnership, customer relation and information sharing?
- What relationships exist between Strategic supplier partnership,customer relation and information sharing and the supply chain performance of the company?

- How do strategic supplier relation, customer relation and information sharing affect the company's supply chain performance?

1.4 Objective of the Study

1.4.1 General Objective

The general topic of this thesis is assessment of supply chain performance of ethio telecom.

1.4.2 Specific objectives

In order to address the major objective of the study, the following specific objectives are outlined:

1- To identify factors affecting supply chain performance of ethio telecom;
2- To assess the implementation level of supply chain practices in terms of Strategic supplier partnership, customer relation and information sharing;
3- To asses relationship between Strategic supplier partnership, customer relation and information sharing in light of the company's supply chain performance;
4- To assess how Strategic supplier partnership, customer relation and information sharing affect the overall performance of supply chain performance of the company.

1.5 Significance of the Study

Taking into account the importance of the supply chain practice, its contributions to the overall performance of the company (ethio telecom) and the existing problems in its actual performance; the findings of this research paper will contribute to better understanding of problems and challenges related to supply chain practice. Also this study helps to identify the strengths and weakness of ethio telecom's supply chain practice and can be valuable in proposing some possible recommendations/solutions to those problems in the study area. The study also providesinsight to those interested in making further study on the same issue.

1.6 Scope of the Study

The study focused on the assessment of the supply chain performance aspect of ethio telecom. Specifically, it focused on the supply chain practice components.Since SCM practices are very wide field of areas, this study focused only on three SCM practice dimensions: Strategic supplier partnership, customer relationship, and information sharing and their effect on supply chain performance of ethio telecom. Also on this study customer refers to internal departments which reflects and work as interface between external customer and internal operation by requesting service from supply chain department.

The findings of the study can be extended to similar companies. However, generalization to wider areas requires further investigation.

1.7 Limitations

This research would be more comprehensive, if it would be able to incorporate suppliers and external customers view to study the overall Supply Chain Performance of ethio telecom.

This study focused only on three SCM practice dimensions: Strategic supplier partnership, customer relationship, and information sharing .This calls for an extension of the analysis regarding other influencing factors. It was also difficult to get literature specific to the telecom supply chain management.

2 Literature Review

2.1 Supply Chain Management

The 1980s was the period of changes in the attitudes toward the role of purchase in organizational strategies. However, in the 1990s the researchers were focused on the integration and methods of recognizing purchase as a more important factor influencing organizational performance (Ellram, Tate and Billington.2007). Altekar (2005)in his work on forces shaping industrial competition, introduces purchasers and suppliers as two of the vital forces. According to Porter's model, when there are fewer purchasers in the business market the bargaining power of purchasers decreases. Therefore, suppliers shall increase quality and reduce costs. On the other hand, when there are fewer suppliers, the bargaining power of suppliers grows and they can determine the quality and price of products.

In this regard, every enterprise in the market competes with suppliers and purchasers for a higher profit margin. Bowersax et al. (2010) define an integrated supply chain as a multi-enterprise relationship management within the framework of capacity limitations, information, major competences, capital and human resources. In such circumstances, the supply chain structure and strategy lead to attempts to establish an operational link between the organization and its customers as well as between the organization and supply/distribution networks. These attempts are aimed at achievement of competitive advantage. Therefore, the entire organizational operation (from the purchase of raw materials to the delivery of products and services to the end customers) is integrated.

Supply chain is a chain that contains all of the activities associated with the flow of goods and conversion of raw materials (from the early preparation phase to the delivery of the end product to the consumer). The transmission not only includes the flow of materials but also covers the flow of information and finances (Houshmandi Maher et al., 2012). The ultimate goal of supply chain is to present products and services to the end customer by establishing connections and collaborations between different businesses. In this regard, capital, information, raw material, intermediate

goods, and such determine the form of thecollaboration between the businesses (Tabibi, Mazlumi, 2009). In other words, it could be stated that effectiveness and efficiency of every organization are the products of the management performance and structure of the supply chain of that organization (RahmaniS., 2008).

In order to discuss Supply chain excellence, the scope of a Supply chain and Supply Chain practice has to be known. The literature review of this study is composed of basic theories which provide definition and explanation about Supply Chain Management, supply chain performance, and related works which present different scholars' point of view with regard to the factors affecting Supply Chain performance, and finally the conceptual framework of the study which is constructed based on the theoretical framework.

2.2 Supply Chain Practice

The basic objective of supply chain practice is to "optimize performance of the chain to add as much value as possible for the least cost possible" (Gunasekaran, 2001). In other words, it aims to link all the supply chain agents to jointly cooperate within the firm as a way to maximize productivity in the supply chain and deliver the most benefits to all related parties .Furthermore, Mentzer et al. (2001) explained that the significant importance of supply chain practice as "the systematic, strategic coordination of the traditional business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long term performance of the individual companies and the supply chain as a whole".

Supply chain practices have been defined as a set of activities undertaken in an organization to promote effective practice of its supply chain (Suhong Li et al, 2004) and describes as supplier partnership, outsourcing, cycle time compression, continuous process flow, and information sharing. Supply chain practicesare defined also as approaches applied in managing integration and coordination of supply, demand and relationships in order to satisfy consumers in effective and profitable manners. While Tan et al (1998) represented supply chain practices in form of quality, purchasing, and customer relationship,again Tan et al (2002) identified six aspects of Supply chain practice through factor analysis: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capability.

According to Li et al. (2006) the dual purpose of Supply chain practices is to improve the performance of an individual organization as well as that of the entire supply chain. Researches support this conception, portraying supply chain practices as a strategic level concept Mentzeret al. (2001) consider supply chain practices as a systemic, strategic coordination of business functions within an organization and between organizations within the supply chain, for improving the long-term performance of individual companies and the supply chain as a whole. The emphasis of each of these definitions is on the objective of supply chain practices to create a distinctive advantage by maximizing the total value of products and services (Stank et al., 2005).

There are numerous definitions of SCM practice; few definitions discussed here would give an understanding of SCM practice.

Table 2.1 Dimensions of Supply Chain Management Practice

Source	Supply Chain Practice Dimensions
Li, et al, 2005	Strategic supplier partnership, Customer relationship, Information sharing, Information quality, Internal lean practice, Postponement
Omain et al, 2010	Customer relationship, Close supplier relationship, Information sharing, Supply chain integration, Logistics, Strategic location
Cook et al, 2011	Information sharing, Long term relationship, Advanced planning system, Leveraging the internet, Distribution network structure
Sundram et al, 2011	Supplier strategic partnership, Customer relationship, Information sharing, Information quality, Postponement, Agreed vision and goal,
Tan, 2012	Information and Technology management, Demand management, Customer relationship management, Supplier relationship
Asmida et al,	Leadership, Supplier management, Customer focuses, Quality information and analysis, Internal lean practice

SCM practice is expected to increase an organization's market share, return on investment, and improve overall competitive position. For example, strategic supplier partnership has been reported to yield organization-specific benefits in terms of financial performance. Advanced design and logistic links with suppliers are related to better-performing plants. Customer relation practices have also been shown to lead to significant improvement in organizational performance(Li et al. 2005). The higher level of information sharing is associated with the lower total cost, the higher-order fulfillment rate and the shorter-order cycle time.

Li et al. (2005) identified strategic supplier partnership, customer relationship, and information sharing, internal lean practice and postponement as key SCM practices. This studyadopts similar practice with modification (strategic supplier partnership,customer relationship, and information sharing) as sub-constructs for the SCM practices construct. Li et al. (2005) also have developed a valid and reliable instrument to measure supply chain management practices. The similar instrument also adopted in this research.

2.2.1. Strategic supplier partnership

It is defined as the long term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits. A strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem solving efforts (Gunasekaran A, 2001).

The strategic supplier partnership identifies optimum practices that can facilitate supply chain process alignment and integration. In order to further expedite collaboration, it is necessary to implement the latest collaborative information systems that drive efficiencies, performance, and quality throughout a supply chain (Robinson and Malhotra, 2005). Several researchers suggest that effective SC practice has a direct impact on the overall financial and marketing performance of an organization (Shin, Collier and Wilson, 2000). In fact, SC practice is expected to increase an organization's market share, return on investment(Shin et al., 2000), and improve overall competitive position. point that in order to achieve high performance in SC practice; companies need to integrate their supply chain partners into their operations.

Strategic partnership withsuppliers enables organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products (Anderson and Katz, 1998; Li et al., 2006). Strategic supplier partnership in SC has been reported to yield organization-specific benefits in terms of financial performance. Vereecke and Muylee (2006) highlighted that strategic partnerships between suppliers and manufacturers have a significant impact on supply chain performance and various aspects of competitive advantage.

2.2.2. Customer relationship*:*

Lambert et al (2000) comprises the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction. According to Day et al (2000), committed relationships are the most sustainable advantage because of their inherent barriers to competition. Customer relations related to the company's ability to communicate to the delivery of appropriate products and services to customers locally and globally in the right time, right place, and appropriate of quantity and quality (Tat, 2010).Low price, short lead-time and accurate delivery dates are three important areas that are important for a customer. (Beamon, 1998)say that areas like lead time, delivery precision and customer satisfaction most often are difficult to measure in monetary terms.

Tan, (2012) consider customer relationshipmanagement as an important component of SCMpractices. As pointed out byDay (2000), committed relationshipsare the most sustainable advantage because oftheir inherent barriers to competition. The growth of masscustomization and personalized service is leading to anera in which relationship management with customers isbecoming crucial for corporate survival. Good relationshipswith supplychain members, including customers, areneeded for successful implementation of supply chain practices.

2.2.3. Level & Quality of information sharing

Prasad S, Tata J. (2000) defined information sharing as the access to private data between business partners thus enabling them to monitor the progress of products and orders as they pass through various processes in the supply chain. Information sharing is the ability of the firm in sharing knowledge with supply chain partners in an effective and efficient approach. Effective information sharing is considered as one of the most important abilities of supply chain process Information sharing is one of the most important tools for achieving an integrated and coordinated supply chain. Information sharing has two aspects: quantity and quality. Both aspects are important for the practices of SC and have been treated as independent constructs in the past SC practice studies (Monczka RM, 1998).According to this researcher quality of information sharing includes such aspects as the accuracy, timeliness, adequacy, and credibility of information exchanged and level (quantity aspect) information sharing refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. Lumnus and Vokurka (1999), stated that in order to make the supply chain competitive, a necessary first step is to acquire a clear understanding of supply chain concepts and be willing to openly share information with supply chain partners.

2.3 Supply Chain Performance Assessment

Supply chain practices are defined as a set of activities undertaken in an organization to promote effective management of its supply chain. Performance measurement is very important as a strategic tool and also provides means to achieve the objectives required, fulfilling a firm's mission and strategy(Busi, 2005;Lapide, 2000; and Neely et al., 1995).The performance measurement system should be easy to understandat all levels in the organizations and it should contain a limited number of relevant measuresstatements.

The goal of supply chain management is to improve supply chain process so as to deliver the product properly, timely and at lowest cost to the customer. The belief that supply chain

management can improve responsiveness to customers and increase profits has drawn the attention of many managers to the notion of supply chain management (Husseini et al., 2010). Factors leading organizations toward supply chain management include the following: the need for improvement activities; increased outsourcing; increased transportation cost; increased competitive stress; increased globalization; significance of global commerce; supply chain complexity; and the need for inventory management (Ketchen, Giunipero, 2004).

Performance assessment is an essential management tool which helps improve performance to increase supply chain efficiency. Although supply chain management is commonly practiced in the industries and numerous articles have been published about supply chain actions and theories, not much attention has been given to supply chain management (Chan et al., 2003). Performance assessment is vital to the success of every organization because it facilitates understanding behaviors, shaped behavior and improves competitiveness (Manian et al., 2010).

Performance assessment can reveal important feedback information that enables managers to monitor the performance, expose progress levels, increase motives, improve communications, and identify problems (Waggoner et al., 1999). Performance assessment is an integral part of effective planning, control and decision making (Manian et al., 2010).

To discern accurate supply chain performance, the outcomes of measuring have to be visible and fully understood by all partners across the supply chain before continuous improvement in performance can be achieved (Wisner et al., 2005). The aim of performance measurement is to recognize performance gaps among service levels.

Shepherd and Gunter (2006) studied the performance measurement systems and metrics of supply chains by critically reviewing the contemporary literature and suggesting three main categories of supply chain performance metrics; time, cost and quality.

- Time - those directly perceived by the customers are articulated as Customer Response Time (The amount of time between an order and its corresponding delivery) &On Time Delivery(orders delivered on or before the due date)

- Cost - purchasing/ sourcing cost associated with sourcing products from an upstream member of a supply chain

- Quality - quality of delivered goods in meeting the needs and expectations of customers

When having an excellent supply chain the company can provide products to its customers that are of high quality (De Meyer et al, 1989), at low cost (Goonatilake, 1990), within short Customer Response Time (Haug, 1985) and give the requested customer support, (Hoover et al., 2001). Efficient Supply chain keeps what is promised, delivery in time, short lead time, and right quality and to lowest possible cost. This definition includes both the performance focus and the cost focus.

2.4 Supply Chain Performance Outcomes

The key success factors are all of the tasks that when accomplished desirably assure a manager, an organization, and a supply chain of success. These factors represent that category of supply chain practice that call for special and continuous attention to improve performance. The studies of industries suggest that the key factors of success vary depending on the industry (i.e. they vary from one level of the supply chain to other levels) (Muhammadi Z., 2007).

According to Shepherd and Gunter (2006) Supply chain performance assessment should create clear cooperative understanding that empowers supply chain to fix the problems, monitor and sustain forward momentum and enter a virtuous circle of continuous improvement. The result must allow the teams to focus on quality, innovation, communication, cost reductions, on time delivery, commitment to the future and trust, to achieve satisfied customers and sustained bottom line benefits. The tangible results will be:

- Opportunities to increase revenue and shareholder value (growth).
- Increased customer satisfaction from better product/service quality and delivery (CRM).
- Retained customers by differentiating the cooperative offering and locking out competitors.
- Reduced administration and production costs (margins).

- More integration and satisfaction from bridging the hidden gaps in teamwork (continuity risk).
- Building combined capability to seize future business opportunities.
- Impressing stakeholders with the seriousness of partner intentions.

2.5 Challenges in Supply Chain Performance Assessment

Performance assessment is an essential management tool which helps improve performance to increase supply chain efficiency (Chan et al., 2003). Performance assessment is vital to the success of every organization because it facilitates understanding behaviors, shaped behavior and improves competitiveness (Manian et al., 2010).

According to Shepherd et al., (2006), there are a number of important problems have not yet address, including: the factors influencing the successful implementation of performance measurement systems for supply chains, the forces shaping their evolution over time and the problem of their ongoing maintenance.

2.6 Review of Empirical Literatures on SC Performance

Empirical study focused on supply chain practices on inter-organizational system used, core competences, and elimination of excess in inventory through postponement. According to Ellramet al (2007) supply chain practices include: managing customer relationship, managing service delivery, managing capacity and skills, flow of cash and information. (Koh, 2007) Classified supply chain practices into strong relationship with customers, strategic partnership with suppliers, e-procurement, just-in time, benchmarking, and outsourcing. Five dimensions of supply chain practices methods including strategic relationships with suppliers, customer relationship, level of information sharing, quality of information systems and internal lean practices should be noted (Siddiqui, 2012).

Lee (2004) in his case study based research identified five practices at the supply chain level that are a key to creating supply chain responsiveness. They are: outsourcing, strategic supplier partnerships, customer relationships, information sharing, and product modularity. Chen and Paulraj (2004) used long-term relationship, cross-functional teams, supplier base reduction, and supplier involvement. Min and Mentzer (2004) identified long-term relationship, information sharing, vision and goals, risk and award sharing, cooperation, process integration, and supply chain leadership underlying the concept of supply chain practices.

Choy (2007) found that the long term success of affirm depends on the reliability of its suppliers and level of satisfaction of its customers. Previous research found that collaborative relationship between customer and supplier has positive significant influence to SC performance improvement. Inventory reduction is one of the main objectives of SC (Wisner, 2005). It is also the most commonly shared data among the supply chain partners. Therefore, several researchers have explored the ways to reduce the inventory in a supply chain. Many researchers have noted that information sharing in the supply chain can play an important role in reducing the inventory level as it allows the companies to quickly respond to market changes thus requiring minimum inventory across the supply chain.

Cousin (2006) also found that customer satisfaction is increasingly being recognized as an appropriate measure for determining how well a particular organization is accomplishing its mission and while customer satisfaction surveys provide valuable information and may be used to improve the entire operation.Thongrattana (2011) also explored that supplier satisfaction and contribution lead to customer satisfaction and SC performance.

Technology is an enabler in SC practice for helping supply chain members to establish partnerships for better supply chain system performance. Gunasekaran (2006) explored that information technology is an essential ingredient for business survival and improves the competitiveness of firms. McLaughlin et al., (2003) found that successful companies around the world are partly dependent on their ability to apply IT to SC practice.

Many studies have found that information sharing has great impacts on supply chain performance, especially in reducing the bullwhip effect (Lee and Whang 2000; Xu, Dong et al. 2001; Yu, Yan et al. 2001). Information sharing enables companies to make better decisions in their operation leading

to better resource utilization and lower supply chain costs. Better management of information allows companies to be more responsive to customers' demands (Lee 2000; Mentzer 2004).

Realizing the benefits of information sharing depends on companies' ability to utilize shared information in their business processes. Kulp et al. (2004) did a survey to investigate the impact of information sharing on companies' performance. They found that the highest profit margin companies are not simply exchanging information but they combine it with close collaboration. Lee and Wang (2000) argue that information sharing is only enabler for achieving supply chain efficiency. Gavirneni (2002) showed that the benefits of information sharing can be obtained if companies change their operational policy.

To take full advantages of information sharing, some significant changes in organization need to be implemented once information sharing in place. Companies should move toward collaboration with their partners to achieve common goals of supply chain efficiency that is built based on high level of trust between companies. Lee (2000) argues that collaboration and coordination can be achieved through exchanging decision rights, work and resources. Work realignment is redistribution of physical activities amongst members of supply chain and may lead to reduce total supply chain costs. Work realignment can only be effective if information sharing is in place. This work realignment needs a cultural shift in organization to treat supply chain partners as if they are parts of organizations.

According to different authors supply chain performance and practices have been found to be different among companies with different supply chain characteristics. Chan (2003) compared supply chain performance in three different industries and found that in the electronic industry, achievement of quality, on-time delivery and cost were found to have the highest priority, whereas the logistics service industry concentrated on service accuracy and flexibility. According to Bowersox and Closs, (1996) supply chain cost as cost components are related to: Order handling, Purchasing or sourcing, Stock handling, Systems needed to handle the Supply like: for example the order system and manufacturing. In relation to performance measurements on the supply chain, Keebler (1999) indicated that there are three principal categories of measurements, namely time, quality and cost. Under this study, supply chain cost refers the purchasing or sourcing cost.

2.7 Framework of the Research

Individual businesses no longer compete as solely autonomous units, but rather as supply chains therefore; it is an integrated approach to the planning and control of materials, services and information flow that add value for customers through collaborative relationships among supply chain members.

This study aims at assessing factors affecting supply chain performance of ethio telecom by taking some aspects of supply chain practices. As indicated in section 2.3 of this study Li et al. (2005) identified supply chain practices in form of strategic supplier partnership, customer relationship, and information sharing,internal lean practice and postponement. This studyadopts similar practice with modification (strategic supplier partnership,customer relationship, and information sharing) as sub-constructs for the SCM practices construct. Li et al. (2005) also have developed a valid and reliable instrument to measure supply chain management practices. The similar instrument also adopted in this research.

Also Shepherd and Gunter (2006) studied the performance measurement systems and metrics of supply chains by critically reviewing the contemporary literature and suggesting three main categories of supply chain performance metrics; time, cost and quality.

This research adopts the same supply chain practice metrics (supplier partnership, customer relationship and information sharing) performance metrics (time, cost and quality)

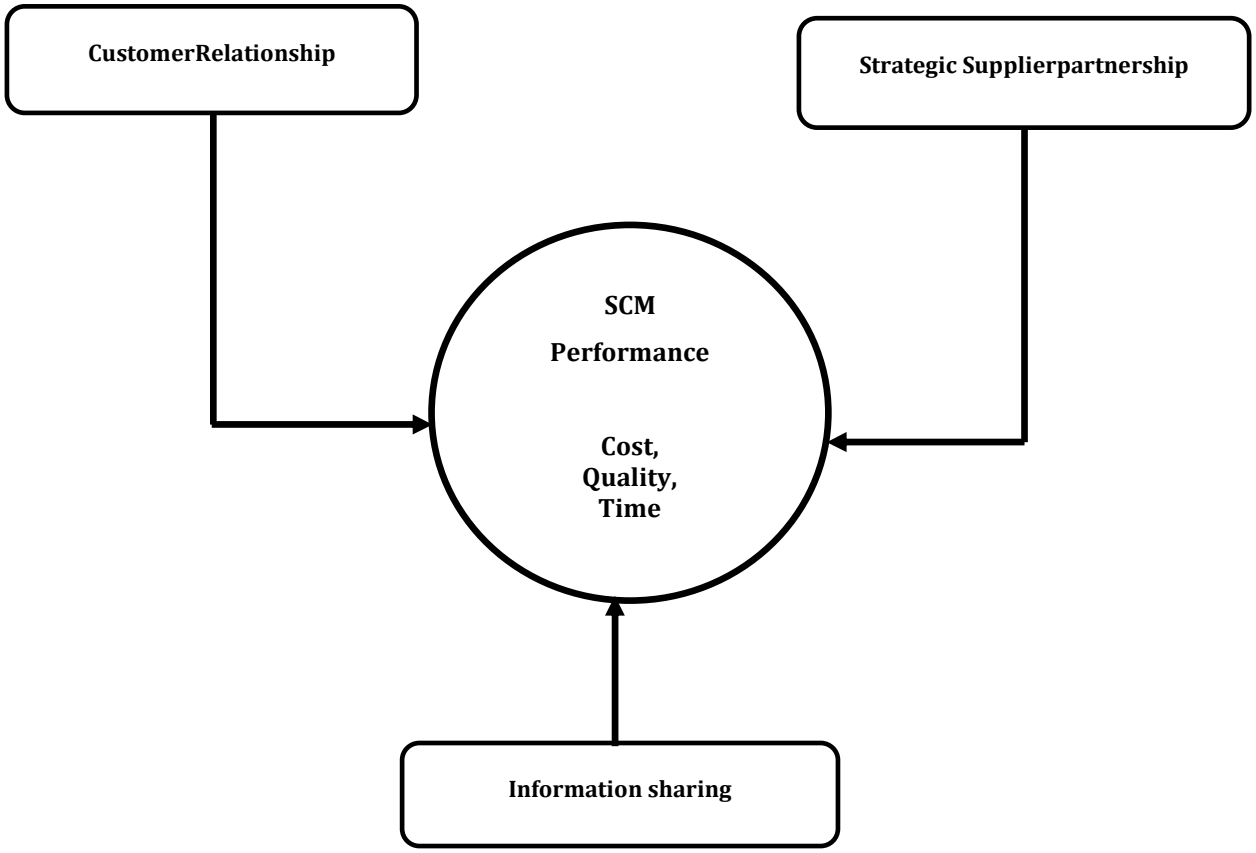

Figure 2.1 Conceptual Framework of the Study

Source: Adopted and modified from Li et al. (2005) and Shepherd and Gunter (2006)

3 Research Method

This chapter outlines the methodology adopted in this thesis work in light of the research problem, the case company under consideration and standard approaches of undertaking such a task.

3.1 Research Design

In this study, the researcher used descriptive research design and causal/explanatory research design. According to Anol (2012), the descriptive survey involves acquiring information about one or more groups of people asking them questions and tabulating their answers. Explanatory or analytical research aims to understand phenomena by discovering and measuring causal relations among them. The research used quantitative and qualitative method in order to gather the most appropriate data to answer the research questions.

3.2 Data Collection Tools

In this study, both primary and secondary data's were used.

3.2.1 Primary data

The primary data was gathered through field survey using standard questionnaires and semi structured interview

3.2.2 Secondary data

Secondary data was obtained through document analysis, records, research papers, journals, books and online resources.

3.3 Sample and Sampling Technique

Based on the organizational structure the supply chain division will be studied via questionnaires to be filled by a chosen population. Since the division has 104 staffs that are closer to the issues rose, census sampling was adopted to gather data. The rationale behind using census sampling was the relatively manageable population in relation with the study at hand. Additionally, all respondents are located at the head office which made reaching them practical. Out of the 104 questionnaires disseminated 75 were returned complete which amounts to 72.12% of the census sample. The remaining were either incomplete (13 which is 12.5% of the total population) or not returned (16 which amounts to 15.38% of the intended census amount). Judgmental sampling technique was adopted for Simi structured interview.

3.4 Operational Definition of Variables

While the dependent variable is supply chain Performance, the independent variables are the three dimensions of supply chain management practices as framed by Li et al. (2005) and Dependent variables as framed by Shepherd and Gunter (2006). These independent variables are Information sharing, customer relation and strategic supplier partnership and dependent variables time, cost and quality.

As concisely presented in the conceptual framework part of the study,

The independent variables are:

i. Strategic supplier partnership is the long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits.

ii. Customer relationship is the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction.

iii. Information sharing is the extent to which critical and proprietary information is communicated to one's trading partner

The dependent variables are:

i. Time - Customer Response Time and In/On Time Delivery

ii. Cost - purchasing/ sourcing costs associated with sourcing products from an upstream member of a supply chain

iii. Quality - quality of delivered goods in meeting the needs and expectations of customers

3.5 Data Analysis Technique

According to Miles and Huberman (1994), the quality of the analysis by dividing data into three phases: data deduction, data display and conclusion drawing, and verification from the presented material. In this thesis, our data evaluation followed these three phases. The data was recorded, shortened, simplified and compiled to prevent loss of information. Respondents were asked to rate their agreement to statements regarding the assessment of supply chain performance on a 6-point Likert scale (1 = "not at all" to 6 = "not applicable").

Nonparametric method is necessary when data have a ranking but no clear numerical interpretation. According to Gujarati (2004) in nonparametric tests, we make no assumptions about the (probability) distribution from which the observations are drawn unlike that of parametric tests and generally assume data are only measured at the nominal or ordinal level. Pearson's Correlation coefficient and multiple linear regression analysis were employed to examine the effect of the three dimensionof supply chain management practices on supply chain performance. Finally, the received responses were analyzed using SPSS (Statistical Package for Social Sciences) version 17 to summarize the data collected. Standard statistical tables and tools were implemented to analyze the data and then conclusion is drawn.

3.6 Ethical Consideration

Respondents were assured that the information they provide is confidential and will be used for academic purpose only. This is hoped to ensure any biased response or unauthentic data provision by respondents and to make participants certain that he/she will not be traced; this will offer them enough room to express their ideas and point their responses freely and safely.

4 Data Analysis and Interpretation

This study makes an assessment of factors affecting supply chain performance at ethio telecom. This section details the results of the data collection via questionnaire dissemination – in the following sections the reliability and validity of the assessment made and various aspects of the data collected are presented. This includes demographic data, supply chain practice implementation levels in terms of identified independent and dependent variables. The data analysis presentation is based on SPSS analysis of the gathered data.

4.1 Reliability and Validity Tests

Reliability: Cronbach's alpha was used to measure the reliability of the individual sub constructs that affect the supply chain performance of the ethio telecom.The following table summarizes the reliabilities (Cronbach's α) of the sub-constructs - strategic supplier partnership, customer relationship, and information sharing.

Table 4.1 Computed reliabilities if the sub-constructs studied

Measurement Items	(Cronbach's α)
Strategic Supplier Partnership	
We consider quality as our number one criterion in selecting suppliers.	**α = 0.824**
We regularly solve problems jointly with our suppliers	
We have helped our suppliers to improve their product quality	
We have continuous improvement programs that include our key suppliers	
We include our key suppliers in our planning and goal- setting activities	
We actively involve our key suppliers in new product development processes	

Customer Relationship	
We frequently interact with customers to set reliability, responsiveness, and other standards for us.	**α =0.792**
We frequently measure and evaluate customer satisfaction.	
We frequently determine future customer expectations.	
We facilitate customers' ability to seek assistance from us.	
We periodically evaluate the importance of our relationship with our customers.	
Information Sharing	
We inform trading partners in advance of changing needs.	**α = 0.818**
Our trading partners share proprietary information with us.	
Our trading partners keep us fully informed about issues that affect our business.	
Our trading partners share business knowledge of core business processes with us.	
We and our trading partners exchange information that helps establishment of business planning.	
We and our trading partners keep each other informed about events or changes that may affect the other partners	

A commonly used value for acceptable reliability is 0.70 (Hair et al., 1998). More reliable measures give greater confidence that the individual indicators are all consistent in their measurements, and therefore, the model is repeatable. The respective results found in this study show such strong indication towards the internal consistency of the study approach which in turn ensures repeatability of the method adopted in this research work.

Since the constructs are previously applied and tested, content validity is assumed. The framework for choosing supply chain management practices was based on Li et al (2005) andShepherd and Gunter (2006) for SC performance. External validity is related to the extent to which the findings from one research can be applied to other similar situations. In other words, how the conclusions drawn can be generalized to other contexts (Thatte, 2007).

4.2 Demographic and General Information

4.2.1 Response rate

A total of 104 questionnaires were disseminated in person to respondents. 75 were returned which makes response rate 72.12%, from the returned questionnaires 13 were incomplete and the remaining 16 were not returned.

4.2.2 Profiles of Respondents

The respondents were selected to ensure that they are from supply chain division to provide more detailed information. Respondents are familiar with the day-to-day operational activities of the company with regard to supply chain practice.

Additionally, three officers from the top management were interviewed to bring in more perspective.

The results pertaining to the general information on respondents as obtained from Section 1 of the questionnaire (Appendix 1), are outlined below.

I. **Qualification**

Table 4.2 Qualification of Respondents

Qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	BA/BSC	63	84.0	84.0	84.0
	MA/MSC	12	16.0	16.0	100.0
	Total	75	100.0	100.0	

(Source: SPSS output 2017)

As indicated in Table 4.2, educational levels of the respondents indicate levels of tertiary education. Eighty–four percent of the respondents have a B.A. degree (84%), and the rest (16%) held M.A. degrees. This shows that the respondents can clearly understand the questions and give valuable input about the issues raised in the questionnaire.

II. Year of Service in current position

Table 4.3: Year of Service in ethio telecom

Year of Service in current position					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 Years	25	33.3	33.3	33.3
	6-10 Years	43	57.3	57.3	90.7
	More Than 10 years	7	9.3	9.3	100.0
	Total	75	100.0	100.0	

(Source: SPSS output 2017)

The number of years that the respondents had been in operation in their current position is as outlined in the above table shows that most of the respondents 57.3% had been operating between 6-10 years, and 33.3% between 0-5 Years, the rest 9.3% served above 10 years. Therefore, one could say that the respondents have long experience in their working area. Since 66.6%of employees have worked in the company for five or more years it can be said that the data is more reliable. Of course it is important to note that the company adopted SCM practice in a much structured form only in 2011. Yet the seven respondents that exhibited 10 or more years of experience were working on related positions – purchasing departments.

4.3 SCM Practice and Implementation level

In this section, the perception of respondents on each of the supply chain practices was described in terms of customer relationship, information sharing, strategic supplier partnership and supply chain performance variables.

4.3.1 Customer Relationship practices

The respondents were asked about their practice of maintaining customer relationship in five variables. These variables indicate the extent of firm's practice in terms of periodically evaluating the importance of their relationship with their customers, frequently determining future customer expectations, frequently measuring and evaluating customer satisfaction, facilitating customers' ability to seek assistance from them and frequently interacting with customers to gather feedback for future improvement.

Table 4.4: Extent of Customer Relationship Practices

	We periodically evaluate the importance of our relationship with our customers	We frequently determine future customer expectatios	We frequently measure and evaluate customer satisfaction	We facilitate customers' ability to seek assistance from us	We frequently interact with customers to gather feedback for future improvement
Mean	2.40	2.49	2.45	2.87	2.52
Mode	2	2	2	4	2
Std. Deviation	1.065	1.288	1.318	1.288	1.155

(Source: SPSS output 2017)

As presented in Table 4.4 the mean values of all customer relationship variables were between 2.4 and 2.87, which is mapped to the phrase *"to a small extent"*. As presented in Appendix 2, 44% said that periodically evaluating the importance of their relationship with their customers ispracticed to a small extent, and 18.7% responded they do not evaluate the importance of customer relationship at all. Regarding frequently determining future customer expectations 50.7% said it is practiced to a small extent and 17.3% responded it is not practiced at all. Among 38.7% of the respondents replied

frequently measuring and evaluation of customer satisfaction was at small extent and 25.3% responded not at all. When it comes to facilitating customers' ability to seek assistance from them the responses were inclined to a moderate level. In aggregate 33.3% responded they practice it to considerable extent and 14.7% saying to a moderate level. 24% said that they frequently interact with customers to gather feedback for future improvement and 49.3% responded it is to small extent.

A firm's customer relationship practices can generate the organizational success in supply chain practices efforts as well as its performance (Scott and Westbrook, 1991). In today's competitive business environment, better relationship management with customers is crucial for organization success (Wines, 1996). Close customer relationship helps to sustain customer satisfaction and elevated the value provided to customer (Thatte, 2007). As canbe observed from the above results the level of practice of cultivating successful customer relationshipis at a lower level in ethio telecom.

4.3.2 Information sharing practices

The respondents were asked about their practice of information sharing in six variables. These variables indicate the extent of the firm's practice in terms of informing trading partners in advance of changing needs, share partner proprietary information with them, and if trading partners keep them fully informed about issues that affect their business, partners share business knowledge of core business processes with them, trading partners exchange information that helps establishment of business planning and trading partners keep each other informed about events or changes that may affect the other partner.

The following table summarizes the findings of these questions.

Table 4.5: Extent of information sharing Practices

	We inform trading partners in advance of changing needs	Our trading partners share proprietary information with us	Our trading partners keep us fully informed about issues that affect our business	Our trading partners share business knowledge of core business processes with us	We and our trading partners exchange information that helps establishmen t of business planning	We and our trading partners keep each other informed about events or changes that may affect the other partners
Mean	3.24	2.25	1.89	2.13	2.05	2.45
Mode	3	2	2	2	2	2
Std. Deviation	1.364	1.140	.863	1.095	.999	1.044

(Source: SPSS output 2017)

As presented in Table 4.5 the mean scores of the respondents for items of supply chain management practice dimension in relationship with information sharing ranges from 1.89 to 3.24, which cab e considered to be mapped betweenthe phrases *"to a small extent"*and *"to a considerable extent"*. As presented in the Appendix 2, 28% said trading partners keep each other informed about events or changes that may affect the other partners was at a moderate extent and 24% responded the same question to have been practiced to considerable extent and 20% claimed it was practiced to small extent.36% of respondents said that trading partners' level of sharing proprietary information was practiced to a small extent and 29.3% answered there is no such practice at all. One-third of the respondents (33.3%) claim that there is no practice where their trading partners keep them fully informed about issues that affect their business.Also the same amount claimed that there is no practice of trading partners to share business knowledge of core business processes with them. 52% & 36% respondents said the practice is there but it is to a small extent.

When it comes to trading partners exchange information that helps establishment of business planning &trading partners keep each other informed about events or changes that may affect the other partner, 49.3% and 50.7% said that it is to small extent respectively and 29.3% and 13.3% responded there is no such practice at all.

Gunasekaran (2006) explored that information sharing is an essential ingredient for business survival and improves the competitiveness of firms. McLaughlin (2004) found that successful companies around the world are partly dependent on their ability to apply IT to SCM. Moreover, findings from McLaren (2004) show that operational efficiency and operational flexibility have high relationship with SCM information system. Compatible and integrated information systems play important roles in integrating a supply chain. These information sharing enable the supply chain members to share and use the data for common goals, which ultimately lead to greater integration in a supply chain.

4.3.3 Strategic Supplier partnership practices

The respondents were asked about their practice of strategic supplier partnership in six variables. These variables indicate the extent of firms practice in terms of considering quality as their number one criterion in selecting suppliers, regularly solving problems jointly with their suppliers, helping their suppliers to improve their product quality, having continuous improvement programs that include their key suppliers, including their key suppliers in their planning and goal- setting activities and involving suppliers to provide information on new product specification development.

Table 4.6: Extent of Strategic Supplier partnership Practices

	We consider quality as our number one criterion in selecting suppliers	We regularly solve problems jointly with our suppliers	We have helped our suppliers to improve their product quality	We have continuous improvement programs that include our key suppliers	We include our key suppliers in our planning and goal-setting activities	We actively involve suppliers to provide information on new product specification development
Mean	3.23	2.25	2.11	2.56	2.39	2.33
Mode	4	2	2	2	2	2
Std. Deviation	1.269	1.274	1.008	1.056	1.384	1.178

(Source: SPSS output 2017)

As presented in the table 4.6 the mean scores of the respondents for most items of supply chain management practice dimension of strategic supplier partnership ranges from 2.11to3.23, which is between "to a small extent" and *"to a considerable extent"*. But when we see each variable only quality as number one criterion in selecting suppliers were practiced between a moderate extent and considerable extent in significant level comparing the other variables which is 17.3% & 36% respectively.

As presented in the Appendix 2, 48.0% said that they involve their suppliers in new product specification development processes was at small extent, and 54.7% said that helping their suppliers to improve their product quality was at small extent also 41.3% said that including their key suppliers in their planning and goal- setting activities and regularly solving problems jointly with their suppliers was at small extent. 62.7% answered that continuous improvement programs that include their key suppliers were again at small extent.

As mentioned in the literature review section, advantages of supplier participation in new product specification development reduced costs (Kessler, 2000; Clark, 1989), and improved perceived product quality (McGinnis, 1997). Strategic partnership between organizations promote shared

benefits and ongoing collaboration in key strategic areas like technology, products, and market (Yoshino and Rangan, 1995; Thatte, 2007). Thatte (2007) stated that strategic supplier partnership as the long-term relationship between the organization and its supplier has significant advantage. Involving supplier early in new product specification development process can lead suppliers to offer cost effective product alternatives, assist in selecting better components and technologies (Tan et al, 2002; Thatte, 2007). However, we can conclude that ethio telecom relies much upon traditional way of doing business and less concern is paid to modern supplier partnership practices such as, including their key suppliers in their planning and goal- setting activities, continuous improvement programs that include their key suppliers, and helping their suppliers to improve their product quality.

4.4 Supply Chain Performance

Three measures were used to assess supply chain performance of ethio telecom:*quality* (supplying products with the right quality to the customers'request), *time* (providing in/on time delivery and providing customer orders with the shortest possible time) and *cost* (provision of customers' orders with the lowest possible cost/price).

Table 4.7: supply chain performance

	We supply products with the right quality to our customers request	We provide in/on time delivery	We provide customer orders with the shortest possible time	We provide customer orders with the lowest possible cost/price
Mean	3.12	2.43	2.41	2.57
Mode	2	2	2	2
Std. Deviation	1.284	1.055	.902	1.296

(Source: SPSS output 2017)

Table 4.7 indicates that the mean value for supplying products with the right quality to customers request is 3.12 which shows that the quality of products that are supplied to customers' order are to a moderate level. Regarding in/on time delivery & providing customer orders with the shortest possible time the mean values are 2.43 & 2.41 respectively and these imply the time aspect has a small extent level of implementation.it is to a small extent. When it comes to providing customer orders with the lowest possible cost/price the resulting mean value is 2.57 which is still showing a small level of practice. So depending on the above variable results we can say that ethio telecom's supply chain performance is concentrated around a small-extent level implementation of these measures – quality, time and cost.

4.5 Inferential Statistics Data Analysis

On the pervious section of the analysis, descriptive statistics data analysis was used to understand the extent of ethio telecoms supply chain practice and level of supply chain performance. Under this sub section inferential statistics is conducted in order to see; if there is a relationship between the independent variables: customer relationship, information sharing, strategic supplier partnership and the dependent variable - supply chain performance.

After analyzing the existing relationship between the two groups of variables, another inferential statistics data analysis is used to determine the effect the independent variable has on the dependent variable.

4.5.1 Correlation among constructs

The researcher has attempted to establish the correlation between the variables that characterize the factors affecting supply chain performance in order to demonstrate how strong the relationship between the variables is. The Pearson's Correlation was used to explore a correlation between supply chain performance and the independent variables (factors affecting its performance).

In order to determine this correlation, Pearson's Correlation coefficients were calculated by SPSS 17. If the test statistic is greater than the critical value, then there is significant linear correlation. Furthermore, we are able to say there is significant positive linear correlation if the original value of

r is positive, and significant negative linear correlation if the original value of **r**is negative. Correlation is an effect size and so we can verbally describe the strength of the correlation using the guide that Evans (1996) suggests for the absolute value of r:

- .00-.19 “very weak”
- .20-.39 “weak”
- .40-.59 “moderate”
- .60-.79 “strong”
- .80-1.0 “very strong

Table 4.8: Pearson Correlations for factors affecting- Supply Chain Management Performance

		Supply Chain Performance	Strategic supplier partnership	Customer Relationship	Information Sharing
Supply Chain Performance	Pearson Correlation	1	.758**	.709**	.668**
	Sig. (2-tailed)		.000	.000	.000
	N	75	75	75	75
Strategic supplier partnership	Pearson Correlation	.758**	1	.539**	.499**
	Sig. (2-tailed)	.000		.000	.000
	N	75	75	75	75
Customer Relationship	Pearson Correlation	.709**	.539**	1	.590**
	Sig. (2-tailed)	.000	.000		.000
	N	75	75	75	75
Information Sharing	Pearson Correlation	.668**	.499**	.590**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	75	75	75	75
**. Correlation is significant at the 0.01 level (2-tailed).					

(Source: SPSS output 2017)

As it is shown in Table 4.8, variables (customer relationship, information sharing and strategic supplier partnership) are positively and strongly correlated with supply chain performance. However, the relationship between strategic supplier partnership and supply chain performance is stronger than the relationship between customersrelationship andinformation sharing with supply chain performance. Therefore, the study revealed a significant positive relationship between strategic supplier partnership with supply chain performance (r=.758**, p<0.01).

4.5.2 Multiple Linear Regression Analysis

In statistics, linear regression is an approach for modeling the relationship between a dependent variable and one or more explanatory variables (or independent variables). The case of one explanatory variable is called simple linear regression. For more than one explanatory variable, the process is called multiple linear regressions.

Therefore in line with the research objective, by conducting multiple linear regression analysis, the researcher analyzed the relationship and the effect within components of the independent variable (customer relationship, information sharing and strategic supplier partnership) with the dependent variable (Supply Chain Performance).

4.5.2.1 Results of Tests for Assumptions of Multiple Linear Regression Analysis

The variables are approximately normally distributed (See Appendix 3). The congregate plots of the data from the study confirm the existence of linearity. The data also shows homoscedasticity, which is where the variances along the line of best fit remain similar as you move along the line. While putting guidelines to be applied in assessing the assumptions of no multi collinearity, Field (2005:196) has argued that if the largest VIF is greater than 10 then there is a cause for concern and also argued tolerance below 0.1 indicates a serious problem. In light of this perspective, the VIF values are all well below 10 and the tolerance statistics are all well above 0.5 for the multiple linear regression model of the study. The collinearity diagnostics indicate a low degree of overlap between the predictors. Therefore, it is safely concluded that there is no co linearity within the data of the study (See Table below).

4.5.2.2 Results of Multiple Linear Regression Analysis

Table 4.9 Regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.861[a]	.742	.731	.538
a. Predictors: (Constant), customer Relationship, Information Sharing and Strategic supplier partnership				
b. Dependent Variable: Supply Chain Performance				

(Source: SPSS output 2017)

The above table shows the results of model summary of the multiple linear regression analysis. Multiple linear regression analysis has been used to identify the effect of supply chain practices (supplier partnership, customer relation and information sharing) on supply chain performance of ethio telecom. The multiple correlation coefficients (r), with a value of 0.861, represent the correlation ratio indicating the existence of a link between supply chain performance and its main factors. The regression analysis explains the extent to which the independent variables predict supply chain performance. As can be seen from Table 4.9, the adjusted R-square, (0.731) indicates to the relative contribution of supply chain practice dimensions in interpreting the supply chain Performance of ethio telecom. In other words, about 73% of the variation in supply chain performancecan be explained by of supply chain management practice variables (supplier partnership, customer relation and information sharing) with other things remaining constant.

Table 4.10: ANOVA TABLE

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59.005	3	19.668	68.054	.000[a]
	Residual	20.520	71	.289		
	Total	79.524	74			
a. Predictors: (Constant), customer Relationship, Information Sharing and Strategic supplier partnership						
b. Dependent Variable: Supply Chain Performance						

(Source: SPSS output 2017)

Table 4.10 shows the ANOVA results of the multiple regression analysis. The p value denoted as "Sig." in the ANOVA table tests whether the independent variables are statistically significant to predict the dependent variable. If p value is > 0.05 the model is statistically insignificant, but if p value is < 0.05 the model is statistically significant.

Hence the above ANOVA table shows the regression model is a good fit of the data. (p=0.00, which is < 0.05) and regression model is valid and can be used to analyze the dependence between variables.

Table 4.11 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-1.916	.333		-5.756	.000	-2.580	-1.253		
	customer Relationship	.466	.120	.315	3.890	.000	.227	.705	.555	1.803
	Information Sharing	.417	.130	.250	3.208	.002	.158	.676	.600	1.668
	Strategic supplier partnership	.588	.096	.460	6.154	.000	.398	.779	.651	1.537
a. Dependent Variable: Supply Chain Performance										

(Source: SPSS output 2017)

Table 4.11 shows the results of coefficients of multiple linear regression analysis for the effect of supply chain practices (customer relation, information sharing and strategic supplier partnership) on supply chain performance of ethio telecom. As we can refer from the above table the Beta coefficient for customer relation construct was β=-0. 466, beta coefficient for the information sharing was β= .417, and β= 0.588 for strategic supplier partnership. These results demonstrate that

the three variables are significant andhave positive and significanteffect on the supply chain performance.

Strategic supplier partnership had the highest beta value of 0.588 which would impact the criterion variable the most. These findings indicate that ethiotelecom would achieve a higher level of supply chain performance if it has well-developed strategic supplier partnership, good customer relationship and information sharing practice respectively.

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4.6 Analysis of Interview Result

An in-depth interview with three personnel at officers level in ethio telecom was made to comprehensively understand the problems of Supply Chain Management practice and Performanceas well as to fill the gaps of information from the questionnaire. This interview was made after fully completing the analysis from the survey questionnaire, and the interview questions were designed accordingly in order to support and confirm the information acquired from survey questionnaire result.For this purpose, three employees who are in the top management positions related to the survey analysis were selected and interviewed individually. These people were Officers from the following divisions: (1) Supply Chain Division (2) Network Division and (3) Enterprise Division. The researcher would like to appreciate for the information they gave decently and their cooperation as well. Thus, the researcher was convinced of the interview responses and believed that they are good input for the survey.

It should be pointed out, however, that the intent of this study was not to compare analyses or data gathered at each user divisions (enterprise & network) but to ascertain what the two interviewees from internal user departments and interviewee from supply chain department perceived to be supply chain problems experienced by them (as internal customers) through the supply chain division.

The purpose of the interviews with the internal users and officers from supply chain division was to identify the supply chain problems that supply chain division in ethio telecom experience, which influence their supply chain management performance. All participants were presented with the same open-ended questions. The interviews took approximately one hour and each participant

suggested that should any more information be needed for this study, the researcher could email further questions to the participant. This was done in order to (1) clarify some points that were made and/or were not quite clear to the researcher; and (2) to ensure that the findings were accurate and reliable in that they indicated exactly what the participants meant.

4.6.1 Section 1: Supply Chain Problems from Internal Customer's Perspective

The aim of this section was to find out from the interviewees (internal users) what they perceived to be the supply chain problems as seen from customer's point of view. The following supply chain problems were identified:

Lengthy process of order issuance: Procurement /Sourcing manual of ethio telecom dictates that all procurement is made using open tender except and otherwise, the issue should be treated case by case and supported by strong justification to prove that other methods of procurement are followed. While looking the lead time that requires in each method of procurement for single order cycle it is expressed as standard as large as (203-366) days lead time expected in open tender and as small as (104-184) days in case of direct procurement. As ethio telecom carries out procurement through open tender, this will have a negative impact in going hand in hand with dynamic technological changes which in turn leads to postponement of service delivery. Order processing phase is a time consuming factor that affects the efficiency of total supply chain process. So this prolonged and complicated system of order issuance ultimately affects the smooth performance of supply chain.

Delivery time promised to customer hardly achieved: Due to variations in supply and implementation problems – promised delivery date and quantity to customers were rarely achieved.

Problems of inventory management: stocks are not regularly checked and replenishment policy is not as such at its strong practice. So some critical goods become out of stock leading to urgent deliveries to sustain the service provision which in turn leads to increased cost to speed up the delivery and delay to respond to external customer request.

4.6.2 Section 2: Problems from the Supply Chain Perspective

The aim of this section was to find out problems from the Supply Chain department perspective ofethio telecom. The following problems were identified.

***Problems related with internal customers (user departments*)**: The user departments do not come with a clear requisition. Their demand fluctuates over time. Though, the user departments are requested to submit their plan for sourcing department three months in advance, rapid changes in demand and unplanned requisition from customers were raised as a great challenge. Also lack of clearly defined specifications/requirements with detailed technical specification to ensure suppliers to participate and provide the right product to the tenders floated were mentioned as major challenge. this also affects the buyer to carry out effective comparisons between suppliers to get a desirable out come.

Problems related with Suppliers: scarcity of local supplier base were another big challenge for ethio telecom with the current foreign currency shortage all over the country. This seriously affected ethio telecom's supply chain management performance by taking longer time todeliver products.

Lack of communication; also ranks high as one of the common supply chain problems in ethio telecom. Suppliers and customers alike require constant monitoring and at least some level of collaboration to ensure supply meets demand. Sometimes suppliers may not deliver the right quality after their technical proposal is validated which had serious. impact on the supply chain efficiency.

Inadequate planning*:* Another major challenge to SCM performance was inadequate planning. Cost effective procurement depends on specialist skills to ensure that buying requirements are reliably determined, appropriate contract strategies are developed,

contracts are well managed and the opportunities to secure the best deal at the right time and at the right price. However, ethio telecom is still facing challenges of improper planning and linking demand to budget. This may be attributed to limited skills and the availability of huge financial capacity. Ambe and Badenhorst-Weiss (2011) acknowledged that training and workshop were vital for successful implementation of SCM.

Excessive slow-moving inventory:Excessive slow-moving inventory due to cancellation of orders were a significant supply chain problem. These slow moving products are bought in bulk and since the company's service is technology oriented, most of these stocks are outdated.

The second question forwarded for the interviewees was about ethio telecom's supply chain management performance. Accordingly, all respondents reply that performance of ethio telecom's supply chain in meeting customer satisfaction is getting improvedcompared to previous times.however, this does not mean that ethio telecom SCM is efficient and performing too well. Though there is greater effort to integration and information flow, its efficiency is under question which magnifies the above specified problems as factors affecting its SC performance.

The third question forwarded for the interviewees was about the measurements taken to improve ethio telecom's SCM performance:

Implementing Enterprise Resource Planning (ERP):ethio telecom has purchased three ERP modules from Oracle and implemented it before four years but not yet benefiting from the system as it is expected. Difficulties are still there which hinders the company from enjoying it benefit to the fullest.

5 Discussion, Conclusion and Recommendation

5.1 Discussion

The finding of studies has proven that building an integrated and coordinated supply chain practices is very important to an efficient supply chain performance. The success or failure of SCM hinges on a company's ability to integrate its key supply chain partners. Performance assessment can reveal important feedback information that enables managers to monitor the performance, expose progress levels, increase motives, improve communications, and identify problems (Waggoner et al., 1999).

5.1.1 Customer relationship practices in ethio telecom

A company's customer relations practices can affect its success in managing the supply base as well as its performance (Scott and Westbrook, 1991; Ellram, 1991; Turner, 1993). A key element of successful supply base management involves downstream integration of customers as well as the management of upstream suppliers. Each entity in the supply chain is a supplier as well as a customer.

Even though customer relationship practice has strong correlation with the overall supply chain performance, what we have observed from the analysis part of this paper is that the customer relationship management practice in ethio telecom is weak in terms periodically evaluating the importance of their relationship customers, frequently determine future customer expectations, frequently measure and evaluate customer satisfaction, and frequently interact with customers to gather feedback for future improvement. However facilitating customer's ability to seek assistance is practiced relatively to a moderate level which is appreciated in ethio telecom.

When we were trying to assess the overall practice of customer relationship it was found to be weak but based on the correlation and regression analysis of the study customer relationship had significant relationship and effect on supply chain performance of the company.

A company shall develop a trust-based relationship with customer and supplier, in order to improve visibility to orders which generated by time-phased demand and supply planning. Previous researchers found that collaborative relationship between customer and supplier has positive significant influence to SCM Performance. Despite the fact that customer practice has significant relation with supply chain performance in the case of ethio telecom, it could be said that it at its lower level of execution in many of its parameters.

5.1.2 Information Sharing

The flow of information between participants of supply chain plays the role of integration and coordination between different parts of the supply chain and has a direct impact on the efficiency of supply chain performance (Amid, 2007). Even though ethio telcom has all the means for communication, the company has not optimized the use these assets to its own advantage when it comes to information sharing with partners in the supply chain. This was seen from the analysis of information sharing practice in terms of partners share proprietary information with them, trading partners keep them fully informed about issues that affect their business, partners share business knowledge of core business processes with them, trading partners exchange information that helps establishment of business planning and trading partners keep each other informed about events or changes that may affect the other partner. in the case of ethio telecom only for informing trading partners in advance of changing needs was practiced at fair level which is still not adequate enough. While the relationship between information sharing and supply chain performance is strong from the correlation observed and has significant and greater effect on the supply chain performance, the practice is not matured as it is supposed to be.

Previous studies suggest that sharing information and data with other parties within the supply chain enhance supply chain performance and can be used as a source of competitive advantage

(Jones, 1998; Novack et al., 1995). Information sharing with suppliers has given the benefits of faster cycle times, reduced inventory (implying reduced costs), and improved forecasts. Customers, for their part, have benefited by getting a higher-quality product at a lower price (Magretta, 1998; Stein and Sweat, 1998). Furthermore material and the information flow upstream and downstream through the supply chain are important and it is a kind of "two-way street". If there is no honest and open sharing of information between the parties there will be no chance to deliver the right products in the needed volume in time and in the same context ethio telecom is not enjoying the benefit that could be gained from information sharing.

5.1.3 Strategic supplier partnership

Many firms have reduced their supply base so they effectively manage relationships with strategic suppliers (Tully, 1995). Humphreys (2001) also explored that supplier satisfaction and contribution lead to customer satisfaction and SCM Performance.

Supplier partnership plays an important role in the reduction of costs and the optimization of performance. (Tobias et al., 2008). Supplier relationship management has become a critical business process as a result of: competitive pressures; the need to consider sustainability and risk; the need to achieve cost efficiency in order to be cost competitive; and the need to develop closer relationships with key suppliers who can provide the expertise necessary to develop innovative new products and successfully bring them to market. Significant benefits are possible from better managing relationships with key suppliers. It has been shown that integration of operations with suppliers can improve firm performance (Swink, 2007; Singh & Power, 2009).

Considering the characteristics of strategic supplier partnership the research findings are showing that in ethio telecom only consider quality as number one criterion in selecting suppliers was practiced at moderate level. Other factors like regularly solving problems jointly with their suppliers, helping their suppliers to improve their product quality, having continuous improvement programs that include key suppliers, including key suppliers in planning and goal- setting activities

and involving suppliers to provide information on new product specification development were not practiced that much. Even though the relationship and relative effect between Strategic supplier partnership and supply chain performance is relatively stronger than the other independent variables the practice is still at its lower level which can tell us that ethio telecom is not enjoying the benefit of strategic supplier partnership.

Strategic partnership with suppliers enables organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products (Anderson and Katz, 1998; Li et al., 2006). Strategic supplier partnership in SCM has been reported to yield organization-specific benefits in term of financial performance. Vereecke and Muylee (2006) highlighted that strategic partnerships with suppliers have a significant impact on supply chain performance and various aspects of competitive advantage.

5.2 Conclusions

As discussed in the previous chapters, this research is carried out to assessfactors affecting supply chain performance (SCP) taking the case of ethio telecom. To that effect, after reviewing different literatures and previous studies, a research frame work was designed and factors affecting supply chain performance were identified. The level of supply chain practice - customer relationship, strategic supplier partnership and information sharing- which affect the supply chain performance; namely, delivery in/on time, customer response time, right quality and low cost/price - were analyzed. Based the findings via the methodology adopted in the study the following conclusions have been drawn:

- Although strategic supplier partnership is the key factor that has a strong positive relationship and highest effect on SCP - followed by customer relationship and information sharing in this study, the level of practice is not at a strong level yet.

- Despite all the independent variables (customer relationship, strategic supplier partnership and information sharing) have positive strong correlation with the dependent variable supply chain performance, and have great potential to affect the performance of the supply chain of

ethiotelecom, their level of practice were found to be minimal. It is important that smooth and efficient operations of every link in the supply chain should be taken care of.

Furthermore, the result from the interview confirms that ethio telecom has SC management challenges related to inventory management,communication, deliveryand customer response time, andinadequate planning. Additionally, it was pointed out that problems related to suppliers and internal customers (user departments) also affect the supply chain practice.

Uncertainties both from customers and suppliers created delays and bottlenecks that hampered the performance output of the supply chain. Operational reliability including delivery timing and trust was a concern at different levels. Trust was very much an issue between departments within the same company where attitudes were polarized between 'them' and 'us'.

Communication was patchy, needing considerable improvement. There was a lack of detailed knowledge of routine plans, schedules and orders necessary for the smooth functioning of the supply chain. There was also a lack of understanding of partners' contributions to the success of the relationships across the supply chain links which suggested that training and routine information flows needed attention. This particular weakness was clearly a major contributor to many of the other issues identified. Because of the lack of information-sharing the supply chain had become compartmentalized which resulted in protective attitudes and a breakdown of trust which undermined effectiveness and performance. There was a danger of slipping into a negative twist of withholding information, focusing on own objectives, taking a short-term view and doing the minimum to get by. These partners only vaguely realized that their poor relationships were affecting the rest of the supply chain.

The above problems indicate lack of close cooperation between ethiotelecom (Sourcing) with its customers (internal user departments) and suppliers. It would appear that the supply chain management philosophy has not yet been adopted and implemented to its fullest extent in ethio telecom.

5.3 Recommendations

Based on the conclusions above, some recommendations are proposed to alleviate the problems encountered.

- ethio telecom should realize the benefits of information sharing and move towards collaboration and coordination with partners by effective use of pertinent, timely, and accurate information to achieve common goals of supply chain efficiency to build higher level of trust between departments, customers and suppliers.

- ehtio telecom should work towards supply chain collaboration: companies that collaborate effectively across the supply chain have enjoyed dramatic reductions in inventories and costs, together with improvements in speed, service levels, and customer satisfaction.

- Strategic partnership and ethical sourcing with suppliers: ethio telecom should establish ethical sourcing to put aside opportunistic behavior and long-term cooperative partnerships for the supply of strategic items and take advantage of transactional kind of relationship for supply of routine items like stationeries in order to take advantage of best available price in the market

- ethio telecom should enter into service level agreements with stake holders like Ethiopian Revenue and Customs Authority, Ethiopian Airlines and Ethiopian Shipping and Logistics Service Enterprise to reduce delivery time. delivery time reduction helps to make delivery fast, which further improves service level and customer satisfaction. A real-time information system among ethio telecom, its customers, suppliers and stake holders would alleviate both delivery time and inventory problems.

- ethio telecom should engage in collaborative planning and goal setting with partners, review performance periodically and pave the way for continuous improvement to enhance the overall supply chain performance

- ethio telecom should place more emphasis on cooperated demand planning and forecasting as an additional means of ensuring customer satisfaction and to reduce obsolete inventories with business's needs.

- ethio telecom should engage in training of the work force and developing their supply chain management skills through workshops and systematic training programmes and promote learning from relevant successful experiences in this area.

- As the concept of SCM is complex and involves a network of companies in the effort of producing and delivering a final product, its entire domain cannot be covered in just one study. Future research can expand the domain of SCM practice by considering external customers and additional dimensions such as geographical proximity, JIT/lean capability, cross-functional coordination, logistics integration, and agreed supply chain leadership, which have been ignored from this study. The future study can also test the relationships/dependencies among dimensions of SCM practices.

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Appendix 1 - Pilot Questionnaire

Department of Logistics and Supply Chain Management

School of Commerce,

School of Graduate Studies,

Addis Ababa University

Questionnaire to be filled by Employees of ethio telecom

Dear respondents:-

This questionnaire is designed for preparing a thesis entitled *"Assessment of factors affecting of Supply Chain performance - the case of ethio telecom".* The outcome of the study will be used in order to suggest possible solutions for problems identified while conducting the study. I kindly request you to spend your precious time to fill the questionnaire as frankly and reasonably as possible. I would like to remind you that, the information you provide will be confidential and consumed for academic purpose only. Therefore, you are not expected to write your name.

Ifyou have any question and comments, don't hesitate to contact me with the following address.

Iman Basha Ahmed

Email: - *imanbasha@gmail.com*

Phone: - +251- 911- 509952

Thank you for your cooperation!

Tick only one box

A. General Background of Respondents (Demographic Information)

1. Qualification

BSC/BA ☐MSC/MA ☐PhD ☐

2. Year of service in your last position

Less than5 years☐ 5 to 10 years ☐ More than 10 Years ☐

B. Section II

Unless otherwise specifically requested, please use the following scale to answer each item:

Not at all	To a small extent	To a moderate extent	To a considerable extent	To a great extent	Not applicable
1	2	3	4	5	6

1. Supply Chain Management (SCM) Practices

SCM practices – is defined as the set of activities undertaken by an organization to promote effective management of its supply chain through, strategic supplier partnership, customer relationship, information sharing.

Please tick✓the number that accurately reflects the extent of your firm's current level of SCM practices.

A. CUSTOMER RELATIONSHIP

Customer Relationship is the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction.

	1	2	3	4	5	6
We periodically evaluate the importance of our relationship with our customers						
We frequently measure and evaluate customer satisfaction						
We frequently determine future customer expectations						
We facilitate customers' ability to seek assistance from us						
We frequently interact with customers to gather feedback for future improvement						

B. INFORMATION SHARING

Information sharing is the extent to which critical and proprietary information is communicated to one's trading partner.

	1	2	3	4	5	6
We inform trading partners in advance of changing needs						
Our trading partners share proprietary information with us						
Our trading partners keep us fully informed about issues that affect our business						
Our trading partners share business knowledge of core business processes with us						
We and our trading partners exchange information that helps establishment of business planning						
We and our trading partners keep each other informed about events or changes that may affect the other partners						

C. STRATEGIC SUPPLIER PARTNERSHIP

Strategic Supplier Partnership is the long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits.

	1	2	3	4	5	6
We consider quality as our number one criterion in selecting suppliers						
We regularly solve problems jointly with our suppliers						
We have helped our suppliers to improve their product quality						
We have continuous improvement programs that include our key suppliers						
We include our key suppliers in our planning and goal- setting activities						
We actively involve suppliers to provide information on new product specification development						

Section III: Supply Chain Performance

Please select the number that accurately reflects the extent of your firm's Supply Chain Performance on each of the following.

	1	2	3	4	5	6
We supply products with the right quality to our customers request						
We provide in/on time delivery						
We provide customer orders with the shortest possible time						
We provide customer orders with the lowest possible cost/price						

Comments

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Thank you.

Appendix 2 – Frequency Tables for Variables

Table A2.1.1

We periodically evaluate the importance of our relationship with our customers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	14	18.7	18.7	18.7
	To small Extent	33	44.0	44.0	62.7
	To Moderate Extent	15	20.0	20.0	82.7
	To Considerable Extent	10	13.3	13.3	96.0
	To Great Extent	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table A2.1.2

We frequently determine future customer expectations					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	13	17.3	17.3	17.3
	To small Extent	38	50.7	50.7	68.0
	To Moderate Extent	8	10.7	10.7	78.7
	To Considerable Extent	9	12.0	12.0	90.7
	To Great Extent	4	5.3	5.3	96.0
	Not Applicable	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table A2.1.3

We frequently measure and evaluate customer satisfaction					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	19	25.3	25.3	25.3
	To small Extent	29	38.7	38.7	64.0
	To Moderate Extent	10	13.3	13.3	77.3
	To Considerable Extent	9	12.0	12.0	89.3
	To Great Extent	7	9.3	9.3	98.7
	Not Applicable	1	1.3	1.3	100.0
	Total	75	100.0	100.0	

Table A2.1.4

We facilitate customers' ability to seek assistance from us					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	14	18.7	18.7	18.7
	To small Extent	19	25.3	25.3	44.0
	To Moderate Extent	11	14.7	14.7	58.7
	To Considerable Extent	25	33.3	33.3	92.0
	To Great Extent	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table A2.1.5

We frequently interact with customers to gather feedback for future improvement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	9	12.0	12.0	12.0
	To small Extent	37	49.3	49.3	61.3
	To Moderate Extent	18	24.0	24.0	85.3
	To Considerable Extent	7	9.3	9.3	94.7
	Not Applicable	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table A2.2.1

We inform trading partners in advance of changing needs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	8	10.7	10.7	10.7
	To small Extent	15	20.0	20.0	30.7
	To Moderate Extent	21	28.0	28.0	58.7
	To Considerable Extent	18	24.0	24.0	82.7
	To Great Extent	8	10.7	10.7	93.3
	Not Applicable	5	6.7	6.7	100.0
	Total	75	100.0	100.0	

Table A2.2.2

Our trading partners share proprietary information with us					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	22	29.3	29.3	29.3
	To small Extent	27	36.0	36.0	65.3
	To Moderate Extent	15	20.0	20.0	85.3
	To Considerable Extent	7	9.3	9.3	94.7
	To Great Extent	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table A2.2.3

Our trading partners keep us fully informed about issues that affect our business					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	25	33.3	33.3	33.3
	To small Extent	39	52.0	52.0	85.3
	To Moderate Extent	6	8.0	8.0	93.3
	To Considerable Extent	4	5.3	5.3	98.7
	To Great Extent	1	1.3	1.3	100.0
	Total	75	100.0	100.0	

Table A2.2.4

Our trading partners share business knowledge of core business processes with us					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	25	33.3	33.3	33.3
	To small Extent	27	36.0	36.0	69.3
	To Moderate Extent	14	18.7	18.7	88.0
	To Considerable Extent	6	8.0	8.0	96.0
	To Great Extent	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table A2.2.5

We and our trading partners exchange information that helps establishment of business planning					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	22	29.3	29.3	29.3
	To small Extent	37	49.3	49.3	78.7
	To Moderate Extent	9	12.0	12.0	90.7
	To Considerable Extent	4	5.3	5.3	96.0
	To Great Extent	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table A2.2.6

We and our trading partners keep each other informed about events or changes that may affect the other partners					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	10	13.3	13.3	13.3
	To small Extent	38	50.7	50.7	64.0
	To Moderate Extent	14	18.7	18.7	82.7
	To Considerable Extent	9	12.0	12.0	94.7
	To Great Extent	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table A2.3.1.

We consider quality as our number one criterion in selecting suppliers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	7	9.3	9.3	9.3
	To small Extent	18	24.0	24.0	33.3
	To Moderate Extent	13	17.3	17.3	50.7
	To Considerable Extent	27	36.0	36.0	86.7
	To Great Extent	8	10.7	10.7	97.3
	Not Applicable	2	2.7	2.7	100.0
	Total	75	100.0	100.0	

Table A2.3.2

We regularly solve problems jointly with our suppliers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	24	32.0	32.0	32.0
	To small Extent	31	41.3	41.3	73.3
	To Moderate Extent	3	4.0	4.0	77.3
	To Considerable Extent	11	14.7	14.7	92.0
	To Great Extent	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table A2.3.3

We have helped our suppliers to improve their product quality					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	19	25.3	25.3	25.3
	To small Extent	41	54.7	54.7	80.0
	To Moderate Extent	6	8.0	8.0	88.0
	To Considerable Extent	6	8.0	8.0	96.0
	To Great Extent	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table A2.3.4

We have continuous improvement programs that include our key suppliers					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	4	5.3	5.3	5.3
	To small Extent	47	62.7	62.7	68.0
	To Moderate Extent	8	10.7	10.7	78.7
	To Considerable Extent	10	13.3	13.3	92.0
	To Great Extent	6	8.0	8.0	100.0
	Total	75	100.0	100.0	

Table A2.3.5

We include our key suppliers in our planning and goal- setting activities					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	21	28.0	28.0	28.0
	To small Extent	31	41.3	41.3	69.3
	To Moderate Extent	7	9.3	9.3	78.7
	To Considerable Extent	8	10.7	10.7	89.3
	To Great Extent	5	6.7	6.7	96.0
	Not Applicable	3	4.0	4.0	100.0
	Total	75	100.0	100.0	

Table A2.3.6

We actively involve suppliers to provide information on new product specification development					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	16	21.3	21.3	21.3
	To small Extent	36	48.0	48.0	69.3
	To Moderate Extent	12	16.0	16.0	85.3
	To Considerable Extent	6	8.0	8.0	93.3
	To Great Extent	3	4.0	4.0	97.3
	Not Applicable	2	2.7	2.7	100.0
	Total	75	100.0	100.0	

Table A 2.4.1

We supply products with the right quality to our customers request					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	5	6.7	6.7	6.7
	To small Extent	24	32.0	32.0	38.7
	To Moderate Extent	17	22.7	22.7	61.3
	To Considerable Extent	19	25.3	25.3	86.7
	To Great Extent	6	8.0	8.0	94.7
	Not Applicable	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

We provide in/on time delivery					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	11	14.7	14.7	14.7
	To small Extent	38	50.7	50.7	65.3
	To Moderate Extent	13	17.3	17.3	82.7
	To Considerable Extent	9	12.0	12.0	94.7
	To Great Extent	4	5.3	5.3	100.0
	Total	75	100.0	100.0	

Table A 2.4.2

We provide customer orders with the shortest possible time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	11	14.7	14.7	14.7
	To small Extent	30	40.0	40.0	54.7
	To Moderate Extent	28	37.3	37.3	92.0
	To Considerable Extent	4	5.3	5.3	97.3
	To Great Extent	2	2.7	2.7	100.0
	Total	75	100.0	100.0	
We provide customer orders with the lowest possible cost/price					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	10	13.3	13.3	13.3
	To small Extent	42	56.0	56.0	69.3
	To Moderate Extent	4	5.3	5.3	74.7
	To Considerable Extent	10	13.3	13.3	88.0
	To Great Extent	7	9.3	9.3	97.3
	Not Applicable	2	2.7	2.7	100.0
	Total	75	100.0	100.0	

Appendix 3 – Regression Analysis Outputs

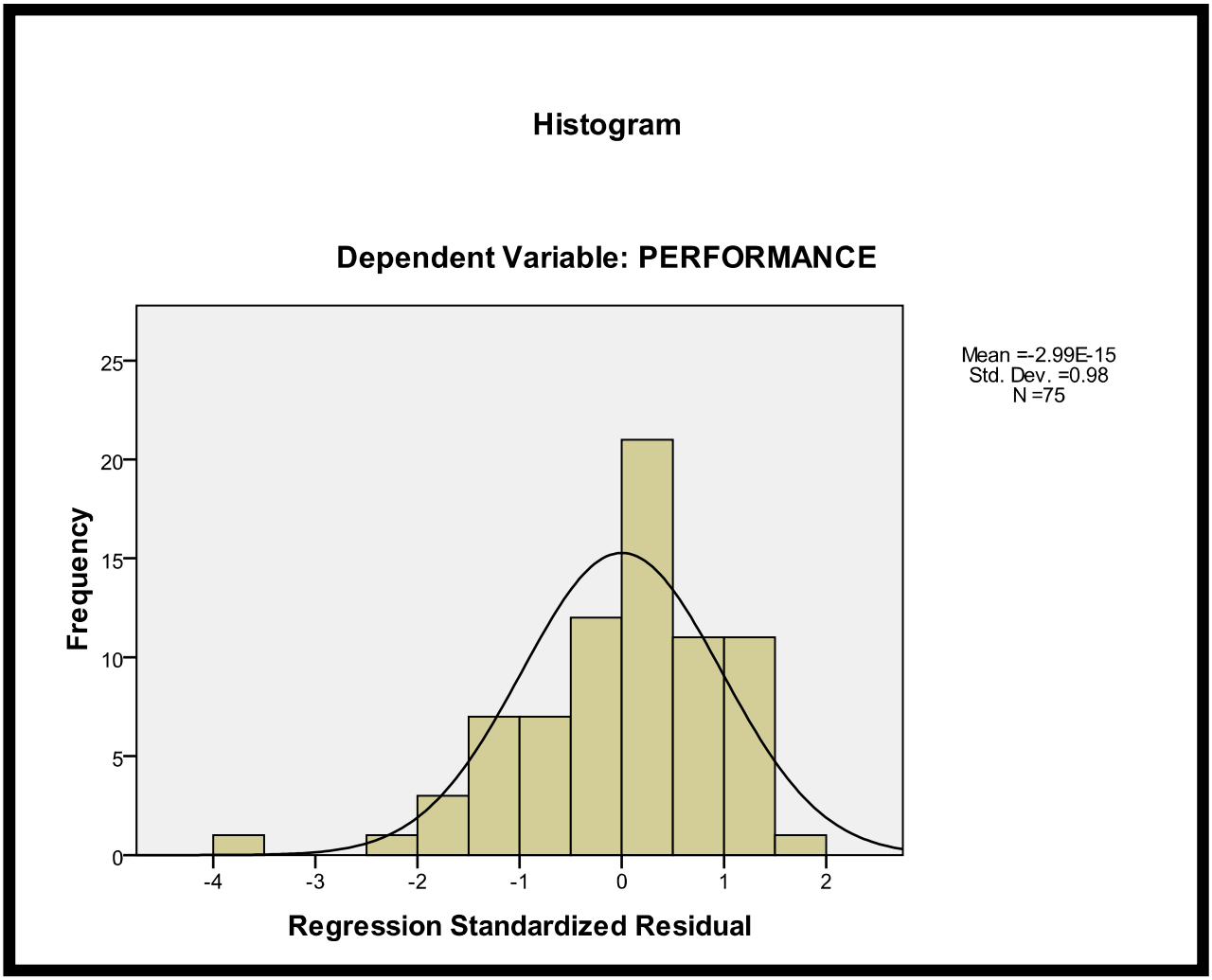

Figure A3.1 Regression Standardized Residual

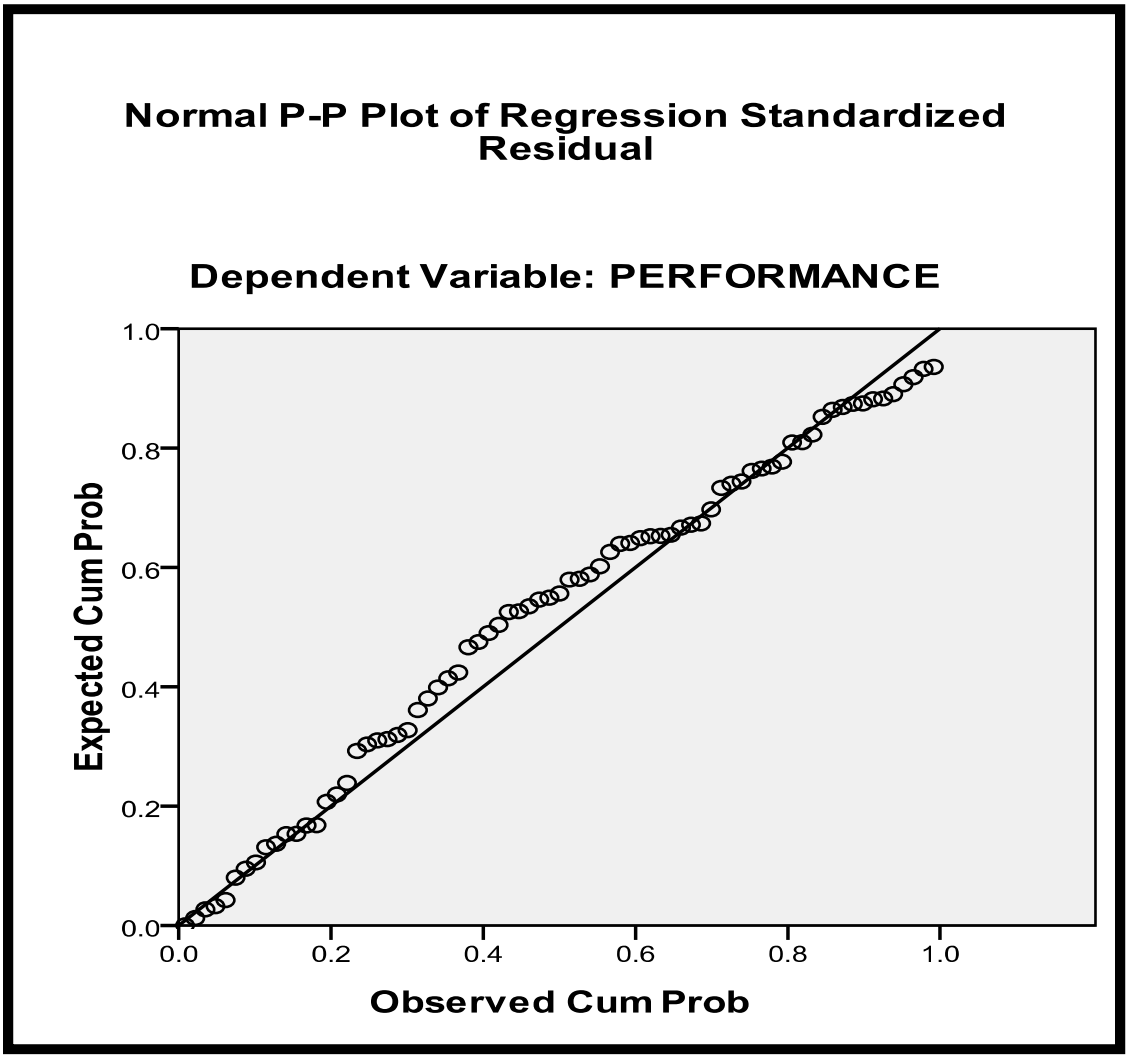

Figure A3.2 Normal P-P Plot of Regression Standardized Residual

Appendix 4- Interview Guide

The following questions were used as an interview guide while gathering information from the selected Officers of ethio telecom that are related to the current research undertaking:

- What are the supply chain practice challenges faced by ethio telecom from your division's perspective?
- How do see those challenges affect the supply chain performance of your company?
- Are there any measures taken to alleviate/mitigate those challenges?

Declaration

I, the undersigned, hereby declare that this thesis is my original and has not been presented for a degree program in this or any other university and all sources or materials used for the thesis are duly acknowledged.

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