The Effect of Supply Chain Management Practices on the Operational Performance: The Case of ethio telecom

By

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A Thesis submitted to the School of Graduate studies of the Addis Ababa University School of the Commerce for the Partial Fulfillment of the Requirements of the Degree of Master of Arts in Logistic and Supply Chain Management

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Declaration

I, Solomon Kindie Bezabh, declare that this paper is a result of my independent research work on the topic entitled "The effect of Supply chain management practice on operational performance: In the case of ethio telecom" for the partial fulfillment of the requirements for the Degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University, School of commerce. This work has not been submitted for a degree to any other university. All the references are also duly acknowledged.

_____

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Certification

This is to certify that Solomon Kindie Bezabh has carried out this research work on the topic entitled "The effect of Supply chain management practice on operational performance: In the case of ethio telecom" under my supervision. This work is original in nature and it can be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management.

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Dr. Shiferaw Mitiku

Date _____

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ACRONYMS

SCM- *Supply Chain Management*

SPSS- *Statistical Package for Social Science*

SSP-*Strategic supply chain practice*

CR*-Customer Relationship*

IS*-Information Sharing*

IQ*-Information Quality*

LP*-Lean practice*

OP*-Operational Performance*

SCMP*-Supply chain management practice*

ABSTRACT

The main goal of supply chain practice is to produce the right product or service, in the right quantity, at the right time and at minimal cost with the purpose of satisfying customer requirement and internal target as efficiently as possible. Supply chain practices are initiatives that influence the whole supply chain. Even though, this practices have great influence on the operational performance of any organization, it is affected by contextual factors such as type of industry, firm size, and length of supply chain. Therefore, the general objective of this study was to assess and investigate the effects of supply chain management practices on the operational performance of ethio telecom. In order to meet the objectives of this research, the study adopted quantitative method and the relationships proposed in the framework were tested using descriptive and explanatory research method. The primary data was collected from 134 employees of ethio telecom by using Likert scale type questioner as measuring instrument for collection of the employees' perception towards the variables then, the collected data were analyzed using descriptive statistics, correlational and multiple regression analysis. The major finding of the study indicated that supply chain management practices i.e. strategic supplier partnership, customer relationship, information sharing, information quality and lean practices have significantly affected the operational performance of ethio telecom. However, the organization has to improve its supply chain practices in order to improve the operational performance even further. Specifically, ethio telecom has to improve involvement of suppliers in planning and goal setting as well as on new product development, the company should also provide on time and accurate information to its suppliers'. In addition, the company should improve its determination to meet the customer needs and demands.

Key Words: *Supply chain management; SCM Practice; Operational Performance.*

CHAPTER ONE

1. INTRODUCTION

This chapter consists of the back ground of the study, statement of the problem, research questions, objectives of the study, significance of the study, definition of terms, delimitations of the study and organization of the paper.

1.1. Background of the Study

Due to the number of rival companies expanding both locally and globally, companies not only have to reestablish themselves to produce higher-quality products and services, to decrease wastes, and try to be able to respond to the market but also to handle their supply chain management efficiently. In addition, the organizations are facing different kinds of challenges in their effort of competing in today's dynamic global markets. To remain competitive, organizations must recognize the importance of supply chain practices that improve not only their own organizational performance. Yet, despite the significant advances in research and practices, many organizations continue to struggle to understand the complex issues associated with the coordinated planning and supply activities amongst the members of their supply networks (Lori & Daniel , 2011).

According to Council of Supply Chain Management Professionals (CSCMP, 2016), Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

SCM includes a set of approaches and practices to effectively integrate suppliers, manufacturers, distributors and customers for improving the long-term performance of the individual firms and the supply chain as a whole in a cohesive and high-performing business model (Chopra & Meindl, 2007).A successful SCM implementation is expected to enhance the relationship between upstream suppliers and downstream customers, and thereby increase customer satisfaction and firm performance. Prior research has indicated SCMP as a key driver of firm performance (Tan, K.-C., Wisner, J. D. & Leong, G. K., 2005).

The objective for efficient SCM is reducing inventory, lead times and related costs in order to assure reliable and on-time deliveries from manufacturing units towards customers. The main goal of supply chain management is to produce the right products, in the right quantities, at the right time and at minimal cost with the purpose to satisfy customer requirements and internal targets as efficiently as possible.

The best supply chain practices are the initiatives that influence the whole supply chain, its parts or key processes (Cuthbertson & Piotrowicz, 2008). These practices are influenced by contextual factors such as type of industry, firm size, its position in the supply chain, type and length of supply chain (Li, S., Ragu-Nathan, B., Ragu-Nathan, T. & Rao, S. S., 2006). Despite the importance there is little empirical research on how practitioners define and incorporate supply chain management practices in to overall corporate strategy. Little is known about the specific practices or concerns of successful supply chain management implementations and its effect (Tan, 2002). The research in the area of SCM has not been able to offer much by way of guidance to help the practice of SCM. This has been attributed primarily to conceptual confusion and the lack of a theoretical framework in researching SCM (Li, S., Rao S, Ragu-Nathan T.S & Ragu, 2005). Therefore, in order to provide the empirical evidence for the research gap identified regarding supply chain practice and its effect on operational performance, the researcher have review different empirical evidences. However, there is limited knowledge of how the supply chain practices are affected the performance of monopolistic firm and services giving industries.

1.2. Statement of the Problem

According to Haftom, (2014), Supply chain inefficiencies lead ethio telecom to incur additional cost and receive many complaints from the customers who lost their trust on the company. Some of these efficiencies are: Ethio telecom has suffered longer time lag in the process of delivering the goods to end customers, fragmented contract with suppliers and internal/external integration problem, which is all related to the operational performance of the company.

According to the key informant of the company, ethio telecom has worked a lot in improving its operational performance but it doesn't reach as per the required level to meet the customers' needs and demands. It is required to improve the planning, distribution, supplier and customer relationship approaches of the company and it is also required to reduce the waste in the inventory by optimizing the supply chain practices of the company.

Even though the supply chain is well reflected in the business strategy of ethio telecom, its predicting factor for operational performance is not known and defined. It is not possible to identify the improvement areas on the company supply chain management practices and its relationship to the operational performance. Specially, the improvement in operational performance of the company for the regularity of distribution of the right product/service, the right quality, at the right time depends on the effective implementation of supply chain management practices.

In Ethio telecom, the operational performance of the company is highly impacted by the problem in information sharing across the internal/external customers, by planning problems of the company which lead to unnecessary inventory hording and inefficient use of inventories. The 2016 annual report of the company supply chain division also shows that there is planning gap across the internal divisions of the company which leads to the ineffective and inefficient utilization of resources and also leads the company to unable to meet the needs and demands its customers due to its inefficient operational performance.

Supply chain practices inefficiencies such as inventory management efficiency, waste on the company operation and asset, inefficient supplier relationship and the integration problem across the company is observed in the company. This also leads to the problem in the operational performer and also affecting profitability and operations of the company.

1.3. Research Question

In the research, the researcher answered the following research questions in this study.

- How does supply chain management is being practiced in ethio telecom?
- To what extent the operational performance of ethio telecom is being accomplished?
- How does supply chain management practice influence the operational performance of ethio telecom?

1.4. Objective of Study

The study have the following objective

1.4.1. General Objective

The general objective of this study is to assess the SCM practice and its impact on the operational performance of the ethio telecom.

1.4.2. Specific Objectives

The specific objectives of the study are:-

1. To assess the supply chain practices of ethio telecom.
2. To assess the operational performance of ethio telecom.
3. To assess and examine the relationship of SCM practices and operational performance of ethio telecom.

1.5. Significances of the Study

The investigation results are important to the academicians, researchers, policy makers, for business practitioners, and management units in the case company. Specifically, the research helps to identify bottlenecks, waste, problems and improvement opportunities in the supply chain practices and its contribution for the operational performance of ethio telecom. This research will also contribute to narrow the gap in the literature on the generalization of the causal relationship between SCM practices and performance.

1.6. Delimitation of the study

SCM has vast areas of managerial practices, it is difficult and unmanageable to study the whole areas of it. Therefore, the scope of the study is delimited to specific context i.e. on SCM practices and their impact on operational performance.

The subject scope supply chain practice are also delimited to the company's point of reference towards strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and internal lean practice. In terms of firm performance the study was delimited to operational; which was measured by price/ cost, quality, delivery dependability and time to market.

1.7. Operational Definition of Terms and Concepts

Supply chain management (SCM)

It is a thunderstruck of organization with higher and lower relationship that are involve in process and activities and like presentation product and services to final customers to create value

Operational performance

It refers to how well an organization provides accurate products and services, at reasonable price, at reasonable time and at a reasonable quantity.

Strategic supplier partnership

It 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

Customer relationship

It refers to 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.

Level of information sharing

The extent to which critical and proprietary information is communicated to one's supply chain partner.

Quality of information sharing

The extent to which to the accuracy, timeliness, adequacy, and credibility of information exchanged.

Lean practice

It is associated with pursuit of improving the process and eliminating non- value adding activities and wests in the organization.

1.8. Organization of the Paper

The paper is organized into five chapters: Chapter one contain the introduction part dealing with back ground of the study, the research problem, objectives of the study, scope and significance of the study and limitation of the study. The second chapter, focuses on the literature review about the subject matter. The 3rdchapter presented the research methodologies of the study. The fourth chapter presents results and discussion of the study and finally, the fifth chapter present the summary of major findings, conclusion and recommendation.

CHAPTER TWO

2. RELATED LITERATURE REVIEW

2.1 Introduction

This part of the study provided the outline of literature specific to concepts or ideas of supply chain management practices and operational performance. The relevant conceptual issues, theoretical, empirical literatures' related to the topic of the study are reviewed and based on the literature reviewed, the selected conceptual framework are also presented on this chapter.

2.2. Theoretical Literature Review

2.2.1. Meaning and Objectives of Supply Chain Management

The advent of information technology and intense global computation has enticed many world class manufacturing and service providers into adopting an integrated strategic approach to supply chain management. Although many supply chain management efforts have failed to achieve the desired results, it has become significant strategic tool for firms striving to achieve competitive success. (Tan, 2002)

Deferent scholars have defined supply chain management for instance Chopra defined it as follows "A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain includes not only the manufacturer and suppliers, but also transporters, warehouses, retailers, and even customers themselves. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service" (Sunil Chopra, 2007)

It also has been argued by (Suhong, Li, Ragu-Nathan, Ragu-Nathan T.S. & Rao S. , 2004) .The concept of SCM has received increasing attention from academicians, consultants, and business managers alike. Many organizations have begun to recognize that SCM is the key to building sustainable competitive edge for their products and/or services in an increasingly crowded marketplace. The concept of SCM has been considered from different points of view in different bodies of literature , such as purchasing and supply management, logistics and transportation,

operations management, marketing, organizational theory, and management information systems. Various theories have offered insights on specific aspects or perspectives of SCM, such as industrial organization and associated transaction cost analysis, resource-based and resource-dependency theory, competitive strategy, and social–political perspective.

According to Martin 1998, as it is cited by Addis (2015), Supply chain management is a philosophy of an integrated approach to manage the total flow of a distribution channel from the supplier to the ultimate customer (Ellram & Cooper, 1990). It is the management of upstream and downstream companies connecting inside and outside the company's operations with suppliers and customers to deliver value to key customers with a low cost supply chain as a whole (Martin, 1998).

In general, regarding the definition of SCM, the key elements of supply chain and its management from these definitions are therefore the upstream parties, the downstream parties and the integration of all the organizations involved, together with the internal function of an organization itself.

The objectives of supply chain thus will be, though it is also described differently between different scholars in the area , for example, Chopra (2007), describes the objective of supply chain as "To maximize the overall value generated. The value a supply chain generates is the difference between what the final product is worth to the customer and the costs the supply chain incurs in filling the customer's request. For most commercial supply chains, value will be strongly correlated with supply chain profitability (also known as supply chain surplus), the difference between the revenue generated from the customer and the overall cost across the supply chain.

Tan also classified the objective of the supply in to two i.e. short and long term objective. The short term objective of supply chain management is to increase productivity and reduce cycle time, while the long term strategic goal is to increase customer satisfaction, market share and profit for all members of the virtual organization. (Tan, 2002)

As it is explained by Tan (2002).The evolution of supply chain management continued into the 1990s as organization further extended best practices in managing corporate resources to include strategic suppliers and logistic function. Instead of duplicating non-value adding activities such as receiving inspection, manufacturers trusted suppliers' quality control by purchasing from a handful certified suppliers (Inaman & Hubler, 1992) and retailers seamlessly integrate with the

logistic providers to achieve direct store delivery without the need for receiving inspection (stonge, 1996).

Furthermore, Mentzer (2001) the significant importance of SCM 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".

As cited by Addis (2015) SCM creates value for Organizations and permits the development of important competitive advantages by means of the relationships between suppliers and clients (Bordonaba -Juste and Cambra-Fierro, 2009). From this perspective, several studies have verified that integration and collaboration in the supply chain can provide important benefits to the companies involved Among these benefits are added value, the creation of efficiencies and client satisfaction (Stock et al, 2010; Chow et al, 2008), which are represented by the reduction in inventories, improvements in service delivery and quality and shorter product development cycles (CORBETT C. J. *et al*, 1999).

SCM involves the coordination and configuration of different process that is necessary to make products available in a timely, reputable, and suitable condition. The distinctiveness of SCM could be achieved by identifying and making use of SCM practices, in organized way. SCM practices involve a set of activities undertaken by the organization to promote effective management of their supply chain. (Faisal, 2011)

Therefore, we can generalize that the basic objective of supply chain management is to "optimize performance of the chain to add as much value as possible for the least cost possible". 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 (Finch 2006).

Despite the importance and theoretical development of supply chain management, there is little empirical research on how practitioners define and incorporate supply chain management practices in to overall corporate strategy. While supply chain management efforts as some companies have resulted in improved competitiveness, similar results in other organization have remained elusive. Little is known about the specific practices or concerns of successful supply chain management implementations (Tan, 2002)

While the lack of successful SCM efforts has been attributed to the complexity of SCM itself, research in the area of SCM has not been able to offer much by way of guidance to help the practice of SCM. This has been attributed primarily to conceptual confusion and the lack of a theoretical framework in researching SCM. It has been pointed out that the SCM phenomenon has not been well understood in the literature (Li, S., Rao S, Ragu-Nathan T.S & Ragu, 2005).

2.2.2. Supply Chain Management Practices (SCMP)

SCM Practices are defined as a set of activities undertaken in an organization to promote effective management of its supply chain. SCM practices are multidimensional which affect the performance of partners in the supply chain. These SCM practices were seen and discussed by different researchers from different perspectives.

According to Haque, (2013), SCM practices are a fundamental to firm performance; in today's globalized business all firms get their competitive advantage by managing various challenges within the country and internationally and this devote substantial attention. As effective SCM provides benefits that go beyond the entities or the organization itself on both of its upstream and downstream sides and those firms may comprehend their potential of integrating their external relationship that is the firms external suppliers, the firm itself and the firms customer and also the firms internal operational practices with a view to enhancing their level of competitiveness and performance as well as customer satisfaction.

As it is argued by Krimi & Rafiee (2014), SCM practices have been defined as a set of activities undertaken in an organization to promote effective management of its supply chain. The empirical study include in their list of SCM practices concentrate on core competencies, use of inter-organizational systems such as EDI, and elimination of excess inventory levels by postponing customization toward the end of the supply chain. They Identify four aspects of SCM practice through factor analysis: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capability. They use supplier base reduction, long-term relationship, communication, cross functional teams and supplier involvement to measure buyer–supplier relationships (Zhao, X., & Lee, T. 2009).

At it is cited by Addis (2015), SCM practices as a set of activities carry out in any organization to promote effective management of its supply chains; From this we can see that components of SCM practices includes supply and material management issues, operations, information technology and sharing (Information Communication Technologies) and customer service.

Other components such as technology, cost, inventory management, competitiveness and external regulations, according to needs to be managed effectively to achieve to business goals of each supply chain members. It also leads to value creation to end customer (Charles, Diyuoh & Oppong, 2014)

SCM involves the coordination and configuration of different process that is necessary to make products available in a timely, reputable, and suitable condition. The distinctiveness of SCM could be achieved by identifying and making use of SCM practices, in organized way. SCM practices involve a set of activities undertaken by the organization to promote effective management of their supply chain. (Faisal, 2011)

2.2.2.1. Strategic Supplier Partnership (SSP)

As it is constructed by Ibrahim & Hamid (2012) Strategic Supplier partnership 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. Such strategic partnerships are entered into to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets. Strategic partnerships with suppliers enable organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products. Suppliers participating early in the product-design process can offer more cost effective design choices, help select the best components and technologies, and help in design assessment. Strategically aligned organizations can work closely together and eliminate wasteful time and effort. An effective supplier partnership can be a critical component of a leading edge supply chain.

Strategic partners in supply chain must realize that the purchasing function is critical link between the source of supply chain and organization itself, with the support coming from the overlapping activities to enhance manufacture ability for both the customer and suppliers. (Tan, 2002)

2.2.2.2. Customer Relationship (CR):

It 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. Someone consider customer relationship management as an important component of SCM practices, as pointed out by them, committed relationships are the most sustainable advantage because of their inherent barriers to competition. The growth of mass customization and personalized service is leading to an era in which relationship management with customers is becoming crucial for corporate survival. Good relationships with supply chain members, including customers, are needed for successful implementation of SCM programs. Close customer relationship allows an organization to differentiate its product from competitors, sustain customer loyalty, and dramatically extend the value it provides to its customers. (Ibrahim & Hamid, 2012)

2.2.2.3. Level and Quality of Information Sharing:

Information sharing has two aspects: quantity and quality. Both aspects are important for the practices of SCM and have been treated as independent constructs in the past SCM studies.

Level (quantity aspect) of information sharing. It refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. Shared information can vary from strategic to tactical in nature and from information about logistics activities to general market and customer information. Many researchers have suggested that the key to the seamless supply chain is making available undistorted and up-to-date marketing data at every node within the supply chain. (Karimi & Rafiee, 2014)

Supply chain partners who exchange information regularly are able to work as a single entity. Together, they can understand the needs of the end customer better and hence can respond to market change quicker. Moreover, someone consider the effective use of relevant and timely information by all functional elements within the supply chain as a key competitive and distinguishing factor.

The empirical findings of they reveal that simplified material flow, including streamlining and making highly visible all information flow throughout the chain, is the key to an integrated and effective supply chain. (Karimi & Rafiee , 2014)

Quality of the shared information of information sharing. Literature is replete with example of the dysfunctional effects of inaccurate/delayed information, as information moves along the supply chain. Divergent interests and opportunistic behavior of supply chain partners, and informational asymmetries across supply chain affect the quality of information. It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors, but also their own suppliers and customers. It appears that there is a built in reluctance within organizations to give away more than minimal information since information disclosure is perceived as a loss of power. Given these predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM. Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and distortion. (Karimi & Rafiee , 2014)

2.2.2.4. Internal Lean Practices (LP)

Internal lean practices refer to consume less system resources uses with the same speed mass production and offers greater variety to customers. In other way James and Jones (2003) internal lean practices as Lean production associated with continuous pursuit of improving the processes, a philosophy of eliminating all non-value adding activities and reducing waste within an organization.

One of the fundamental ideas in internal lean practices is removed surplus (Hassanzadeh & Jafarian, 2010). The most famous of internal lean practices can be mentioned timely and lean produce. Production of lean and timely is production system that its aims are to optimize processes and production process by reducing waste and other inefficient factors (White, 1993).

Internal lean practices understanding for the study is waste elimination regarding to setup time, continuous improvement and just in time. (Mustefa, 2014)

2.2.3. Operational Performance Measures

As it is cited by Tewfik & Matiwos (2012). Qualitative supply chain (SC) performance measures include customer satisfaction (pre transaction, transaction, and post-transaction), flexibility, information and material flow integration, risk management, and suppliers' performance in terms of delivering the right good in the right time. There are also quantitative measures based on cost and on customer responsiveness.

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

It is summarized by (Suhong, Li, *et al*., 2004), operational Organizational performance refers to how well an organization achieves its market-oriented goals as well as its financial goals. Financial metrics have served as a tool for comparing organizations and evaluating an organization's behavior over time. Any organizational initiative, including supply chain management, should ultimately lead to enhanced organizational performance. A number of prior studies have measured organizational performance using both financial and market criteria, including return on investment (ROI), market share, profit margin on sales, the growth of ROI, the growth of sales, the growth of market share, and overall competitive position.

The targets of improved operational performance are measured as long term is to increase market share and its short term goal includes reduce cost (Sundram *et al*., 2011). Supply chain performance is important for company to compete in global market and improve the operational performance. In line with the above literature, the same items will be adopted to measure organizational performance in this study.

2.3. Review of Empirical Studies

The previous researches in the area of the study explained the relationship of supply chain management practices and organizational performance from different perspective/dimensions. Some of these researches finding there methodologies are summarized as follows

Table 2.1: List of literatures Used and Their Findings

Paper	Paper Objective	SCM Practices Concepts	Performance Concepts	Sample and Main Methods	Findings
(Li, et al., 2006)	to assess the impact of supply chain management practices on performance	• Strategic supplier partnership • Customer relationship • Level of information sharing • Quality of information sharing, • Postponement	Competitive advantage; Organizational performance	196 firms using structural equation modeling	• Higher levels of SCM practice can lead to enhanced competitive advantage and improved organizational performance • Competitive advantage can have a direct, positive impact on organizational performance.
(Addis, 2015)	to assess the impact of supply chain management practices on performance of pharmacies in governmental health facilities in Addis Ababa/Ethiopia	• JIT supply • Holding safety stock • Few suppliers, • Close partnership with suppliers, • Close partnership with customers, • Level of information quality (IQ)	• Quality • Price/Cost • Delivery dependability • Product/ Service innovation • Time to market • Reduce inventory level	From pharmacy officials in those 71 randomly selected health centers pharmacy at Addis Ababa and 8 governmental hospitals in Addis Ababa	SCM Practices have an impact on their operational performance. And also SCM related organizational Performance is impacted by SCM Practice directly and through Operational performance (indirectly)
(Mutuerandu, 2014)	(1) to assess the level of implementation of SCM practices in Haco Industries Ltd, and (2) to study the relationship between SCM Practices and organizational performance in the same industries	• Strategic supplier partnership, • Customer relationship, • Information sharing and • Training practices	• Lowering its operational costs, • Reduction of lead time, • High customer service levels, • Product quality, • Fast response to changes in the market and • Expanding its market share and sales	40 employees of the orgn	there is a high level of practical implementation of SCM practices in Haco Industries ltd and that they all had a positive effect on organization's performance
(Karimi & Rafiee , 2014)	To assess the influence the adoption of supply chain management practices in organization performance through competitive priorities	• Strategic Supplier Partnership • Customer Relationship • Level of Information Sharing & • Quality of Information Sharing	**Organizational Performance** • Market performance • Financial performance • Customer OK **Competitive Advantage** • Price/cost • Quality Delivery • Dependability Product Innovation (flexibility)	483 of employees selected to random manner as members of sample.	Research finding indicate that apply practices supply chain management influence in Iran pumps Company, according to competitive priorities.
(Mustefa, 2014)	to determine the underlying dimensions of supply chain management (SCM) practices and to empirically test a framework identifying the relationships among SCM practices, operational performance and SCM-related organizational performance	• Strategic Supplier partnership • Customer Relationship • Level of Information Sharing • Quality of Information Sharing • Internal lean practice	**Operational performance:** • Price/ Cost • Quality• Delivery Dependability • Time to Market **Organizational performance:**• Market share • Return on investment • The growth of sales • Profit margin on sales • Overall competitive position	42 employees of the company Pearson correlation, and the causal relations were analyzed using regression analysis	it is concluded that there is strong relationship between SCM practices, operational performance and organizational performance

As it can be realized on the above table 2.1, different scholars studied the impact of the supply chain practice on firms' performance by taking different variables as supply chain practices. The study conducted by (Li, *et al*., 2006), (Mutuerandu, 2014), (Karimi & Rafiee , 2014) and (Mustefa, 2014) investigated the impact of supply chain management practices on performance. The studies mainly focus on the impact of supply chain practices on competitive advantage and on organizational performance. The finding showed that the higher level of supply chain practices i.e. strategic supplier partnership, customer relationship, level and quality of information sharing can lead to enhanced competitive advantage and improved organizational performance and competitive advantage. The other study conducted by (Addis, 2015) has investigated the impact of supply chain practices on the performance of pharmacies in governmental health facilities in Addis Abeba on performances of the pharmaceutical industries, the study only focus on upper tire of supply chain and information sharing with suppliers. Her findings showed that JIT, Holding safety stock, few suppliers, close partnership and level of information quality improve quality , product or service innovation, time to market and reduce price, operational costs and time to market, most of which is related to the operational performance of the organization.

However, most of this studies consider the supply management practices i.e. strategic supplies partnership, customer relationship, level and quality of information sharing. When it comes to performance, its competitive advantage, operational and organizational performance are taken as the dependent variable. The finding of the reviewed empirical findings indicate that practices of supply chain management influence the performance of the organization and its competitive advantage.

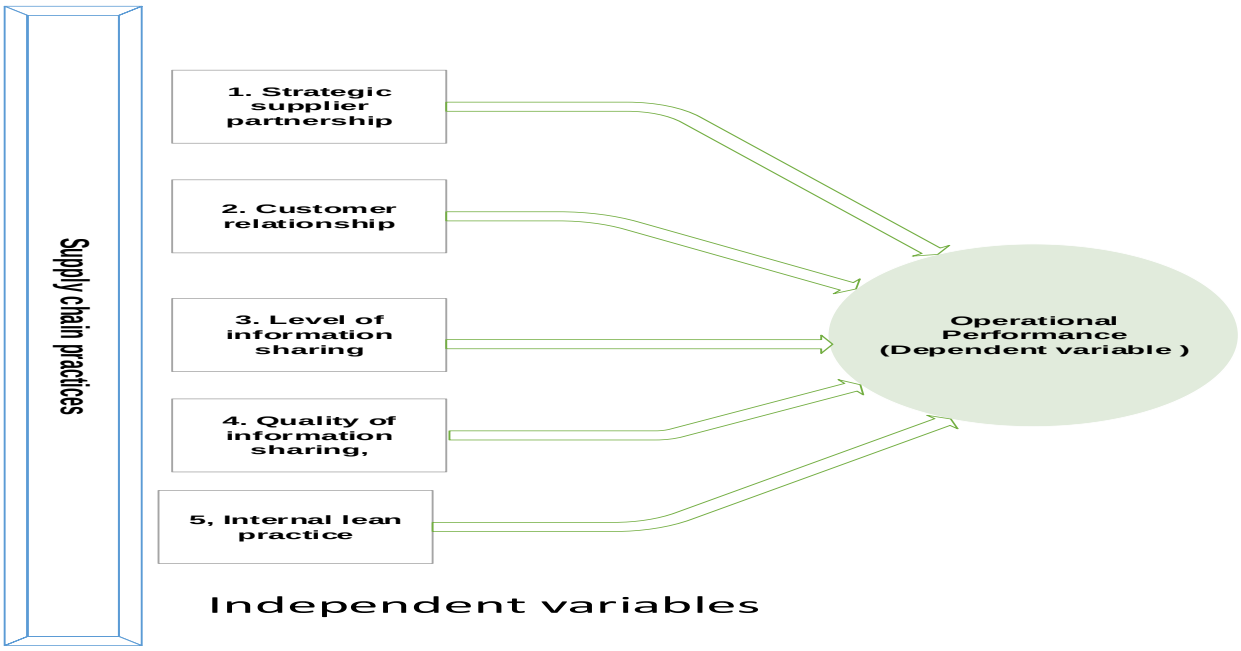
2.4. Identified Literature Gap

Even though the measures of organizational performance and supply chain management vary from organization to organization, they are essential for effective management of any organization. Supply chain management practices are affected by the global operations, the real challenge for managers of this new enterprise environment is to develop suitable performance measures and metrics to make right decisions that would contribute to an improved supply chain practices, competitiveness of the organization and its operational performance. Some of the empirical studies only focus on upper tier supply chain i.e. suppliers (Addis, 2015) and some only focus on the lower level supply chain i.e. customers. Some studies like (Suhong, Li, *et al*., 2004), (Mutuerandu, 2014), (Karimi & Rafiee , 2014), and (Mustefa, 2014) focus on both supplier and customer but the variables used as supply chain practices are varied depending on the organization selected on their study. However, it is absence of complete agreements using the supply chain practice variable and its effect on the performance of the organization. Most of the literature survey shows and suggests for future research on the selected topic which show the antecedences and consequences of supply chain practice.

2.5. Conceptual Framework of the Study

Conceptual framework is a hypothesized model identifying the concepts under the study and their relationships. The Conceptual framework of the study, adopted from (Mustefa, 2014) modified by the researcher is illustrated on the following diagram.

Figure 2.1: Conceptual framework of the study



Source: The Conceptual Framework of the study, adopted from Mustofa, (2014) modified by the researcher.

In the conceptual framework, the independent variables which are believed to have impact on the performance of the selected company are strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and internal lean practices. Whereas, the operational performance is considered as dependent variable. The previous empirical studies conducted by (Ibrahim & Hamid, 2012), (Karimi & Rafiee , 2014), (Li, et al., 2006), (Mustefa, 2014), (Mutuerandu, 2014), (Suhong, Li, *et al*., 2004), (Yohannes, 2014) , (Wagnera, S.M., et al., 2012) and (Fantazy KA, Kumar V & Kumar U, 2010) has showed that the higher level of supply chain practices implementation can lead to enhanced operational performance of the organization. Therefore, based on this research finding how much is the influence of effective implementation of supply chain practices on operational performance of the ethio telecom will be tested.

CHAPTER THREE

3. METHODOLOGY OF THE STUDY

This part describes the methodologies used in the study; the choice of particular research approach and designs, unit of analysis for the study, data type and data source, data gathering techniques and data analysis techniques along with appropriate justification associated with each approach. The pilot study result for the measuring instrument is also presented on this chapter.

3.1. Description of the Study Area

Ethio telecom was established on December 2010 by the decision of the government of Federal Democratic Republic of Ethiopia to transform the previous traditionally operating corporation (ETC) with a vision to be a world class telecom operator. Ethio telecom provides different kinds of products and services all over the country and act as a sole service provider.

Ethio telecom is the only telecom service provider in Ethiopia. Due to its monopolization the consumption of all telecom products like voucher cards (VCs) and SIM cards are imported through the company and distributed by the company itself and other distributers. But the major portions of those items are distributed mainly through the company owned distribution channels. That means the company needs to manage its supply chain effectively and efficiently to be successful. Like other companies in Ethiopia, ethio telecom didn‘t have supply chain management section until 2011 i.e. until the transformation process began. (Fanuel, 2013)

Due to the fact that supply chain management process is an early stage at ethio telecom, the company is facing different challenges in implementing and managing the supply chain of the company and based on the feedback in the Growth Transformation Program (GTP) meeting, the following challenges are some of the many concerns of the supply chain management: - Inspection delay, Office equipment quality problem and shortage, challenging rooftop management, scrap items in all company premise, warehouse space problem and disposal of obsolete items, vehicle assignment and etc. (Fanuel, 2013)

3.2. Research Approach

The study uses a deductive research approach which is closely related to quantitative research. Therefore, in terms of methods, this research employed quantitative method while conducting the study i.e. to collect, to organize and to analyses the data. Quantitative research method involves studies that make use of statistical analysis to obtain finding. Creswell (2005) asserted that quantitative research is a type of educational research in which the researcher decides what to study, asks specific, narrow questions, collects numeric (numbered) data from participants, analyzes these numbers using statistics, and conducts the inquiry in an unbiased and objective manner.

For data collection, a research question was developed to explore the effect of supply chain practice in the operational performance and then theoretical model based on former theories and concepts was developed based on it. Close ended Likert type questioners was distributed to and collected from the selected employees of ethio telecom and then it is summarized and analyzed in order to describe it and to make inference on the population.

3.3. Research Design

Research design is the framework that has been created to find answers to research questions. One type of non-experimental form of research is the correlational design in which investigators use the correlational statistic to describe and measure the degree or association (or relationship) between two or more variables or sets of scores These designs have been elaborated into more complex relationships among variables found in techniques of structural equation modeling, hierarchical linear modeling, and logistic regression. (Creswell, 2005).

The other type of quantitative research design is the survey research. It provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. It includes cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection—with the intent of generalizing from a sample to a population (Fowler, 2008).

Therefore, the research designs employed in this study are descriptive and explanatory. Descriptive research design is preferred for better describe the group of individuals over the set of variables. Correlation are applied to investigate the association of variables and the regression

is used to show the cause and effect relationship between the dependent variables and the independent of supply chain management practices. The rationale behind selection of this method is to get an accurate representation of characteristics of a particular situation and group.

3.4. Unit of Analysis

The unit of analysis is the major entity that are analyzed in the study. Therefore, the unit of analysis used in this survey is the group of employees involved in the supply chain operation of ethio telecom. The employees' perception towards the supply chain practice and operational performance are collected using survey questioner and then the quantitative analysis has been made based on the collected information.

3.5. Description of the Study Population and Sampling

3.5.1. Population

The target population of the study is the ethio telecoms sourcing and facility division having the total of 1843 employees. From all the five departments of the division, only Sourcing and Logistics & Supply department works are taken as the target population, excluding PAs and Clerks. Based on the company profile October, 2016, the total number of employees in this department is 235. The population is selected based on its reliability for the sources of data required and its convenience for data collection.

3.5.2. Sample Frame

A list of those within a population who can be sampled, are optioned form the company oracle data based on October, 2016. The summary list is presented on the following table.

Table 3.1: Summery of sample frame per department by position

Position	Logistics and Supply	Sourcing	Sub Total	Target Population from each strata
Staffs	109	83	192	192
Supervisors	22	11	33	
Managers	3	5	8	
Officers	1	1	2	43
Total	135	100		235

Source: From the Company ERP data base accessed on October, 2016

3.5.3. Sampling Technique

In order found the appropriate number of respondents for the survey, the researched have divided the target population in to two i.e. staff level and managerial level employees of ethio telecom. Then, Non-probability Convenience sampling have been used to select staff level employee. In order to arrive the correct sampling size for the selection of staff level of employees, the researcher have used Krejcie and Morgan (1970) sampling formula for selecting staff level employees. Many researchers (and research texts) suggest the minimum Confidence Level = 95% and the Margin of Error = 5%. Therefore, sample size for the staff level employees are

$$\boldsymbol{N = \frac{Z^2.P.Q.N}{e^2(N-1)+Z^2.P.Q}}$$

$$\boldsymbol{N = \frac{1.96^2 X 0.5 X 0.5 X 193}{0.05^2(192-1)+1.96^2 X 0.5 X 0.5}} = \underline{\underline{128}}$$

- Z = Z score level of confidence of the estimate (in the case of 95% = 1.96).
- e = Marginal error, 5%
- P = proportion of the sample successfully collected =P=0.5
- Q = failure of sample (1-0.5)= 0.5
- N = population of the staff sample=193

Since management employees have more experience on the area of the study, for managerial employees' selection including officers, managers and supervisors, the researcher have used census. Thus, all 43 management staffs form the selected two departments are taken for the survey.

Therefore, based on the above given information and sample size formula, 171 employees are selected for the survey and questioners are distributed to them. From 171 distributed questioners, only 149(87.13%) are collected but after the data cleansing only 134 (78.36%) are used for the analysis.

3.6. Data Source and Type

Primary and secondary are used for the analysis of the study. The primary data were gathered using survey questionnaire from the selected sample respondents/employees of ethio telecom and secondary data was collected from the company oracle data base, form the different online and off-line literatures mainly on Journals, Books, and Report and Proceedings.

3.7. Measurement Instruments

As the measuring instrument, close-ended Likert type questionnaires was used. This questionnaire type is selected because it is easy to administer to groups of people simultaneously, it is less costly and less time consuming than other measuring instruments.

Likert scale is a widely used rating scale which requires the respondents to indicate a degree of agreement or disagreement with each of a series of statements or questions i.e. from (1) strongly disagree to (5) strongly agree. The questionnaire were also includes some questions about educational back ground of respondents, employee level of the respondents, experience of the respondents at their current position.

3.8. Data Collection and Analysis Procedure

In the data collection and analysis of the study, the following procedures were used:

- ✓ 1st briefing on the questioners was given to the selected respondents before the distribution of the questioner and then questioner were distributed to the respondents.
- ✓ 2nd depending on the distribution time, the questions were collected from the respondents after a week.
- ✓ 3rd a reminder was made for the non- responding employees and lagged questioners were collected.
- ✓ 4th the questioners were coded and analyzed for usability of the questioners are made.
- ✓ Finally, the analysis of the data using different statistics on SPSS version 20 was made and this paper is produced.

3.9. Data Analysis Techniques

Before analyzing the data, the quantitative data collected using questionnaire were cross checked for its completeness and consistency. Then, descriptive statistics, correlational and multiple regression model were used in order to analyze the data. The analysis of the data was done using SPSS Version 20. Frequencies and percentages were used to analyze respondents' demographic data. Mean, Mode, Median, skiwness and kurtosis have been used for the assessment of the responses of the employees of the organization. Correlation and Multiple regression are used to test the relationship of the independent and dependent variables.

3.10. Pilot Study

The close-ended Likert type questionnaires were selected from similar studies in the area. This questionnaire type is selected because it is easy to administer to groups of people simultaneously, it is less costly and less time consuming than other measuring instruments.

Likert scale is a widely used rating scale which requires the respondents to indicate a degree of agreement or disagreement with each of a series of statements or questions i.e. from (1) strongly disagree to (5) strongly agree. The questionnaire were also includes some questions about educational back ground of respondents, employee level of the respondents, experience of the respondents at their current position.

In order to cross check its completeness the researcher have used SCM literature and empirical review of the previous researches on the area of the study and additional content on the framework are included based on it. However, according to the research texts, in survey based research, before the questioners are administrated, it is important to validate the scales used for reliability and validity. Though, the questionnaire used for this survey are adopted form previous research with minor customization and its validity and reliability were tested. The researcher have made a pre pilot and pilot survey to test the questioner validity and reliability on current survey situations. Therefore, the test result are presented on the following topics.

3.10.1. Face Validity Test

Even if most of the questioners were adopted form the similar researches on the area of the study and its validity were previously tested, to cross check its face validity after its customized questions as the measuring instrument, the questionnaire was given to three academicians for their comment. In addition, the questioner also distributed to five employee in different employment level on the selected departments of ethio telecom. Then, based on the observation of feedback of the academicians and respondents, the redundant and ambiguous items were either modified or eliminated.

3.10.2. Validity

Validity is the extent to which a score on a scale or test predicts scores on some criterion measure (Cronbach & Meehl, 1955; as cited in Gleam & Rosemary, 2003). Based on the pilot test data using 30 respondents, the Pearson the correlation between all independent variables and the dependent validity are shown on the following table.

Table 3.2: Correlations between variables

		OP	SSP	CR	IS	IQ	LP
OP	Pearson Correlation	1	.790**	.691**	.785**	.596**	.472**
	Sig. (2-tailed)		.000	.000	.000	.001	.008
	N	30	30	30	30	30	30

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

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

Source: Survey data, 2017

As it is shown on the above table, the predictive validity of the instrument test result based on the correlation analysis has sig (2-tailed) value obtained of all variables are <0.05, so it can be concluded that all independent variables used as supply chain practice was valid and were found to be significantly correlated with the dependent variables. Therefore, the findings using this questioners will be acceptable by the public.

3.10.3. Reliability Analysis

After the test of validity of the research instrument the next step is to cross check the constancy and reliability of the instruments. Reliability refers to the extent to which data collection techniques or analysis procedures yield consistent findings (Saunders, *et al*., 2009). Cronbach's Alpha used as a standard test for questionnaire accuracy. It is used to test the degree to which instruments items are homogeneous and reflect the same underlying construct(s).

Every question using the Likert Scaling method must be tested for its reliability. Therefore, in the study, after verifying the construct and content validity, the questioners has been reproduced and distributed to a sample of 30 respondents for the pilot test and the test results of readability is presented on the following table and in the Appendix 1A.

Table 3.3: Cronbach's Alpha

Construct	Variables	Number of items	Cronbach's Alpha
SCM Practices	Strategic supplier partnership	6	0.836
	Customer relationship	5	0.887
	Level of information sharing	6	0.891
	Level of information quality	5	0.902
	Internal lean practices	2	0.714
Operational Performance	Performance	14	0.963

Source: Survey Data, 2017

According to Hair, Black and Anderson (2010), the lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research. While Nunnally considered Cronbach's alpha values greater than 0.60 are to be taken as reliable. The instruments the high degree of the high degree of reliability, if the value of Cronbach's alpha obtained is greater than 0.7.

Therefore, as it can be seen form the table 3.3, all values of the Cronbach's alpha for supply chain management practices and performance measures show greater than 0.7. Therefore, we can conclude that the data collection instruments were acceptable as reliable.

3.11. Model and Estimation Techniques

In order to found the cause and effect relationship between dependent and independent variables, the study have used multiple regression model to measure the level of significant relationship between the dependent and independent variables.

The model applied to show this influence is presented as follows;

$$\mathbf{Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \varepsilon}$$

Where:

Y = Operational performance of ethio telecom.

β0 = Constant (value of Y when X1, X2, X3, X4 and X5= 0)

β1 = Regression coefficient for strategic Supplier relationships

X1= Strategic supplier partnership

B2=Regression coefficient for strategic partnership

X2= Customer relationship

B3=Regression coefficient for customer relationship

X3= Level of information sharing

B4=Coefficient of regression for level of information

X4= Level of information quality

B5=Coefficient of regression for level of information quality

X5= Internal lean practices

ε = the error

3.12. Ethical Considerations

According to Leedy & Ormarod (2010), there are four ethical issues that need to be addressed in the process of undertaking a research: That are protection from harm, informed consent, right to privacy, and honesty with professional colleagues. Therefore, the participants in this study was selected with full consent and informed to respond for questionnaires with confidence and understanding the purpose of the thesis; and the researcher was assure that as he will keep the information confidential and the data will used only for intended purpose.

CHAPTER FOUR

3. DATA ANALYSIS AND PRESENTATION

4.1. Introduction

This chapter presents the data analysis and result interpretation part of the research. In order to presents the findings of this research on supply chain management practices of ethio telecom on its operational performance, the collected data using quantitative method was tabulated and analyzed using descriptive and regression analysis statistical tools.

4.2. Data Processing

Only 149 questioners are collected out of 171 distributed questioners to the selected respondents that make 87.1% response rate and 12.9% non-response rate. However, in order to reduce the possible errors in the data administration, immediately after the collection of data the researcher has cleanses the outlier, missing values and discrepancies. Finally, 134 complete respondents' data are used for the survey analysis using SPSS 20.0.

4.3. Descriptive Analysis

In this part of analysis, the researcher have divided and describe it in to two parts. The first part focuses on the demographic information of the respondents so frequencies and percentage used for the analysis. The second part focused on the basic questions which are intended to acquire the perceptions and the feeling of the respondents towards supply chain practices i.e. Strategic supplier partnership, customer relationship, level of information sharing, level of information quality and lean practices in the organization and also focuses on the perceptions of the employees towards the operational performance of the company. Therefore, for the analysis mean, median, mode, skewedness and kurtosis are used to describe the findings.

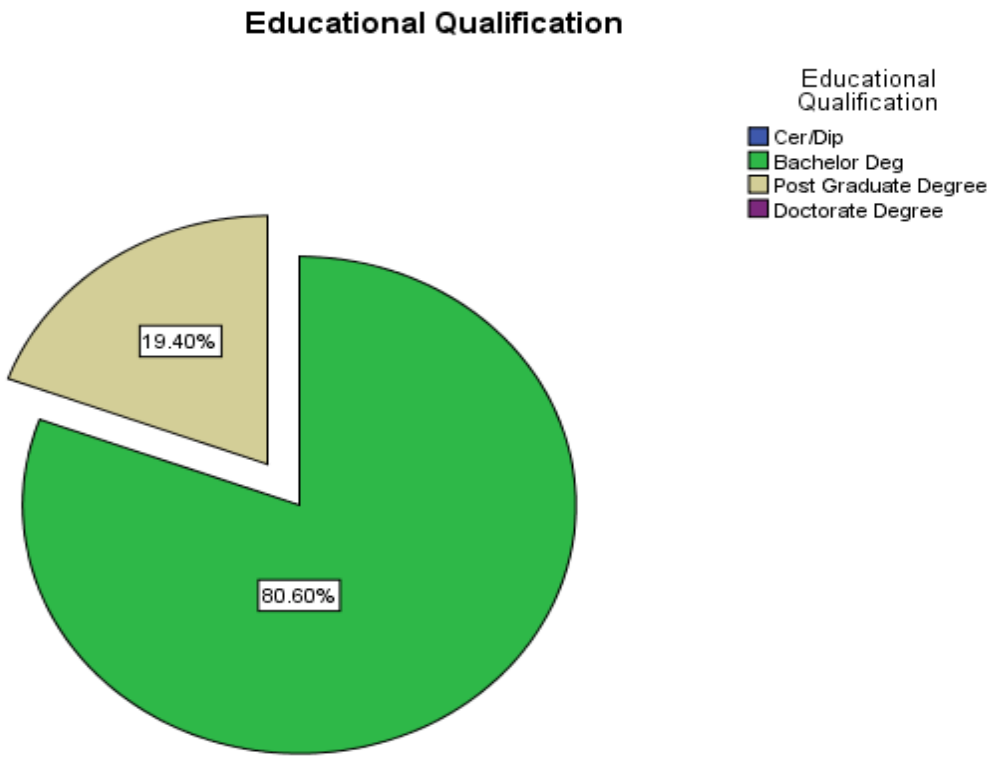
4.3.1 Demographic Data of the Respondents.

The profile of the respondents' in the selected department of ethio telecom sourcing and facility department are summarized in to four parts in this survey. The first one is about the respondents' educational qualification, the second is about their employee level in the organization, the third is about their experience in the selected departments, and the fourth one is about their department.

4.3.1.1. Educational Qualification of Respondents

Education is paramount in enabling the respondents to conceptualize issues related to resource utilization. This finding was in line with Katz (1992) finding that those with higher education are more successful as they have more knowledge and have modern managerial skills making them more conscious of the reality of the business work.

Figure 4.1: Educational qualification of the respondents'



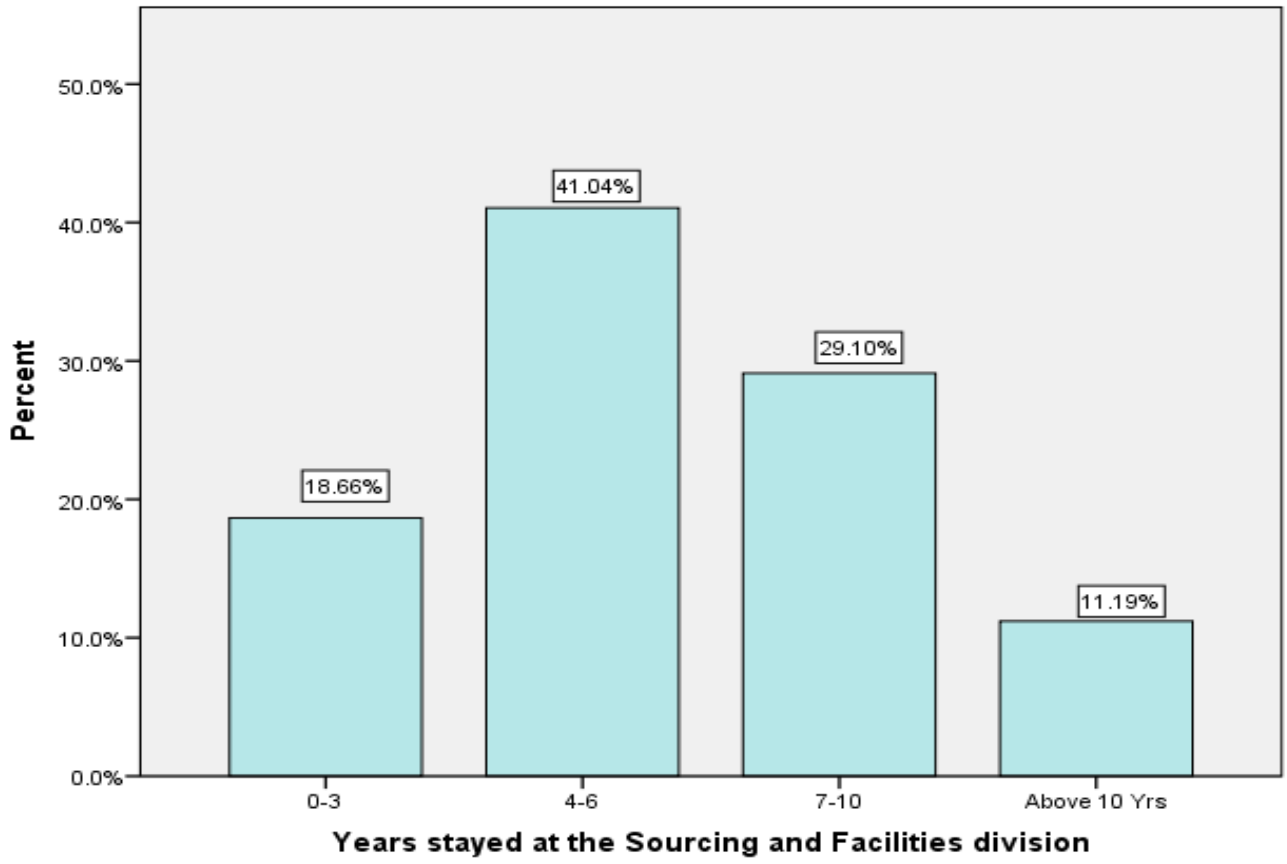
Source: Survey data, 2017

As it can be seen form the figure 4.1, the respondents' educational qualification is above 1st degree level i.e. 80.6% and 19.40% of the respondents have bachelor and post graduate degree respectively. This implies that they are capable of conceptualizing and respond authoritatively on issues and practices.

4.3.1.2. Service Year of the Respondents' in the Selected Department

It is also important to note the experience level of the respondents on the area of the study for the successful implementation of the survey. The following figure presents the respondents' experience on selected departments.

Figure 4.2: The respondents' Service Year in the selected department



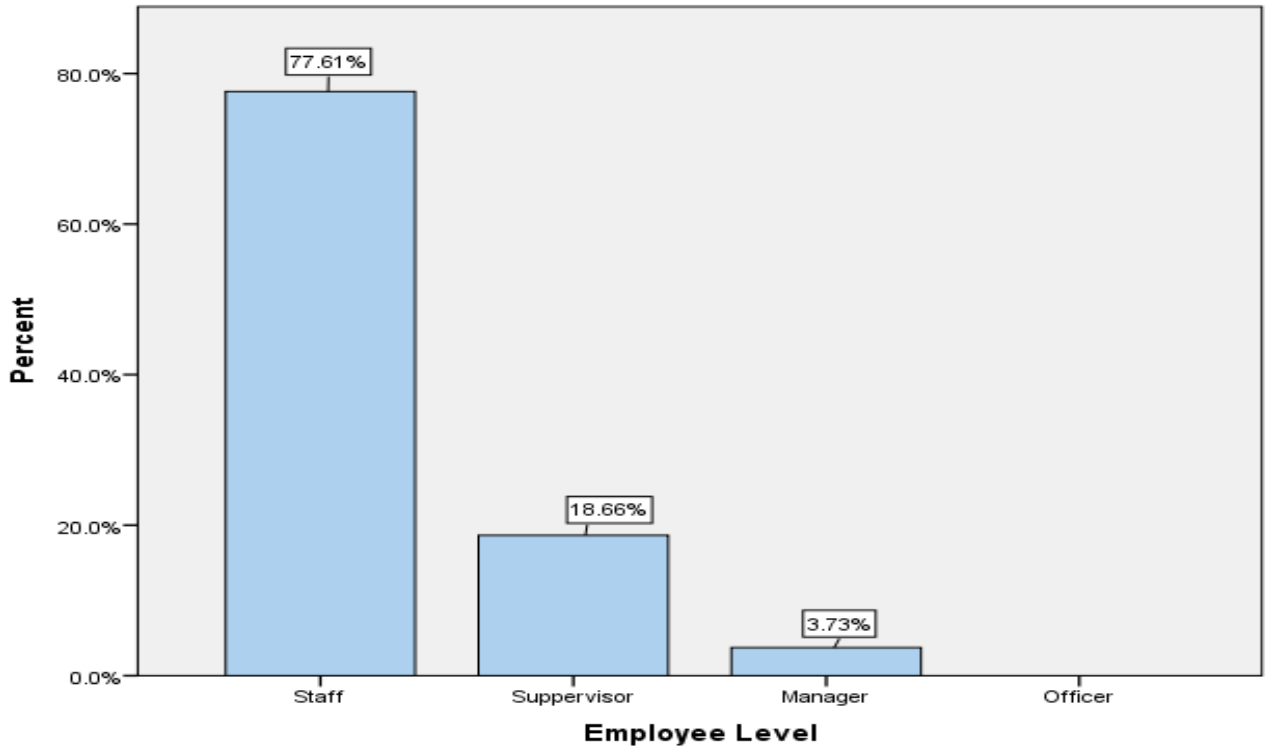
Source: Survey data, 2017

Based on the Fig 4.2, almost 81% of the respondents have more than four year experience on the companies logistic and supply chain division. Specifically, 41.04% of respondents' have four up to six year experience, 29.1% have seven to ten years' experience and 11.19% of them have more than ten years' experience. However, only 18.66% of them have experience less than 3 year. Therefore, we can conclude that they can understand the supply chain practices their response will be taken as dependable result.

4.3.1.3. Employee Level of *the* Respondents in the Company

The other important factor on the respondents' demographic variable is the respondents' level of employment in the company. In ethio telecom, there are different level of employment starting form staff level to the highest level of ranking as the chief officer. The following graph shows the respondents' employment level in the company.

Figure 4.3: Position of the Respondents' in the Company



Source: Survey Data, 2017

Figure 4.3 shows that officers do not respond for this survey. However, managers, supervisors, and staff level employees on the selected departments of the company proportionally respond well to this survey. Out of the 134 valid responses on the survey, 77.61% of the questioners were form staff level employees, 18.66% are from the supervisors and 3.73% are form the manger level of the employees. This implies that due to their detailed involvement on logistic and supply chain activity of the company, the information gathered from them are accurate and relevant for the study.

4.3.1.3. Departments of the Respondents in the Company

In logistic and supply chine division of ethio telecom, there are five departments, namely sourcing department, logistic and supply chain department, facility and fleet department, TEP logistic program department and TEP civil work program department. However, due to the employees detail involvement for the companies supply chain operational activity, the researcher have selected only two department employees for this survey as the respondents'. The following table shows the frequency and the percentage of response in the selected departments.

Table 4.1: The frequency and percentage of the respondents' in each department

Variables	Description	Frequency	Percentage
Your department	Sourcing	74	55.2%
	Logistics and Supply	60	44.8%

Source: Survey Data, 2017

As it can be seen on the table 4.1, the number of respondents' on the two selected department is proportionate. 55.2% of them are form sourcing and the remaining 44.8% is form logistic and supply department. This implies that the responses collected form them acquire detail and end to end information for the survey. Therefore, the findings can be generalizable for the company.

4.3.2. Descriptive Analysis on Variables' Used

4.3.2.1. Descriptive statistics on Aggregated Variables

The Supply chain management practices used in the analysis are supplier relationship, customer relationship, level of information sharing, Quality of information sharing and lean supple chain practices. To address different points under each main category of supply chain practices and operational performance, different question were asked and then it is aggregated in to one variable under each dimension. In addition, all questions as supply chain practice is also grouped to get one SCMP variable. The following table shows the grouped responses result for each variable.

Table 4.2: Descriptive Characteristics on the grouping Variables

Statistics		SCMP					OP	SCMP
		LP	SSP	CR	IS	IQ		
N	Valid	134	134	134	134	134	134	134
Mean		3.31	3.33	3.44	3.17	3.16	3.15	3.28
Median		3.50	3.33	3.40	3.33	3.20	3.14	3.33
Mode		4	4	3	3	4	4	4[a]
Skewness		-.872	-.132	-.090	-.014	-.188	.015	-.177
Kurtosis		.300	-.339	-.827	-.706	-1.097	-1.037	-1.050

a. Multiple modes exist.

Source: Survey data, 2017

Based on the output data which is shown on the table 4.2, out of the 134 respondents, the mean score is greater than the midpoint of the scale which is 3. Of the five independent variables customer relationship has the highest mean (3.44) which is followed by 3.33 mean score for supplier relationship of the company. However, information sharing and information quality with the suppliers has the lowest, which is 3.17 and 3.16 respectively. The mean value of the dependent variable (Operational performance of the company) is also above 3.

Based on the value of skewness and kurtosis, we can also see the normality of the data distribution. Since this value falls within the normality range i.e. for skewness and kurtosis the data should be within +2 and -2 range. Therefore, the collected data are normally distributed. This implies that in ethio telecom, the results have confirmed that supply chain practices and operational performance of the company shows above average performance.

4.3.3.2. Descriptive analysis on Independent Variables (SCMP)

4.3.3.2.1. Strategic Suppliers' Partnership (SSP):

In order to assess the supplier relationship, the selected employees were requested to respond for seven related question in order to assess the strategic partnership of ethio telecom with the suppliers. The questions are focused on criteria for supplier selection in ethio telecom; alignment and involvement of key suppliers in problem solving; joint involvement for new product development and improvement of existing products and services; and joint goal setting and planning activates of ethio telecom and suppliers. The Table 4.3 shows the responses of each questions asked as strategic supplier relationships.

Table 4.3: Descriptive statistics on strategic supplier relationships

SSP Variables	N Valid	Mean	Median	Mode	Skewness	Kurtosis
We consider quality as our number one criterion in selecting suppliers	134	3.84	4	4	-0.333	-0.713
We regularly solve problems jointly with our suppliers.	134	3.62	4	4	-0.804	0.112
We have helped our suppliers to improve their product quality	134	3.4	3	3	0.077	-0.614
We have continuous improvement programs that include our key suppliers.	134	3.04	3	3	-0.076	-1.276
We include our key suppliers in our planning and goal-setting activities.	134	3.1	3	3	-0.119	-0.505
We actively involve our key suppliers in new product development processes.	134	2.97	3	3	-0.178	-0.254

Source: Survey data, 2017

As it is indicated on the table 4.3, based on the mean value, the variables for strategic partnership of ethio telecom with suppliers vary from the highest 3.84, for the criteria for the selection of the supplier to the lowest (2.97) for involving suppliers for the new product and service development. The highest respondents' agree on ethio telecom suppliers' selection based on quality criteria and ethio telecom solving the problems jointly with the key suppliers. However, they are neutral on quality programs, including suppliers in improvement program, on planning and on new product and service development. The skewness and kurtosis has showed the collected data based on the variables of strategic supplier partnership is normally distributed i.e. it falls between +2 and -2.

Therefore, the finding has shown as ethio telecom has to improve the involvement of its suppliers in the new product/service development, in planning and goal setting activities and on the continuous improvement programs in order to improve its strategic supplier relationship.

4.3.3.2.2. Customer Relationship (CS)

On ethio telecom relationship with the customer, respondent was asked six questions. The questions are selected to assess the company's involvement in customer need, company's feedback collection from customers, new products and services development based on the customers need and its speedy fulfilment of the customer orders, and on provision of products information as well as offering of technical assistance & training to users.

Table 4.4: Descriptive statistics on Customer Relationship

	We frequently interact with customers to set reliability, responsiveness, and other standards for us.	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.
N Valid	134	134	134	134	134
Mean	3.67	3.40	3.24	3.32	3.56
Median	4.00	4.00	3.00	3.00	4.00
Mode	4	4	3	4	4
Skewness	-.312	-.026	.085	-.159	-.100
Kurtosis	-.664	-1.348	-.885	-.857	-1.138

Source: Survey data, 2017

Table 4.4 shows, all customer relationship variables mean are higher than the middle value 3. Observing the mode value 4, highest number of employees has agreed on the company frequently interacts with the customer, on the companies measurement and evaluation the customer satisfaction and on the companies facilitation for the customer interaction to assistance However, most respondents are neither agree or disagree on company determination for the customer satisfaction. The skewness and kurtosis value failed between +2 and -2, therefore, the data collected form the respondents are normally distributed.

Using the overall variables of the customer relationship, the findings has showed us ethio telecom has good customer relationship with the customer. However, the company has to work to improve its relationship with the customer specially by frequently determining the future customer expectations and by facilitating the customers' ability to seek assistance.

4.3.3.2.3. Level of Information Sharing (IS)

The level of information sharing refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. Shared information can vary from strategic to tactical in nature and from information about logistics activities to general market and customer information.

To verify ethio telecom level of information sharing with the trading partners, six questions are provided to the respondents and their answer are summarized on the following table.

Table 4.5: Descriptive statistics on Level of information sharing (IS)

IS Variables	N Valid	Mean	Median	Mode	Skewness	Kurtosis
We inform trading partners in advance of changing needs.	134	3.32	3.34[a]	4	.019	-1.253
Our trading partners share proprietary information with us.	134	3.17	3.19[a]	3	.057	-.861
Our trading partners keep us fully informed about issues that affect our business.	134	3.24	3.26[a]	3	-.033	-.607
Our trading partners share business knowledge of core business processes with us.	134	3.07	3.09[a]	3	-.104	-.938
We and our trading partners exchange information that helps establishment of business planning.	134	3.02	2.93[a]	3	.541	-.585
We and our trading partners keep each other informed about events or changes that may affect the other partners.	134	3.21	3.20[a]	3	.198	-.814

Source: Survey data, 2017

As it is presented on the Table 4.5, the mean value for all variables has shown a little higher than the middle value. The highest mode (4) is observed for the informing the partners on the chaining needs. In addition, the highest mean and mode has been also observed for informing the partners for the changing needs. However, the median response felled on neither agree nor disagree for all variables and all the information sharing variables are normally distributed based on the skewness and kurtosis value.

Therefore, what we can understand is that, ethio telecom informed its trading partners on the changing needs, share proprietary information with the suppliers and fully informed them when any issue are arise which affect the company and its strategic suppliers. However, ethio telecom do not establish its business planning with its strategic suppliers.

4.3.3.2.4. Level of Information Quality (IQ)

Ensuring the quality of the shared information becomes a critical aspect of effective SCM in any organization. In order to assess the quality of information sharing in ethio telecom, five variables were used and the result are presented on the following table.

Table 4.6: Descriptive Statistics on Level of information Quality

		Information exchange between our trading partners and us is timely.	Information exchange between our trading partners and us is accurate	Information exchange between our trading partners and us is complete.	Information exchange between our trading partners and us is adequate	Information exchange between our trading partners and us is reliable.
N	Valid	134	134	134	134	134
Mean		3.03	3.12	3.17	3.09	3.40
Median		3.00[a]	3.13[a]	3.24[a]	3.13[a]	3.47[a]
Mode		2	3[b]	4	4	4
Skewness		.185	.056	-.334	-.169	-.204
Kurtosis		-1.280	-1.082	-1.494	-1.519	-1.175

a. Calculated from grouped data.

b. Multiple modes exist. The smallest value is shown

Source: Survey data, 2017

Table 4.6 shows that, on the average all variables mean is higher than the middle point and the data collected using the survey questioner are normally distributed as it is indicated by the skewness and kurtosis. The mean ranged from the highest 3.4 for reliable information exchange with the suppliers to the lowest 3.03 for timely information exchange of information. Highest respondents agreed that ethio telecom has complete, adequate and reliable information exchange with the suppliers. However, highest respondents do not believe ethio telecom has on time information exchange with its suppliers.

Therefore, in order to improve level of information quality, the company has to work more on accurate and timely information exchange with the suppliers.

4.3.3.2.5. Internal Lean Practices (LP):

Lean practice is associated with continuous pursuit of improving the processes, a philosophy of eliminating all non-value adding activities and reducing waste within an organization. Therefore, to find out the lean practice of ethio telecom, two questions were asked for its employees and the findings are summarized as follows

Table 4.7: Descriptive Statistics on Lean Practice

		Our firm reduces process set-up time (time required to prepare or refit equipment/workstation for production)	Our firm produces only what is demanded by customers when needed (e.g. JIT)
N	Valid	134	134
Mean		3.06	3.55
Median		3.10[a]	3.60[a]
Mode		3	4
Skewness		-.164	-.264
Kurtosis		-.592	-.813

a. Calculated from grouped data.

Source: survey data, 2017

As it is indicated on Table 4.7, skewness and kurtosis shows that the collected data using lean practice variables are normally distributed. The highest mean, median and mode value is observed for preparation of the services based on customer need which is 3.55. However, lowest 3.06 mean is for the reduction of process setup time.

This implies that, ethio telecom provide its product and services whenever needed but the equipment setup time for delivery of services is lower in ethio telecom. Therefore, the company has to work to improve the observed gap.

4.3.3.3. Descriptive Analysis on Dependent Variable

Operational performance is achieved through planning accuracy, delivery of goods and services to customers in a way that meet and even going beyond the expectation of the customers. In order to collect its employees perception towards the operational performance of the ethio telecom. The respondents have been asked fourteen questions and the result of the findings are provided in the following table.

Table 4.8: Descriptive Statistics on Operational Performance

OP Variables	N Valid	Mean	Median	Mode	Skewness	Kurtosis
We offer product or services at reasonable prices	134	3.11	3.17[a]	4	-.283	-.666
We are deliver quality product and service to the customers whenever needed (On reasonable response time).	134	3.10	2.97[a]	2	.275	-1.093
Our planning is always meet the customer need(Correct on our forecasting)	134	3.04	2.89[a]	2	.366	-1.051
Our planning(budget and optimization plan) is accurate	134	2.90	2.78[a]	2	.327	-.881
We receive product and service on time	134	2.80	2.68[a]	2	.725	-.636
We offer products that are highly reliable.	134	2.96	2.93[a]	2	.132	-.957
We offer high quality products and service to our customer.	134	3.03	3.04[a]	4	-.005	-1.052
We deliver the kind of products and service needed.	134	3.22	3.32[a]	4	-.413	-1.056
We deliver customer order on time.	134	3.42	3.50[a]	4	-.539	-.805
We provide dependable delivery.	134	3.13	3.13[a]	3	.133	-.990
We alter our product offerings to meet client needs	134	3.09	3.09[a]	4	.101	-1.129
We respond well to customer demand for “new” features	134	3.42	3.50[a]	4	-.567	-.867
We deliver product and service to market quickly	134	3.40	3.43[a]	4	-.090	-.974
We have fast product/ service development.	134	3.48	3.52[a]	4	-.177	-.911

a. Calculated from grouped data.

Source: Survey data, 2017

As it is presented in Table 4.8, The data’s collected for the assessment the operational performance variables of ethio telecom is normally distributed i.e. the skewness and kurtosis values are between +2 and -2. Based on the survey result, on the average the respondents agree that the company delivers services and products to the customers whenever needed as per their need and demand, it serve the customers’ quickly and the company has also respond well to the customers on new features needs. However, on average the respondents’ do not agree on the

company dependable delivery system, on timely delivery of products and services to the customer, on the company's correct planning system to meet the customer need and demand.

As it is observed from the perception of the respondents, majority of the respondents stated that companies are not providing low cost products, are not innovative, do not supply variety of products and the company are not working in a sustainable manner for the customer. Respondents are neutral on the dependable delivery for ethio telecom.

Therefore, the company has to improve the observed gaps on operational performance. The previous empirical studies has shown that to improve the operational performance of any organization, it needs to improve the supply chain practices.

4.4. Regression Analysis for SCM Practices and Firm Performance

The collected data form the employees of ethio telecom were used to make the inferential analysis of the study. The researcher conducted a multiple regression analysis so as to test the relationship among independent variables and dependent variable. This regression analysis is conducted to know by how much the independent variable explains the dependent variable.

The model applied to show this influence is presented as follows;

$$\mathbf{Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \beta 5X5 + \varepsilon}$$

Where: Y = Operational performance of ethio telecom.

β0 = Constant (value of Y when X1, X2, X3, X4 and X5= 0)

β1 = Regression coefficient for strategic Supplier relationships

X1= Strategic supplier partnership

B2=Regression coefficient for strategic partnership

X2= Customer relationship

B3=Regression coefficient for customer relationship

X3= Level of information sharing

B4=Coefficient of regression for level of information

X4= Level of information quality

B5=Coefficient of regression for level of information quality

X5= Internal lean practices

ε = the error

In the model the predictors used as the supply chain practice i.e. Strategic suppler Partnership, customer relationship, level of information sharing, quality of information sharing and lean practice are selected based empirical reviews. According to (Field, 2009), in order to create the accurate regression model based on the observation of a sample of data there are two important questions to ask: (1) does the model fit the observed data well, or is it influenced by a small number of cases (outliers); and (2) can my model generalize to other samples? These questions are vital to ask because they affect how we use the model that has been constructed. Therefore, to answer this two basic questions outliers ware removed before the data analysis and then the following multiple regression assumption has been checked and the test results are presented as follow.

4.4.1. Multiple Regression Assumptions

In order to get the reliable and dependable result of the analysis, all the assumptions of the multiple regression should be fulfilled before making the regression analysis interpretation. Therefore, before going to answer the research questions the researcher have tested the following pre regression assumptions and the assumption results are presented on the following topics of this research paper.

4.4.1.1. Reliability Test for Survey Data

Before the data collected are used for testing the relationship between variables, the researcher have tested the reliability of the collected data using the Cronbach alpha reliability test. It measures the extent to which item responses obtained at the same time correlate highly with each other and the widely accepted social science cut off is that alpha should be 0.70 or higher for a set of items to be considered a scale (Field, 2009)

Table 4.9: Reliability Statistics

Construct	Variables	Number of items	Cronbach's Alpha
SCM Practices	Strategic supplier partnership	6	0.718
	Customer relationship	5	0.875
	Level of information sharing	6	0.852
	Level of information quality	5	0.908
	Internal lean practices	2	0.712
Operational Performance	Performance	14	0.945

Source: Survey data, 2017

As can be seen form SPSS generated data on Table 4.9, the calculated coefficient Cronbach's alpha for this study was found to be greater than 0.7 for all variables, which is confirming the variables to be internally consistent for each variable for Internal lean practice.

4.4.1.2. Sample Size

Sample size is another important factor to be considered while conducting the regression analysis. As it is cited Field (2009), Green (1991) makes two rules of thumb for the minimum acceptable sample size, the first based on whether you want to test the overall fit of your regression model (i.e. test the R2), and the second based on whether you want to test the individual predictors within the model (i.e. test b-values of the model). If you want to test the model overall, then he recommends a minimum sample size of 50 + 8k, where k is the number of predictors. So, with five predictors, you'd need a sample size of 50 + 40 = 90. If you want to test the individual predictors then he suggests a minimum sample size of 104 + k, so again taking the example of 5 predictors you'd need a sample size of 104 + 5 = 109 (Field, 2009).Therefore, since the samples for this survey is 134 that means it provide enough case for the survey in predicting both the model overall or individual predictors in the model.

4.4.1.3. Multi-collinearity

In multiple regression model, before making a regression analysis it is important to test the multi-collineartity test. The multi- collinearity test is a test to identify a strong correlation between two or more predictors in a regression model. This assumption can be assessed by examining tolerance and the variance inflation factor (VIF). VIF values well below 10 and the tolerance statistics well above 0.2 can safely to conclude that there is no collinearity within the data (Field, 2009). A small tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be added to the regression equation. A good regression model must not have a strong correlation among its independent variables or must not have a multi-collinearity problem and that the value of variance inflation factor (VIF) must have a value between 1 and 10 and the tolerance level should be more than 0.2 (SPSS Inc., 2017) .

Table: 4.10: Multi-Collinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
LP	.683	1.464
SSP	.402	2.490
CR	.366	2.735
IS	.322	3.101
IQ	.375	2.668

a. Dependent Variable: OP

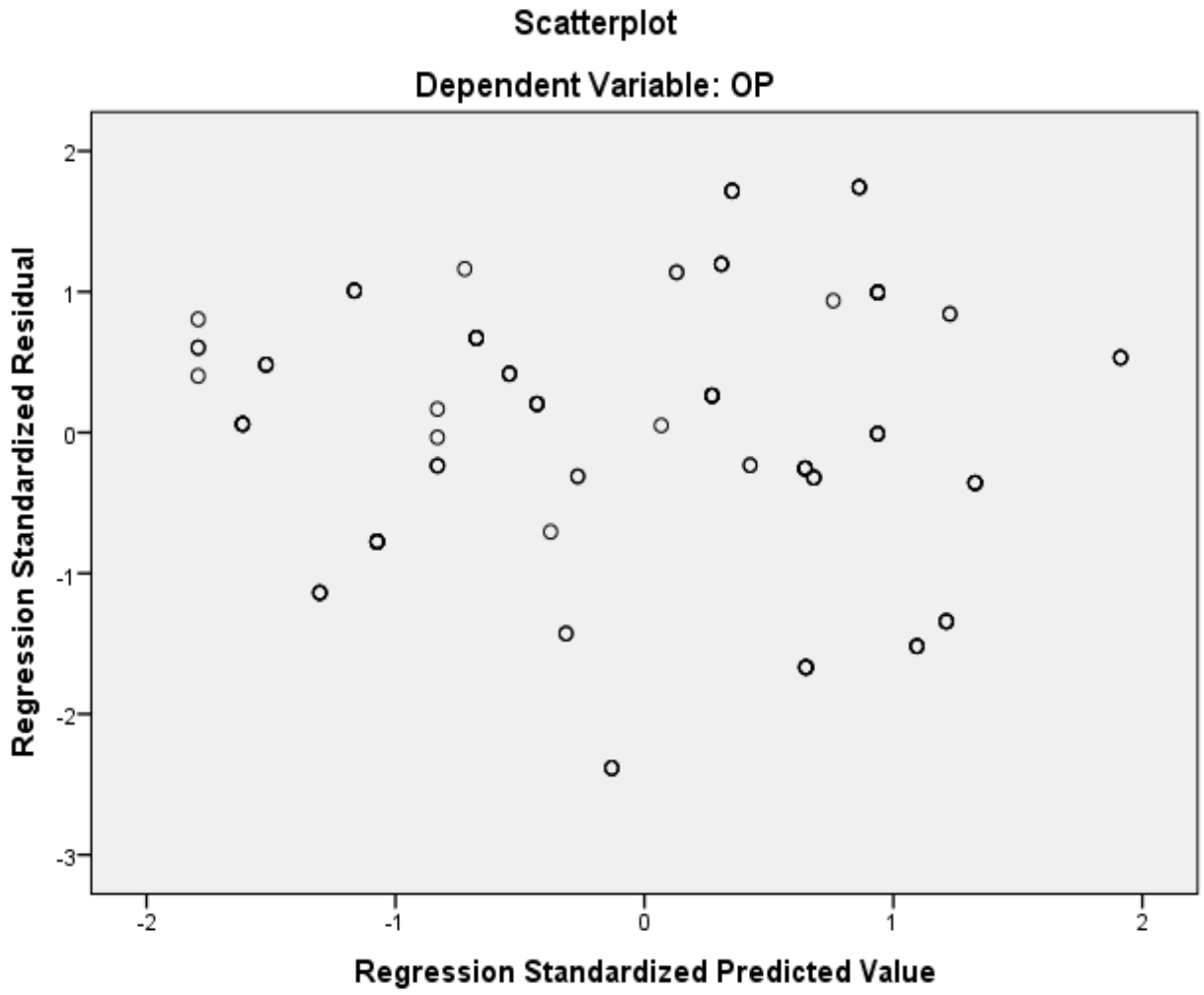
Source: Survey data, 2017

Based on the output data on table 4.12, the obtained VIF (the coefficient of collinearity statistics) value is between 1 to 10 and the tolerance level is more than 0.2. Therefore, it can be concluded that there are no multi-collinearity symptoms on this regression model.

4.4.1.4. Homoscedasticity

In Homoscedasticity assumption, the variance of error terms are similar across the independent variables. At each level of the predictor variable(s), the variance of the residual terms should be constant. This just means that the residuals at each level of the predictor(s) should have the same variance (homoscedasticity); when the variances are very unequal there is said to be heteroscedasticity (Field, 2009). According to the statistical solution (2017), to test the linear relationship assumption, Intellect's in the statistics plot the standardized residuals verses the predicted Y' values can show whether points are equally distributed across all values of the independent variables or not. Biased standard errors lead to biased inference, so results of hypothesis tests are possibly wrong. For a basic analysis, we first plot *ZRESID (Y-axis) against *ZPRED (X-axis) on SPSS because this plot is useful to determine whether the assumptions of random errors and homoscedasticity have been met (Field, 2009).

Figure 4.4: Scatterplot based on Residual



Source: Survey data, 2017

The graph of *ZRESID and *ZPRED should look like a random array of dots evenly dispersed around zero. If this graph funnels out, then the chances are that there is heteroscedasticity in the data. If there is any sort of curve in this graph, then, the chances are that the data have broken the assumption of linearity (Field, 2009).

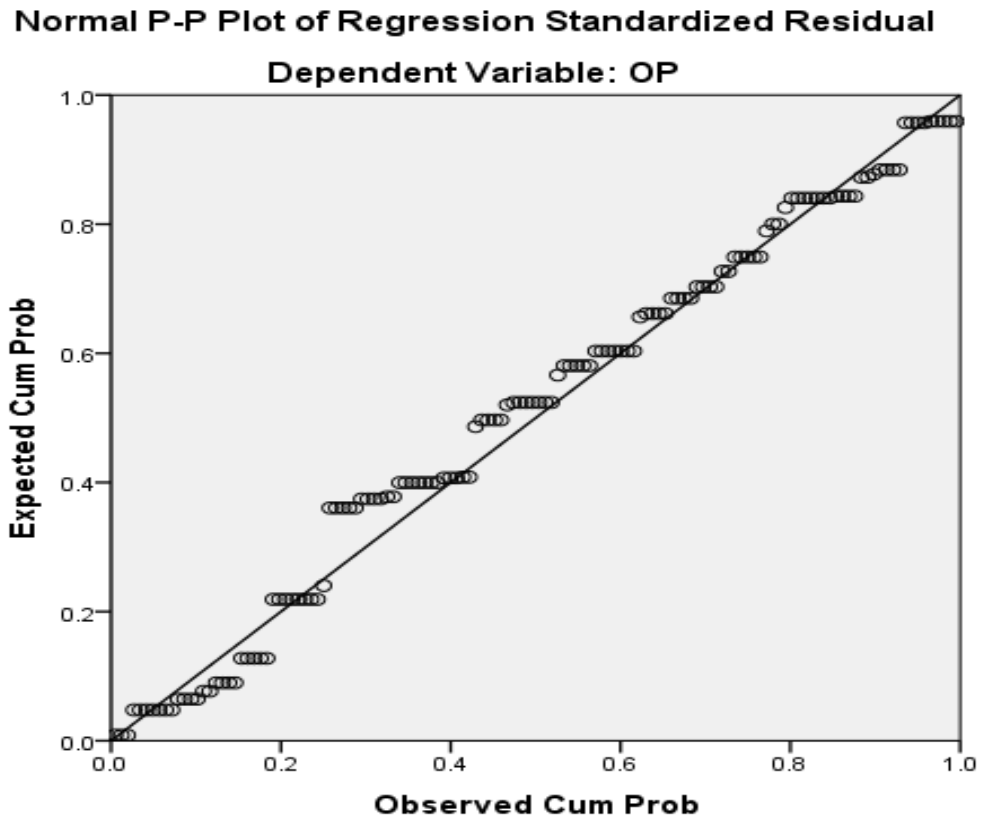
As can be seen in the scattered plot on fig 4.4 above, the residuals at each level of explanatory variables look like they are evenly dispersed and that the graph do not assume any type of shaped. Therefore, it is safe to say that this study has no heteroscedasticity problem.

4.4.1.5. Normally Distributed Error vs Normally Distributed Outcome Variables

The assumption of normally distributed error states that the residuals in the model are random, normally distributed variables with a mean of 0. This assumption simply means that the differences between the model and the observed data are most frequently zero or very close to zero and that differences much greater than zero happen only occasionally. In general, the normal distribution makes a straight diagonal line, and the plotted residuals are compared with the diagonal. If a distribution is normal, the residual line will closely follow the diagonal (Field, 2009)

According to statistics solution (2017), in multiple linear regression analysis requires that the error between observed and predicted values (i.e., the residuals of the regression) should be normally distributed. This assumption can best be checked by plotting residual values on a histogram with a fitted normal curve or by reviewing a Q-Q-Plot. Normality can also be checked with a goodness of fit test (e.g., the Kolmogorov-Smirnov test), though this test must be conducted on the residuals themselves. When the data is not normally distributed, a non-linear transformation (e.g., log-transformation) might correct this issue if one or more of the individual predictor variables are to blame, though this does not directly respond to the normality of the residuals.

Figure 4.5: P-P Plot of regression standardized residual



Source: Survey data, 2017

Figure 4.5 shows that the residuals have a sound normal distribution because the plotted residuals were around the diagonal straight line instead of making any other shape or curve.

4.4.1.6. Correlational Analysis between Dependent and Independent Variables

Correlational analysis testes the relationship between the dependent and independent variables as well as it can also be taken as one of the assumptions for the regression analysis. In this correlational analysis the operational performance is taken as dependent variable and as independent variables different supply chain management practices (strategic suppliers' partnership, customer relationship, level of information sharing, level of information quality and lean practices) are used. To test the statistically significant relationship between the participants' responses to the two Likert scales questions for the independent and dependent variables, Spearman rank correlation test is used on the this survey since the variables are measured on a scale that is at least ordinal.

Table 4.11: Correlations between grouped supplier relationship and operational performance

			OP	SCMP
	SCMP	Correlation Coefficient	.873**	1.000
		Sig. (2-tailed)	.000	.
		N	134	134

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

Source: Survey data, 2017

As it can be seen in the Table 4.11, to test the relationship the aggregated variable for SCMP and OP, all variables under each category are transformed in to aggregated SCMP and OP variables. The 2-tailed sig value for Spearman rank correlation test is .000, which means it is significant at 99% confidence level. Therefore, we can concluded that SCMP in ethio telecom has positive and significant relationship with the operational performance of the company.

Table 4.12: Correlation between grouping Variables and Operational Performance

			LP	SSP	CR	IS	IQ	OP
Spearman's rho	OP	Correlation Coefficient	.529**	.729**	.734**	.793**	.791**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.000	.
		N	134	134	134	134	134	134

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

Source: Survey data, 2017

Each questions in each category of supply chain practice are transformed in to five variables i.e. LP, SSP, CR, IS, and IQ. For operational performance, the collected data using Likert scale type questioners was transformed in to OP variable. The finding shows that all supply chain management practice variables coefficients are significant at the 0.01 level. Based on the above output value of sig (2-tailed), in ethio telecom,

- All independent variables (SSP, CR, IS, IQ and LP) used as supply chain practice and operational performance have a statistically significant relationship $r < .001$).
- The direction of the relationship independent variables and dependent variables are positively correlated, that means these variables tend to increase together.
- The magnitude, or strength, of the association is approximately strong ($.5 < | r | < .9$).
- Since the value of $r<1$, it also shows there in on Multicollinearity problem in the model.

In general, there is a strong and positive relationship between all independent and dependent variables are observed on the finding. Specifically, for example, the coefficient of the relationship between strategic supplier relationship and Operational performance (r = 0.729). Therefore, if the supplier relationship increase the operational performance of the ethio telecom will increase. The same holds for the other variables i.e. the coefficient of operational performance with Customer relationship (r = 0.734), the level of Information sharing (r = 0.793), the level of information quality (r = 0.791), the Lean practice (r = 0.529). Therefore, if the companies' strategic supplier relationship, customer relationship, level of information sharing, quality of information sharing and lean practices increase the operational performance of the company will increase proportionately.

4.4.2. Results of the Regression Analysis

4.4.2.1. Regression Analysis Model Summery

A multiple regression model R-squared is determined by pairwise correlations among all the variables, including correlations of the independent variables with each other as well as with the dependent variable. The multiple correlation coefficient (R) is a measure of the strength of the relationship between Y (in this case the operational performance) and the five predictor variables selected for inclusion in the equation as the supply chain practices i.e. SSP, CR, IS, IQ and LP. Large values of the multiple R represent a large correlation between the predicted and observed values of the outcome. A multiple R of 1 represents a situation in which the model perfectly predicts the observed data. (Field, 2009)

Adjusted R2 is a measure of the loss of predictive power or shrinkage in regression. The adjusted R2 tells us how much variance in the outcome would be accounted for if the model had been derived from the population from which the sample was taken Adjusted R-squared is always smaller than R-squared, but the difference is usually very small unless you are trying to estimate too many coefficients from too small a sample in the presence of too much noise. Statistical solution (2017)

Table 4.13: Model Summary table

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.890[a]	.793	.785	.355

a. Predictors: (Constant), LP, SSP, CR, IQ, IS

Source: Survey data, 2017

Based on SPSS generated data above, the adjusted R^2 (coefficient of determination) explain 78.5% of the factor affecting operational performance as represented by the five independent variables that were studied. Therefore, a further research should be conducted to investigate the other factors (21.5%) that affects operational performance in Ethio Telecom.

4.4.2.2. ANOVA Table

The most important part of the table is the F-ratio, which is a test of the null hypothesis that the regression coefficients are all equal to zero. Because R2 is not a test of statistical significance (it only measures explained variation in Y from the predictor Xs), the F-ratio is used to test whether or not R2 could have occurred by chance alone. In short, the F-ratio found in the ANOVA table measures the probability of chance departure from a straight line.

Table 4.14: ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	61.773	5	12.355	97.929	.000[b]
	Residual	16.148	128	.126		
	Total	77.921	133			

a. Dependent Variable: OP

b. Predictors: (Constant), LP, SSP, CR, IQ, IS

Source: Survey data, 2017

For this survey data shown on the table 4.14, F is 97.929, which is significant at $p < 0.001$ (because the value in the column labeled Sig. is less than 0.001). This result tells us that there is less than a 0.1% chance that an F-ratio this large would happen, if the null hypothesis proposed about F-ratio were true. Therefore, we can conclude that our regression model results in significantly better prediction of operational performance and that the regression model overall predicts the operational performance significantly well.

4.4.2.3. Coefficients of Regression Analysis

In order to know which of the predictors' i.e. SSP, CR, IS, IQ or LP has contributed significantly to our understanding of Y (operational performance), the following table shows Coefficients when we explore each predictor's beta (i.e., standardized regression coefficient) and its level of significance.

Figure 4.6: Coefficient Table for regression analysis

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.764	.222		-3.448	.001
LP	.135	.052	.125	2.572	.011
SSP	.316	.089	.226	3.561	.001
CR	.166	.065	.170	2.557	.012
IS	.222	.082	.191	2.691	.008
IQ	.362	.066	.360	5.476	.000

a. Dependent Variable: OP

Source: Survey data, 2017

A multiple regression analysis so as to determine the relationship between operational performance of the ethio telecom and the five supplier relationship variables. As per the SPSS output above, the equation ($\mathbf{Y = \beta 0 + \mathit{SSP}X1 + \mathit{CR}X2 + \mathit{IS}X3 + \mathit{IQ}X4 + \mathit{LP}X5 + \varepsilon}$) becomes:

Y = -.764+ 0. 316 X1 + 0. 166 X2 + 0. 222 X3 + 0. 362 X4+ 0. 135 **X5+ 0.355**

If all SCMP has not been performed on the company or (when X_1, X_2, X_3, X_4, X_5= 0), the operational performance of ethio telecom will start form negative. However, since, there will no operation without supply chain function. Therefore, the researcher do not interpret it.

Form the above equation, if X_1 differed by one unit (and X_2, X_3, X_4, X_5 did not differ) Y (Operational performance of ethio telecom) will differ by B_1 units, on average. The same holds for the other variables. Therefore, for our model if the strategic supply chain partnership increase by 1%, on average, the operational performance of ethio telecom will be increased by 0. 316 %.

Similarly, β1 is interpreted as the difference in the predicted value in operational performance for each one-unit difference in X_1 if X2,, X_3, X_4, X_5 remains constant. So compared to a one percent increase in the customer relationship of ethio telecom, we would expect the operational performance of the company will increase by 0. 166% having constant the other variables. In addition, holding or keeping the other variables constant, for one percent increase in operational performance, 0. 222% is form the information sharing, 0. 362% is form information quality and 0. 135% form lean practice of the organization.

4.4.2.4. Findings based on Research Questions

Based on the finding of the study, the researcher have answered for the following research questions

"How the strategic suppler partnership influence the operational performance of ethio telecom?"

Based on generated data, strategic supplier partnership has a positively and significantly influence the operational performance of ethio telecom, where the t- statistic value was calculated to be 3.561 at p value < 0.05. The value of the coefficient of strategic supplier partnership was also found to be 0.316 which means that, keeping other things constant, a unit change in strategic partnership cause 31.6% increase in operational performance of the company.

"How the customer relationship influence the operational performance of ethio telecom?"

The coefficient of customer relationship was .166, which means a unit change in this variable increases operational performance by 16.6%, keeping other variables constant. The t-statistic value of customer relationship was 2.557 significant at p value < 0.05, which makes the customer relationship and operational performance has positive and statistically significant relationship.

"How the level of information sharing influence the operational performance of ethio telecom?"

It is also found that level of information sharing has a positively and significantly influence the operational performance of ethio telecom, where the t- statistic value was calculated to be 2.691 are significant at p value < 0.05. The value of the coefficient of customer relationship was also found to be 0.222 which means that, keeping other things constant, a unit change in level of information sharing causes 22.2% increase in operational performance of the company.

"How the level of information quality influence the operational performance of ethio telecom?"

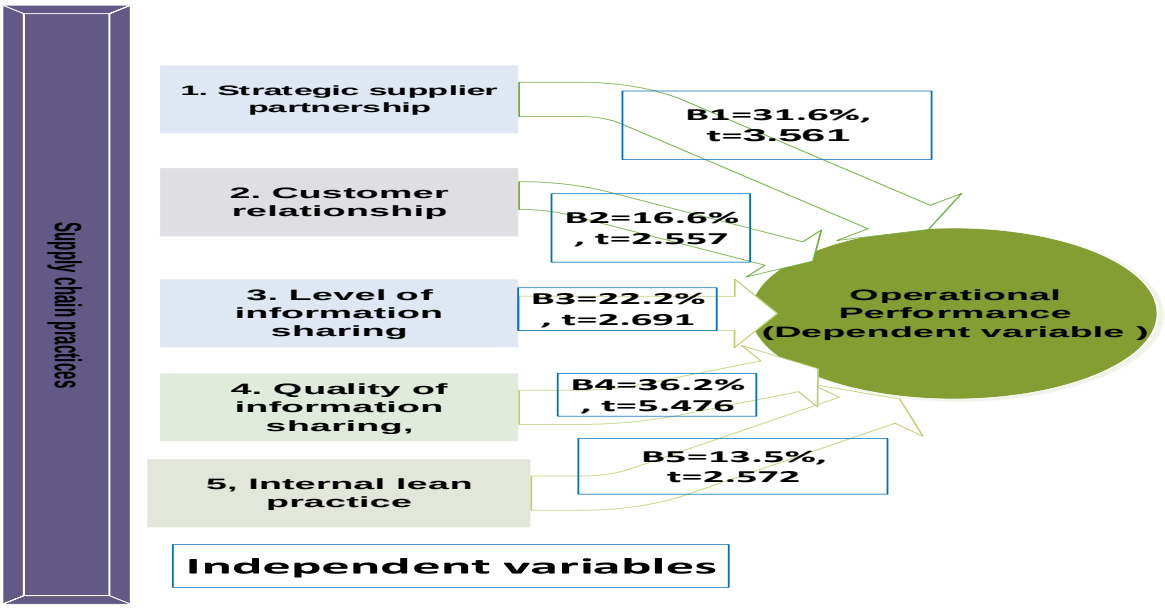
Level of information quality has also a positively and significantly influence the operational performance of ethio telecom, where the t- statistic value was calculated to be 5.476 are significant at p value < 0.05. The value of the coefficient of customer relationship was also found to be 0.362 which means that, keeping other things constant, a unit change in level of information quality causes 36.2% increase in operational performance of the company.

"How lean practice influence the operational performance of ethio telecom?"

Level of lean practice has also a positively and significantly influence the operational performance of ethio telecom, where the t- statistic value was calculated to be 2.572 are significant at p value < 0.05. The value of the coefficient of customer relationship was also found to be 0.135 which means that, keeping other things constant, a unit change in lean practice causes 13.5% increase in operational performance of the company.

In general, the survey result showed that there is a significant and positive relationship between independent variables of supply chain practices and the operational performance of ethio telecom. The fig 4.6 shows the summery relationship of the selected variables.

Figure 4.7: Model summery based on the findings



Source: Survey data findings, 2017

Therefore, as it is indicated on the above figure, by improving the supply chain practices i.e. strategic supplier partnership, customer relationship, level of information sharing, level of information quality and lean practices of ethio telecom, the operational performance of the organization could significantly and positively improved. The finding of this survey is consistence with the findings of the other empirical researches findings on the area of the study. The relationship between strategic supplier partnership, customer relationship, level of information sharing, level of information quality finding also is supported by (Li, S., et al., 2005), (Mutuerandu, 2014), (Karimi & Rafiee , 2014), (Charles, *et al.*, 2014), (Li, *et al.*, 2006) (Mutuerandu, 2014) and (Mustefa, 2014). The finding for the relationship between lean practice and operational performance are supported by the finding of (Mustefa, 2014)

CHAPTER FIVE

5. SUMMERY, CONCLUSION AND RECOMMENDATION

In this section, the summery conclusion of the research finding that have been analyzed and discussed in the previous chapter are briefly presented. Furthermore, based on the findings of this study possible recommendations are made.

5.1. Summary of the Findings

The main objective of this study was to assess the effect of supply chain on the operational performance of ethio telecom and also it is to assess the implementation of supply chain practices and operational performance in the company. The results are show that the supply chain practices (Strategic supplier relationship, customer relationship, level information sharing, and level of information quality) has significant impact on the operational performance of ethio telecom.

The findings of the survey also shows that that 78.5% of corresponding change in determining operational performance Ethio Telecom is the results of the change in supply chain practices of all the five predictor variables jointly. The test of overall significance of all the five variables jointly i.e. strategic supply chain relationship, customer relationship, level of information sharing, level of information quality and lean practices are significant at .05 level which found out that the model used for this survey is also to be significant.

5.2. Conclusion

Base on the finding using the data collected and by using multiple regression analysis, the results showed that the effect of supply chain management practices on the operational performance of ethio telecom are significant and positive related with the operational performance of the company. Specifically,

- Strategic supply chain relationship and operational performance are significantly and positively related. So strategic supply chain relationship is one of the main predictor of the operational performance of ethio Telecom. As strategic relationship, ethio telecom considered quality as number one criteria for supplier selection and the company jointly solve problems with the suppliers. However, ethio telecom do not involve suppliers in the continuous improvement programs, on planning and goal setting as well as in product and service development.

- Customer relationship and operational performance are also significantly and positively related. Ethio telecom evaluates the customer satisfaction and facilitates the interaction for customer assistance. However, the company's determination for fulfilling the customer satisfaction are not clear.

- The relationship between the level of information sharing and operational performance are positive and significant. Ethio telecom inform the suppliers about the changing need, proprietary information and any issues. However, ethio telecom do not plan together with its suppliers.

- The relationship between the level of information quality and operational performance are also positive and significant. Ethio telecom has complete, adequate and reliable information exchange with the suppliers. However, ethio telecom do not have on time information exchange with its suppliers.

- Lean practice and operational performance relationship are positive and significant in ethio telecom. The company provides products and services whenever needed by the customer. However, the company has problem in equipment set up time for delivering product and service to the customer.

Based on the descriptive statistics finding, on the average, ethio telecom's supply chain practices has more than average level of implementation level and the supply chain practice of the company and its operational performance also shown more than average level of performance. However, due to inefficiencies of the supply chain practice the company do not reached at its optimal operational level, still the company has the problem in some aspects of supply chain practices in the company. Therefore, based on the empirical findings the researcher have tried to answer to all the research question of the study.

5.3. Recommendation

The following recommendations can be drawn from the analysis and conclusions made.

- Strategic supply chain partnership of ethio telecom will improve if the company involves suppliers in the continuous improvement programs, on planning and goal setting as well as in new product and service development.
- Customer relationship will be improved if the company's determination for the customer satisfaction improved together with other customer relationship variables.
- Ethio telecom should involve suppliers in planning stage in order to meet the customer needs and to improve the level of information sharing.
- The level of information quality of ethio telecom will be improved if on time information exchange of the company with its suppliers improved. Therefore, ethio telecom should improve on time and accurate information exchange with the suppliers.
- The company has to work more on solving the problem in equipment set up time for delivering service to the customer.

5.4. Limitation and Implications for Further Research

While these results are valuable, the limitation of this study must also be considered. A potential limitations of this research are not considering the responses of the other tier supply chain members i.e. suppliers and customer, only taking the operational performance as the performance measures, and not considering the other contextual factors i.e. type of industry, firm size and supply chain length. In addition, the data for the study only consisted of responses from single respondents in an organization which may be a cause for possible response bias. Therefore, the results have to be interpreted taking this limitation into account. Future studies can examine the proposed relationships by bringing some contextual variables and additional dimensions into the model in order to fill the observed gap.

However, by validating a multi-dimensional operational measure of the construct of SCM practice and by demonstrating its efficacy with operational performance, the present study provides important insights for ethio telecom management. It can be used as the useful tool for evaluating the strength and weakness of the current SCM practices of the organization. This study also provides empirical evidence to support conceptual and prescriptive statements in the literature regarding the impact of SCM practices.

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Annex 1-Questioner of the Survey

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE
DEPARTMENT OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT
MASTERS OF BUSINESS ADMINISTRATION

FOR PARTIAL FULFILLMENT OF THE DEGREE OF MASTER
IN
LOGISTIC AND SUPPLY CHAIN MANAGEMENT

QUESTIONNAIRE

Dear respondents, the purpose of this questionnaire is to gather data on the effect of supply chain management practices on the organizational performance: In the case of Ethio telecom. The study is purely for academic purpose and thus not affects you in any case. So, your genuine, frank and timely response is vital for successfulness of the study. Therefore, I kindly request you to respond to each items of the question very carefully.

In order to investigate the effect of SCM practices on ethio telecom performance, the researcher prepared the following questions, please tick (√) on the appropriate question number to indicate the extent to which you agree or disagree with each statement.

The item have five-point Likert type scales, the scales have the following meaning

1. Strongly Disagree
2. Disagree,
3. Neutral,
4. Agree,
5. Strongly Agree

General Instructions

- There is no need of writing your name
- Where answer options are available please tick (√) in the appropriate box.

Contact Address

If you have any query, please do not hesitate to contact me and I am available as per your convenience at (Mobile: *0911-209906* or e-mail: *'skjoys@gmail.com'*)

Thank you for spending your precious time in advance!

PART I: DEMOGRAPHIC INFORMATION

1. **Educational Qualification:**

- ☐ Certificate/diplomas
- ☐ Bachelor's degree
- ☐ Post Graduate degree
- ☐ Doctorate degree

2. **Employee Level**

- ☐ Staff
- ☐ supervisor
- ☐ Manager
- ☐ Officer

3. **Years stayed at the sourcing and supply chain division:**

- ☐ Under two Years
- ☐ 2-5 Years
- ☐ 6-10 Years
- ☐ Above 10 years

4. **Your department**

- ☐ Sourcing
- ☐ Logistics and Supply

Part II: Instruments of Supply chain management practice

1. Strategic supplier partnership (SSP)		**Strongly Disagree (1)**	**Dis-agree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
1.1	We consider quality as our number one criterion in selecting suppliers.					
1.2	We regularly solve problems jointly with our suppliers.					
1.3	We have helped our suppliers to improve their product quality					
1.4.	We have continuous improvement programs that include our key suppliers.					
1.5	We include our key suppliers in our planning and goal-setting activities.					
1.6	We actively involve our key suppliers in new product development processes.					
2. Customer relationship (CR)		**Strongly Disagree (1)**	**Dis-agree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
2.1	We frequently interact with customers to set reliability, responsiveness, and other standards for us.					
2.2	We frequently measure and evaluate customer satisfaction.					
2.3	We frequently determine future customer expectations					
2.4	We facilitate customers' ability to seek assistance from us.					
2.5	We periodically evaluate the importance of our relationship with our customers.					
3. Level of information sharing (IS)		**Strongly Disagree (1)**	**Dis-agree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
3.1	We inform trading partners in advance of changing needs.					
3.2	Our trading partners share proprietary information with us.					

3.3	Our trading partners keep us fully informed about issues that affect our business.					
3.4	Our trading partners share business knowledge of core business processes with us.					
3.5	We and our trading partners exchange information that helps establishment of business planning.					
3.6	We and our trading partners keep each other informed about events or changes that may affect the other partners.					
4.	**Level of information quality (IQ)**	**Strongly Disagree (1)**	**Dis-agree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
4.1	Information exchange between our trading partners and us is timely.					
4.2	Information exchange between our trading partners and us is accurate					
4.3	Information exchange between our trading partners and us is complete.					
4.4	Information exchange between our trading partners and us is adequate					
4.5	Information exchange between our trading partners and us is reliable.					
5.	**Internal lean practices:**					
5.1.	Our firm reduces process set-up time					
5.2.	Our firm produces only what is demanded by customers when needed (e.g. JIT)					

III. INSTRUMENTS OF OPRATIONAL PERFORMANCE

3. Performance		Strongly Disagree (1)	Dis-agree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
3.1	We offer product or services at reasonable prices					
3.2	We are deliver quality product and service to the customers whenever needed (On reasonable response time).					
3.3	Our planning is always meet the customer need(Correct on our forecasting)					
3.4.	Our planning(budget and optimization plan) is accurate					
3.5	We receive product and service on time					
3.6	We offer products and service that are highly reliable.					
3.7	We offer high quality products and service to our customer.					
3.8	We deliver the kind of products and service needed.					
3.9	We deliver customer order on time.					
3.10	We provide dependable delivery.					
3.11	We alter our product or service offerings to meet client needs					
3.12	We respond well to customer demand for "new" features					
3.13	We deliver product and service to market quickly					
3.14	We have fast product/ service development.					

Any additional comments/suggestions to be considered in this study……
……
……..……..……..……

Thank You

Annex- 2- RESULT OF SPSS

Appendix 1A: Reliability

SSP: Reliability Statistics

Cronbach's Alpha	Number of Strategic supplier partnership Variables
.836	6

SSP Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
We consider quality as our number one criterion in selecting suppliers	16.57	15.289	.215	.879
We regularly solve problems jointly with our suppliers.	16.73	12.961	.681	.798
We have helped our suppliers to improve their product quality	17.03	12.516	.606	.810
We have continuous improvement programs that include our key suppliers.	17.37	12.861	.654	.801
We include our key suppliers in our planning and goal-setting activities.	17.33	11.195	.792	.768
We actively involve our key suppliers in new product development processes.	17.47	11.085	.763	.774

CR: Reliability Statistics

Cronbach's Alpha for customer relationship	N of Items
.887	5

CR Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
We frequently interact with customers to set reliability, responsiveness, and other standards for us.	13.57	11.633	.733	.861
We frequently measure and evaluate customer satisfaction.	13.73	9.926	.795	.847
We frequently determine future customer expectations	13.93	11.444	.713	.865
We facilitate customers' ability to seek assistance from us.	13.87	12.533	.650	.879
We periodically evaluate the importance of our relationship with our customers.	13.70	10.838	.759	.854

IS Reliability Statistics

Cronbach's Alpha for information sharing	N of Items
.891	6

IS Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
We inform trading partners in advance of changing needs.	15.53	13.913	.686	.880
Our trading partners share proprietary information with us.	15.63	14.861	.763	.864
Our trading partners keep us fully informed about issues that affect our business.	15.57	14.944	.725	.870
Our trading partners share business knowledge of core business processes with us.	15.77	16.530	.688	.879
We and our trading partners exchange information that helps establishment of business planning.	15.77	14.185	.781	.860
We and our trading partners keep each other informed about events or changes that may affect the other partners.	15.73	15.237	.669	.878

IQ: Reliability Statistics

Cronbach's Alpha for information quality	N of Items
.902	5

IQ Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Information exchange between our trading partners and us is timely.	13.47	9.499	.607	.914
Information exchange between our trading partners and us is accurate	13.37	8.516	.885	.852
Information exchange between our trading partners and us is complete.	13.30	9.321	.778	.877
Information exchange between our trading partners and us is adequate	13.40	9.352	.802	.873
Information exchange between our trading partners and us is reliable.	13.13	8.602	.747	.885

LP: Reliability Statistics

Cronbach's Alpha for lean paracitce	N of Items
.676	3

LP Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Our firm reduces process set-up time (time required to prepare or refit equipment/workstation for production)	6.77	3.220	.455	.625
Our firm has continuous quality improvement programs	6.23	3.633	.378	.714
Our firm produces only what is demanded by customers when needed (e.g. JIT)	6.60	2.593	.653	.342

LP after removing LP2 Reliability Statistics

Cronbach's Alpha lean practice after the removal of 1 question	N of Items
.714	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Our firm reduces process set-up time (time required to prepare or refit equipment/workstation for production)	3.20	1.200	.555	.
Our firm produces only what is demanded by customers when needed (e.g. JIT)	3.03	1.137	.555	.

Correlations

		OP	SSP	CR	IS	IQ	LP
OP	Pearson Correlation	1	.790**	.691**	.785**	.596**	.472**
	Sig. (2-tailed)		.000	.000	.000	.001	.008
	N	30	30	30	30	30	30
SSP	Pearson Correlation	.790**	1	.706**	.716**	.669**	.506**
	Sig. (2-tailed)	.000		.000	.000	.000	.004
	N	30	30	30	30	30	30
CR	Pearson Correlation	.691**	.706**	1	.803**	.558**	.518**
	Sig. (2-tailed)	.000	.000		.000	.001	.003
	N	30	30	30	30	30	30
IS	Pearson Correlation	.785**	.716**	.803**	1	.712**	.408*
	Sig. (2-tailed)	.000	.000	.000		.000	.025
	N	30	30	30	30	30	30
IQ	Pearson Correlation	.596**	.669**	.558**	.712**	1	.430*
	Sig. (2-tailed)	.001	.000	.001	.000		.018
	N	30	30	30	30	30	30
LP	Pearson Correlation	.472**	.506**	.518**	.408*	.430*	1
	Sig. (2-tailed)	.008	.004	.003	.025	.018	
	N	30	30	30	30	30	30

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

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

Appendix 1B: Validity

Correlations

		LP	SSP	CR	IS	IQ	OP
SSP	N	134	134	134	134	134	134
	Correlation Coefficient	.326**	1.000	.692**	.691**	.694**	.729**
	Sig. (2-tailed)	.000	.	.000	.000	.000	.000
CR	N	134	134	134	134	134	134
	Correlation Coefficient	.485**	.692**	1.000	.767**	.570**	.734**
	Sig. (2-tailed)	.000	.000	.	.000	.000	.000
IS	N	134	134	134	134	134	134
	Correlation Coefficient	.480**	.691**	.767**	1.000	.680**	.793**
	Sig. (2-tailed)	.000	.000	.000	.	.000	.000
IQ	N	134	134	134	134	134	134
	Correlation Coefficient	.476**	.694**	.570**	.680**	1.000	.791**
	Sig. (2-tailed)	.000	.000	.000	.000	.	.000
OP	N	134	134	134	134	134	134
	Correlation Coefficient	.529**	.729**	.734**	.793**	.791**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.
	N	134	134	134	134	134	134

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

Appendix 2C-Regression analysis using aggregated variables (SCMP and OP)

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.884[a]	.781	.779	.360

a. Predictors: (Constant), SCMP

b. Dependent Variable: OP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.723	.181		-3.989	.000
	SCMP	1.182	.055	.884	21.694	.000

a. Dependent Variable: OP