**ST. MARY'S UNIVERSITY**
**SCHOOL OF GRADUATE STUDIES**

**SUPPLY CHAIN MANAGEMENT PRACTICE AND IMPACT ON FIRM PERFORMANCE IN *THE CASE OF YOTEK CONSTRUCTION PLC*.**

**By**
**TEMESGEN TAGESSE**

JUNE 2017

ADDIS ABABA, ETHIOPIA

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**APPROVED BY BOARD OF EXAMINERS**

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External Examiner                                              Signature and Date

# DECLARATION

I, Temesgen Tagesse declare that the work I am submitting for assessment entitled "Supply Chain Management Practice and Impact on Firm Performance in the Case of YOTECK Construction Plc." is my original work and that it has never been presented to any University or Institution for an award of any academic qualification. No section copied in whole or in part from any other source unless explicitly identified in quotation marks and with detailed, complete and accurate referencing.

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                  Name                                               Signature

St. Mary's University, Addis Ababa                              June, 2017

# ENDORSEMENT

This is to certify that Temesgen Tagesse carried out his thesis on "Supply Chain Management Practice and Impact on Firm Performance in the Case of YOTECK Construction Plc." and submitted in partial fulfillment of the requirements for the award of the degree of Masters of Art in Business Administration at St. Marry University with my approval as university advisor.


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            Name                                                      Signature

St. Mary's University, Addis Ababa                      June, 2017

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# ACRONOMYS

CSC:          Construction of supply chain

CSCMP:        Council of supply chain management professional

CPFR:         Collaborative Planning Forecasting, and Replenishment

CR:           Customer Relationship

IT:           Information Technology

LIS:          Level of Information Sharing

LIQ:          Level of Information Quality

SC:           Supply Chain

SCM:          Supply Chain Management

SSR:          Strategic Supplier Relationship

# Abstract

*Supply chain management (SCM) has become potentially valuable element in the construction industry to improve operational efficiency and enhance organizational performances. The study had four objectives to achieve: to assess supply chain management practice in YOTECK Construction plc on the five major dimensions (strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing, and information technology), to assess collaboration or integration level of the company with SC members, to determine the impact of SCM practice with firm operational performance and organizational performance. The research design involved was a descriptive research. For achieving the objective of this study, 46 Questionnaires were distributed and 41 of them were successfully collected and analyzed using descriptive statically analysis (mean and Standard Deviation) as well as correlation and regression analysis using SPSS 2.0.version. Both primary and secondary source of data were used for this Study. The method of data collection was Interview and questionnaire in the form of closed ended question. The Questionnaires were rated using five points liker Scale. The major finding indicated that, most of SCM Practices were moderately practiced in YOTEK Supply chain, whereas IT was poorly applied. Regarding the relationship between SCM practice and firm performance, there were found to have strong statistical significant between SCM practices with operational performance and organizational performance. The study helps to create awareness to YOTEK owners, and it will give chance for others who are interested on to assess SCM Practice and its correlation with firm's performance to make further studies, especially on Construction industry.*

*__Keywords:__ supply chain management, operational performance, organizational performance*

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

The changing global environment of competition among companies, leads to a shift toward customer and supply chain relationship rather than focusing only individual company level. Today, no corporate leader believes that organizations can survive and prosper isolated from their channels of suppliers and customers. The ultimate core competency an enterprise may possess is not to be found in a temporary advantage it may hold in a product or process, but rather in the ability to continuously assemble and implement market-winning capabilities arising from collaborative alliances with their supply chain partners (David F.R., 2011).

According to Tan et al. (1998), nowadays the concept of SCM has received increasing attention from parts of people like academicians, managers, consultants, and business owners. 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 and enhancing organizational and overall supply chain performance (Li et al., 2006).

Chen and Paulraj (2004) found that the origin of SC concept has its inspirations from the fields of quality revolution, materials management and integrated logistics, interest in industrial markets and networks, and the ideas of increased focus as well as influential industry-specific studies. With the increasing need to decrease costs, increase quality of products and improved level of customer service in the 1980's, and coupled with the intense global competition, this gave rise to the emergence of SCM concept.

According to David, Edith, and Michael (2004), effective SCM practice help company to efficiently integrate suppliers, manufacturers, warehouse and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements.

The construction industry processes and products are unique and ranges from high complexity and uncertainty, consumer influence on product, fragmented state of its processes, complex

network of stakeholders involving many organizations as well as relationships (Aloini, Dulmi, Mininno, and Ponticelli, 2012). The traditional project management techniques have been redesigned reconceived to achieve the desired service parameters and time limits in Construction Industry. Hence, the traditional approach to the control of the construction supply chain is not adequate any more, and a shift of methods for managing the supply chain is needed (Ruben & Lauri, 2000).

The basic Supply Chain Management (SCM) techniques have been used extensively in production industry and these are finding its way in construction industry. Construction businesses are beginning to realize that their success is increasingly dependent on the organizations they supply to and buy from, and that for continued success they need to cooperate and collaborate across customer/supplier interfaces (Egan, 1998). As stated by Ahmed, Azhar, and Ahmad (2002), the supply chain within the context of a construction project can be said to be a scenario where the client comes first, this is closely followed by the designer, contractor, specialist contractors/subcontractors/suppliers thus forming a cluster of supply chains.

SCM has significant role to improve the productivity and profitability of Construction industry. It ensures dependable material and labors flows to the site to avoid disruption to the work flow, facilitates logistics and reduces lead-time and inventory cost, as well as enables integrated management and improvement of the supply chain. At the end, it reduces total cost and duration, improve customer service and satisfaction and increase productivity and profitability of the industry as the whole (Ruben and Lauri, 2000). The key goal of SCM is to bring down inventory to the barest minimum and regulate supplier's interaction along the production line more effectively. The objective of SCM is to be able to get the right products in the right quantities, at the right moment with minimal cost. Furthermore, such objectives could be converted into a precise area of interest like flexibility, delivery, reliability, effective lead/delivery time and minimum inventory (Cutting-Decelle, Young, Das, Case, Rahimifard, Anumba and Bouchlaghem, 2007).

The performance of the supply chain is affected by different factors. One of the most important factors influencing the performance of supply chain is strategic supplier alliances (Narasimhan and Jayaram, 1998). The other factor is having good relationships with customers, which are needed for successful implementation of SCM programs (Moberg, Cutler, Gross and Speh,

2002). 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 (Magretta 1998). For example, strategic supplier partnership has been reported to yield organization-specific benefits in terms of financial performance. Advanced design and logistic links with suppliers are related to better-performing plants. Customer relation practices have also been shown to lead to significant improvement in organizational performance. The higher level of information sharing is associated with the lower total cost, the higher-order fulfillment rate and the shorter-order cycle time (Wisner, 2001). Furthermore, Wang, Wang, Cheung, and Xie (2008) stated that integration and coordination across supply chain can be well provided through information sharing.

Operational performance is a source of competitive advantage for the enterprise to differentiate itself in the eyes of the customers from its competitors by operating at a lower cost and hence at a greater profit (Christopher, 1992). Operational performance is measured by using price/ cost, quality, delivery, flexibility and time to market. Whereas, organizational performance refers to how well an organization achieves its market-oriented goals as well as its financial goals. The short-term objectives of SCM are primarily to enhance production performance, while long-term objectives are to increase market share and profits for all members of the supply chain (Tan, Kanna and Handfield, 1998). Li, Bhanu, Ragu-Nathan and Subba (2006) also stated that any organizational initiative, including supply chain management, should ultimately lead to enhanced organizational performance.

YOTEK Construction Plc is one of private limited company that operates construction activities in Ethiopia and is the focus of this study. YOTEK Construction Company engaged on Real Estate construction, Road construction and different building construction work. The company creates job opportunity for more than 600 workers that are engaged on different construction projects and head office level. Out of which 129 have been working in Addis Ababa.

Therefore, the researcher was intended to study SCM practice and test relationships with operational performance and organizational performance of the case company.

## 1.2 Statement of the Problem

Higher levels of supply chain management practice can lead to enhanced competitive advantage and improved organizational performance. Supply chain management practice is expected to increase an organization's market share, return on investment, and improve overall competitive position Li et al (2006),

As stated by Nawaz & Ikram (2013), despite the contribution of the construction industry, its performance and potentials has been affected by a myriad of problems ranging from wastage of construction materials, re-works, scraps and stakeholder's dissatisfaction amongst others. Moreover, the construction industry has been criticized for its less than satisfactory performance, its fragmentation and its adversarial orientation to procurement. The literature study shows that Infrastructure construction supply chain is poorly managed. It is found that non-value adding activities include waste of time and materials are caused by in-effective communication between supply chain participants (O'Brien, 1999).

Customer-supplier relationships in construction are generally of the arms-length type rather than being partnerships because the commonly used competitive tendering to procure projects assures that sub-contracting is provided by the lowest-price supplier with little or no guarantee (or even incentive) to future work. Traditionally, project information exchange between designers and contractors has been mainly based on paper documents. These documents come in the form of architectural and engineering drawings, specifications, and bills of quantities and materials. This practice is far from being satisfactory, with about two-thirds of construction problems being caused by inadequate communication and exchange of information and data. Although there is a need for integration of the various actors in construction sector and with the increasing complexity of construction projects, availability of inadequate support of information technology was another challenge in the industry (S.N. Tucker, S. Mohamed, D.R. Johnston, S.L. McFallan and K.D. Hampson, 2001).

Despite the increased attention paid to SCM, the literature has not been able to offer much by way of guidance to help the practice of SCM that is applicable to every situation (Cigolini et al., 2004). There is large evidence that cultural, social and economic aspects of each country do

influence the link between SCM practices and performance (Harland, 1997; Mentzer et al., 2001, and Kaufmann & Carter, 2006).

A number of studies on studies on SCM practices had been conducted in Ethiopia on various manufacturing industry. Admaw (2010) studied the practice of SCM for Ethiopian textile firms. It was found that, SCM practices in Ethiopian textile firms are weak and not considering SCM as a strategic tool for competition. Business managers of the textile firms didn't give attention for SCM theories and practices. Also Dereje, (2012) studied the impact of SCM practices on the organizational performances in metal and engineering industries. The result of the study shows that the implementation of SCM in this industry is weak. Also the SCM practices don't have any relationship with organizational performances except internal lean practices.

Wondimieneh (2013) study on Supply Chain management Practice of Pharmaceuticals Manufacturing Companies of Ethiopia in Ethiopian Pharmaceuticals Manufacturing Sharing Company. His study found that no long term relationship with most of the suppliers, there is information sharing between departments, but not with suppliers and distributors, there were no on-time and direct delivery to most of its customers. Mustefa (2014) also study on Supply Chain Management Practices and Firm Performance in Case of Awash Tannery Plc. He focus on the relationship between SCM practice and operational as well as organizational performance on the variables of strategic supplier partnership, customer relationship, level of information sharing, level of information quality, internal lean process. He found that there was strong correlation between each variable with operational and organizational performance.

 But there was very limited research had done on construction industry as far as my knowledge. For instance, Moges (2015) study Practice and challenge of SCM on Ethiopian Private Grade one Road Construction Companies by selecting five companies among the twenty three companies and select seven sample sizes from each company. His study was focus on the practice and challenge of SCM practice as well as assessing collaboration level within supply chain members. He found that there were moderate level performance in supplier and customer relationship, internal operation and information sharing, while low performance on application of information technology and training practice.  However, his study had not sought to demonstrate the relationship between supply chain management practice and firm performance.

This study has focused on to address the gaps of the previous study; focusing on SCM practice and impact on firm performance that determined in terms of operational and organizational performance. In addition, as compared to Moges (2015) works, this study focuses on the case company of YOTECK construction by collecting the data from larger population to determine SCM practice and impact on firm performance.

### 1.3 Research Questions:

1. What are the current supply chain management practices of the Company?
2. What is level of Collaboration/ integration among the supply chain partners?
3. What are the relationship between SCM practice and operational performance?
4. What are the relationship between SCM practice and organizational performance?

## 1.4 Objective of the study

### 1.4.1 General objective

The overall purpose of this study is to assess supply chain management practice and to make empirical test between the relationship of SCM with operational and organizational performance.

### 1.4.2 Specific Objectives:

1. To assess the current SCM practice of YOTEK construction company
2. To assess the extent of Collaboration/ Integration among the Supply Chain partners
3. To analyze the relationship between supply chain management practice and operational performance.
4. To analyze the relationship between supply chain management practice and organizational performance

## 1.5 Research Hypothesis

Prior studies have indicated that the various components of SCM practices (such as information sharing) have an impact on organizational performance. For example, Information sharing leads to high levels of supply chain integration (Li et al., 2006) by enabling organizations to make dependable delivery and introduce products to the market quickly. The higher level of

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information sharing is associated with the lower total cost, the higher-order fulfillment rate and the shorter-order cycle time (Moslem, 2013). Based on these arguments it is hypothesized that:

**Hypothesis 1**: There is relationship between SCM practices and operational performance

Having a competitive advantage generally suggests that an organization can have one or more of the following capabilities when compared to its competitors: lower prices, higher quality, higher dependability, and shorter delivery time. These capabilities will, in turn, enhance the organization's overall performance. Therefore, a positive relationship between competitive advantage and organizational performance can be proposed.

*Hypothesis2.* There is relationship between SCM practices and organizational performance.

Other studies have indicated that the various components of SCM practices (such as strategic supplier partnership) have an impact on various aspects of competitive advantage; such as market share, return on investment, growth of market share, growth of sales, growth of return on investment, profit margin on sales and overall competitive position

The above two hypotheses, taken together, support the SCM framework presented in Fig. 1.

### 1.6 Significant of the study

Since construction industry is the most complex and highly fragmented activities, its management also very challenging. The study assess supply chain management practice and extent of collaboration across supply chain members in construction industry and test the relationship between supply chain practice dimensions with performance. Thus, the result of this study contributes for corporate managers, academicians, policy makers and for business practitioners. Moreover, it serves as a spring board for further research in the topic related.

## 1.7 Scope and limitation of the Study

### 1.7.1 Scope of the study

SCM comprehends vast area of managerial practices. However, due to shortage of time, finance and manageability issue, the study is delimited to SCM practice and firm performance of one selected Construction industry; the case of YOTEK Construction PLC. The conceptual scope of the research is also limited to areas of SCM practices such as supplier relationship, customer relationship, level of information sharing, level of information quality and use of information technology. The study not intended to analyze the information gathered from supplier's side and the ultimate customer of the product due to time and budgetary constraints.

### 1.7.2 Limitation

It is difficult to cover the entire supply chain actors with the limited time available for this study. The research sample did not include all the supply chain participants such as suppliers and customers due to time constraints and therefore, the findings couldn't be generalized to the company under investigation.

## 1.8 Organization of the paper

This thesis paper is organized into five chapters: Chapter one contains the introduction part dealing with back ground of the study, the research problem, and objectives of the study, scope and limitation, significance of the study and organization of the paper. The second chapter discusses the literature review about the subject matter. In chapter three, the research methodologies were presented. Chapter four present results and discussion of the study and finally, chapter five present the major findings, conclusions and recommendation as well as implication for future research.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Theoretical Review of Related Literature

### 2.1.1　Concept and Definition

#### a) Supply Chain

Handfield and Nichols defined generic supply chain and supply chain management; they think the supply chain encompasses all organizations and activities related with the flow and transformation of goods from the raw materials stage to the final customer, as well as the associated information flows. Whereas, supply chain management is the integration and management of supply chain organizations and through building integrated organizational relationships, effective business processes, and high levels of information sharing to create high-performing value systems that provide actors in organizations a sustainable competitive advantage (Handfield and Nichols, 2002).

Supply chain by Christoper (1998) defined as a network of various organizations involved both through upstream and downstream linkages in different kinds of activities and processes. The term "supply chain" contains several interdependent steps of activities, including order of process and overlapping process as well as flows between them, supported by infrastructure (people, equipment, building, software, etc.)

#### b) Supply Chain Management

The concept of Supply chain management has been defined by several authors. Tan, et al. (2002) defines SCM as the simultaneous integration of customer requirements, internal requirements and upstream supplier performance. Council of Logistics Management (CLM) defines SCM as the systemic, strategic coordination of the traditional business functions and tactics across these businesses functions within a particular organization and across businesses within the supply chain for the purposes of improving the long-term performance of the individual organizations

and the supply chain as a whole. SCM has been defined to explicitly recognize the strategic nature of coordination between trading partners and to explain the dual purpose of SCM: to improve the performance of an individual organization, and to improve the performance of the whole supply chain (Li et al., 2006).

As Li et al. (2006) described, SCM is a concept which its goal is to integrate both information and material flows seamlessly across the supply chain as an effective competitive weapon. Li et al. (2006) also stated that SCM applies to show the collaborative relationships of members of different echelons of the supply chain and refers to common and agreed practices performed jointly by two or more organizations.

### 2.1.2 Supply Chain Management in Construction Industry

The construction industry in general is highly fragmented with significant negative impacts- low productivity, cost and time overrun, conflicts and disputes, resulting in claims and time consuming litigation. This has been acknowledged as the major cause of performance-related problems facing the industry. Some of the consequences of the fragmentation problem include (Evbuomwan and Anumba, 1998):

i.    inadequate capture, structuring, prioritization and implementation of client needs;
ii.   the fragmentation of design, fabrication and construction data, with data generated at one not being readily re-used downstream;
iii.  development of pseudo-optimal design solutions;
iv.   lack of integration, co-ordination and collaboration between the various functional disciplines involved in the life-cycle aspects of the project; and
v.    Poor communication of design intent and rationale, which leads to unwarranted design changes, inadequate design specifications, unnecessary liability claims, and increase in project time and cost.

To overcome industry fragmentation, a number of integration approaches and strategies, and their successful applications in manufacturing and other industries have been recommended (Mohamed, 1997). These include design-and-construct, design-for-construction, con-current engineering, lean construction, business process reengineering, and a variety of others.

Unfortunately, these approaches have proved inadequate to cope with the increasing complexity of construction projects, without the support of information technology (Mokhtar and Bedard, 1995). Also, most of these approaches have tried to focus on elements linked to time, quality and/or cost, but research noted that 85% of commonly associated problems are process related, and not product related.

Project Information in construction is also produced by many sources, at many levels of abstraction and detail, contributes to fragmentation of the construction industry (Froese, Rankin and Yu, 1997). Traditionally, project information exchange between designers and contractors has been mainly based on paper documents (Luiten, Tolman and Fischer, 1998). The research shows that about two-thirds of the construction problems are caused by inadequate communication and exchange of information and data. Therefore, it is not surprising for communications/networking via IT to be regarded in the construction industry as the most important opportunity for the future.

In general, Vrijhoef and Koskela (2000) characterized the supply chain in construction as: converging at the construction site where the object is assembled from incoming materials, temporary producing one-off construction projects through repeated reconfiguration of project organizations separated from the design and typical make-to-order supply chain, with every project creating a new product or prototype.

Since the 1990s there has been an increased interest of supply chain management theories to understand and characterize the deficiencies and to propose solution to improve the coordination of the often many subcontractors and suppliers in the construction supply chain. This action helps to improve the efficiency and productivity of construction industry. Although effective management and co-ordination of supply chain is important, because of the massive amounts of documents involved in a construction project, the necessary coordination is amenable to SCM.

**General structure of construction supply chain (CSC)**

CSC includes the flow of information ,materials, services or products, and the flow funds between client, designer, contractor and supplier
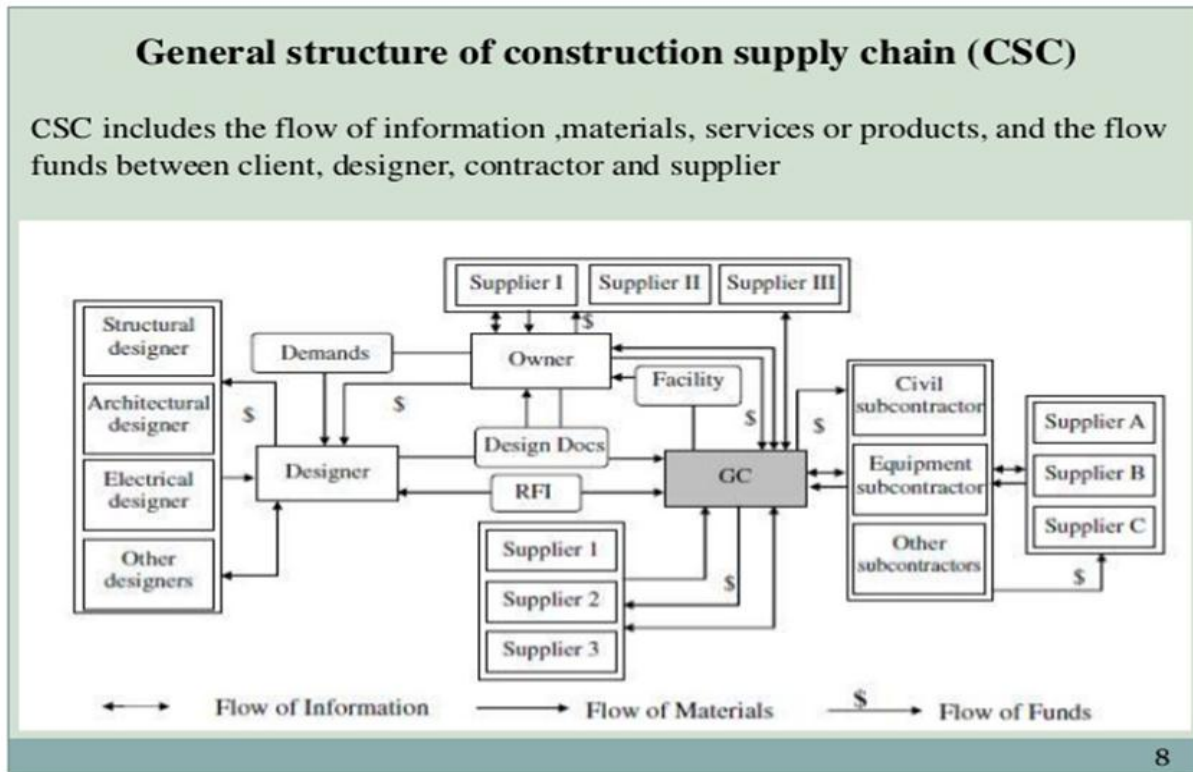
Source :- Vrijhoef and Ridder (2007)

Figure 2.1 General Structure of Construction Supply Chain

### 2.1.3   Principles of Supply Chain Management

To balance customers' demands with the need for profitable growth, many companies have moved aggressively to improve supply chain management. Their efforts reflect seven principles of supply chain management that working together can enhance revenue, cost control, and asset utilization as well as customer satisfaction. Successful implementation of these principles enhances creation of delighted customers and improved profit margins for the organization. The seven principles of supply chain managements are: Customer segmentation, Customizing logistics networks, Demand planning, Product differentiation, Sourcing suppliers strategically, Integration of technology and Performance measures (Aregawi, 2006).

Rejecting the traditional view of a company and its component parts as distinct functional entities, managers realize that the real measure of success is how well activities coordinate across

the supply chain to create value for customers, while increasing the profitability of every link in the chain.

Adherence to the seven principles transforms the pull of war between customer service and profitable growth into a balancing act. By determining what customers want and how to coordinate efforts across the supply chain to meet those requirements faster, cheaper, and better, companies enhance both customer satisfaction and their own financial performance. But the balance is not easy to strike or to sustain. In general, the seven principles include:

**A. Customer segmentation:** It is grouping customers by industry, product, or trade channel and then taken a one-size-fits-all approach to serving them.

**B. Customizing logistics networks:** It is a logistics network design in organizing their inventory, warehouse, and transportation activities to meet a single standard.

**C. Demand planning:** Many consult the marketplace only informally, and few involve their major suppliers in the process. Such independent, self-centered forecasting is incompatible with excellent supply chain management. It needs coordination of manufacturing scheduling and inventory deployment to manage end users demand.

**D. Product differentiation:** Manufacturers have traditionally based production goals on projections of the demand for finished goods and have stockpiled inventory to offset forecasting errors. These manufacturers tend to view lead times in the system as fixed, with only a finite window of time in which to convert materials into products that meet customer requirements.

**E. Sourcing suppliers strategically:** Determined to pay as low a price as possible for materials, manufacturers have not traditionally cultivated warm relationships with suppliers. While manufacturers should place high demands on suppliers, they should also realize that partners must share the goal of reducing costs across the supply chain in order to lower prices in the marketplace and enhance margins. The logical extension of this thinking is gain-sharing arrangements to reward everyone who contributes to the greater profitability.

**F. Integration of technology:** To sustain re-engineered business processes, many progressive companies have been replacing inflexible, poorly integrated systems with enterprise-wide information technology system for day to day transaction, electronic commerce cross the supply

chain and thus help align supply and demand by sharing information on orders and daily scheduling.

**G. Performance measures:** It requires adopting measures that apply to every link in the supply chain include both service and financial metrics. These include; (i) measure service in terms of the perfect order - the order that arrives when promised, complete, priced and billed correctly, and undamaged and (ii) determine their true profitability of service by identifying the actual costs and revenues of the activities required to serve an account, especially a key account (Anderson et al., 1997).

### 2.1.4   SCM Practices/ Measurement

SCM practices have been defined as a set of activities undertaken in an organization to promote effective management of its supply chain. SCM practices are multi-dimensional which affect the performance of partners in the supply chain. SCM practices were studied by different researchers from different perspectives. Donlon (1996) describes the evolution of SCM practices, which include supplier partnership, outsourcing, cycle time compression, continuous process flow, and information technology sharing. Tan et al. (2002) identify six aspects of SCM practice through factor analysis: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity, and just in time capability.

Chen and Paulraj (2004) presented SCM framework/practice that encompassed three dimensions: supply network structure, characterized by strong linkages between members, low levels of vertical integration, non-power based relationships; long-term relationships, managed with effective communication, cross-functional teams, and early supplier involvement in crucial projects, planning processes; and logistics integration. Min and Mentzer (2004) identify the practices of SCM as including agreed vision and goals, information sharing, risk and award sharing, cooperation, process integration, long-term relationship and agreed supply chain leadership.

Thus the literature describes SCM practices from a variety of different perspectives with a common goal of ultimately improving organizational performance. In reviewing and consolidating the literature, five distinctive dimensions, including upstream (strategic supplier

partnership) and downstream (customer relationship) sides of a supply chain, information flow across a supply chain (level of information sharing and quality of information sharing as well as Information Technology) are selected for measuring SCM practice. It should be pointed out that even though the above dimensions capture the major aspects of SCM practice, they cannot be considered complete, but they are the focus of this study due to time limitation and for manageability purpose.

**2.1.4.1** *Strategic Supplier partnership*

Strategic Supplier partnership is defined as the long term relationship between the organization and its suppliers. Strategic supplier partnership emphasizes direct relationship and long-term and encourages mutual planning and efforts to resolve problem. Supplier and organizations can work together more closely and eliminate useless time and effort. Effective partnerships with suppliers can be critical factor to guide supply chain management (Li et.al., 2006). 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.

Many companies believe strongly that better supplier partnerships are important to achieving competitive corporate performance. As such, companies are realizing the importance of developing win-win, long-term relationships with suppliers. It is critical that customers and suppliers develop stronger relationships and partnerships based on a strategic rather than a tactical perspective and then manage these relationships to create value for all participants. Successful partnerships with key suppliers can contribute to innovations and have the potential to create competitive advantage for the firm. Selecting the right supply partners and successfully managing these relationships over time is thus strategically important; it is often stated that "a firm is only as good as its suppliers (Joel, Wisner, Keah-Choon and Keong, 2012). Coordinating operational activities through joint planning with suppliers also results in inventory reduction, smoothing production, improve product quality, reducing supply uncertainty and lead time reduction (Lee, 2002).

Sandikiglu and Zehir (2010) stated that in strategic supplier partnership, suppliers play more direct role in an organization's quality performance. Furthermore, Hanfied and Nichols (2004) have found that suppliers relationship have to be maintained positive even when the firms facing in economic challenges. If companies manages it' suppliers strategically, operational performance, in terms of dependability, flexibility, cost, and quality, could be improved (Rungtusanatham, Salvador, Forza and Choi, 2003).

In construction project commonly exists the adversarial standpoint between main contractors and their suppliers. Due to the characteristics of temporary project in Construction, the temporary contract negative influence the long-term relationships between main contractors and suppliers are an ordinary thing.

Measuring supplier performance is important tasks to improve the relationship and the performance. Measures related to quality, cost, delivery and flexibility have traditionally been used to evaluate how well suppliers are doing. Information provided by supplier performance will be used to improve the entire supply chain. Thus, the goal of any good performance evaluation system is to provide metrics that are understandable, easy to measure and focused on real value-added results for both the buyer and supplier. By evaluating supplier performance, organizations hope to identify suppliers with exceptional performance or developmental needs, improve supplier communication, reduce risk and manage the partnership based on an analysis of reported data ( Joel et al., 2012).

### 2.1.4.2 *Customer Relationship Management*

Because of the intense competitive environment in most markets today, customer relationship management has become one of the leading business strategies and potentially one of the most costly. Customer relationship management becomes necessary as soon as a company finds a market and some customers for its products and services. Over time, value continues to be demonstrated to customers through reliable on-time delivery, high quality products and services, competitive pricing, innovative new products and services, attention to various customer needs and the flexibility to respond to those needs adequately. Managing customer relationships starts with building core competencies that focus on customer requirements, and then continues with

delivering products and services in a manner resulting in high levels of customer satisfaction ( Joel et al., 2012).

According to Li et al., (2006), all the practice for managing customer relationships could be source of competitive advantage. For example, managing customer complaints, building long-term relationships, and improving customer satisfaction are effective methods of managing customer relationship. Hence, integration with chosen customers will build permanent uniqueness for the companies in the supply chains.

Rungtusanathanm et al., (2003) argues that a firm engaging on long-term relationship with its customers can reduce demand uncertainty, improve its customer's service and ultimately decrease cost for stocking and warehouse management. It also needed that the company should strive to individualize its customer relationship and this creates loyalty. Flint (2004) states similarly, that companies should view the supply chain from customer's point of view. The companies must able to understand, compare, contrast and merge the attributes the disparate customers could desire. Flint (2004) adds that customer learning will help to predict customer needs both regionally and globally, and would then generate competitive advantage.

Furthermore, Rungtusanathanm et al., (2003) argues that, if the companies interact with customer in issues related to quality and material flows, they could enhance their operational performance in terms of speed and delivery accuracy. Also customer's information would be gaining competitive advantage for the companies; customers forecasts, order statuses, sales statics and marketing campaigns are few example. Just like strategic supplier partnership, building long-term and profitable relationship with customers' needs mutual benefits and trust. By having trusting customers, the company can further develop their relationship and deepen the co-operation with the customers and the joint effort benefits both than they can achieve independently.

Today, customer relationship management (CRM) has come to be associated with automated transaction and communication applications using software modules or a portion of the larger enterprise resource planning system. Customers today like the convenience of communicating or transacting over the Internet; however, individualized contact between a company and its customers is also needed to ultimately keep customers satisfied and coming back.

### 2.1.4.3 Level of Information sharing

Information flow is the element in the supply chain that gives the different actors the possibility to plan their activities. Fundamentally, information and trust are the basis of every profitable relationship. Information sharing refers to ability of enterprises to share knowledge and information with supply chain partners with effective and efficient manner. Information sharing in interactive system of supply chain includes information between direct partners and all network of supply chain. For effective and efficient use by partners is needed sharing information. The level of information sharing is closely linked with accountability and efficiency (Rahmanseresht and Afsar, 2008).

Furthermore, Alireza et al. (2011) stated integration and coordination across supply chain can be well provided through information sharing. Information sharing is considered as one of five building blocks that characterize a solid supply chain relationship. 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.

Effective use of relevant and timely information by all the functional elements in the supply chain is considered as a competitive factor and distinctive (Ahmadi, 2005). Failures can occur in case of information delays, shortage or distortion across the supply chain (Power, 2005). The impact of information sharing on SCM depends on what information is shared, quality on shared information, and company's capability in using and translating the information in to a supply chain strategy and operational activities (Moberg et al, 2002).

### 2.1.4.4 Level of Information quality

The way companies share information whatever the confidential level or not; determines the success of the collaboration. The nature of information to be across the supply chain differs based on the degree of integration, institutional trust and availability of infrastructure that facilitate the practice (Lazarevic, Sohal and Baihaqi, 2007).

Quality of information sharing includes aspects such as the accuracy, timelines, adequacy, & credibility of information exchanged (Tan et al. 1998). As information sharing is vital, its major

impact on supply chain management depends on what information is shared, when & how it is shared, & with whom it is shared The objective of supply chain management is to quickly obtain real-time information, minimize cost, increase levels of service, improve communication among supply chain components, and increase flexibility in terms of delivery and response time (Moberg et. al. 2002).

Based on Li et al. (2006), organization needs to review their information as a strategic asset and ensure that the information flows with minimum delay and distortion. In addition, the information shared must be accurate so that the best SCM solution will be obtain. Effective use of relevant and timely information by all the functional elements in the supply chain is considered as a competitive factor and distinctive (Ahmadi, 2005).

The empirical findings of Childhouse and Towill (2003) 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. Providing and transforms raw material to a product or service and delivers it to the customer is activities that is done in the supply chain.

### 2.1.4.5 Information Technology

Information Technology tools play a central role in SCM, because they guarantee consistent and efficient information management. Chopra and Meindl (2007), for example, make the point that "Information is potentially the biggest driver of performance in the supply chain because it directly affects … the other drivers". The development of the Internet and information technology has also brought new dimensions in the supply chain management. Utilizing information system allows critical and necessary information to be effectively communicated between supplier chain partners (Li et al., 2006).  As such, many researchers have suggested that information technologies may be beneficial to the construction industry by linking main contractors with their sub-contractors, by reducing the response time and by enabling companies' to expand their activities into new local and international markets.

In SCM, IT is highly regarded as a major enabler in achieving effective SCM. As a supply chain spans many organizations in developing products to customers both up-stream, downstream and

many functional areas within a company, the implementation of IT allows the companies to increase communication and coordination of various value adding activities with their partners and between functions within their own operation (Simchi-Levy, Kaminsky and Simchi-Levy, 2000).

With the advent of the information technology, it is possible to achieve the supply chain management for construction by seamlessly connecting all components in the construction chain with real-time information. These information technologies adapted in construction supply chain management include Internet, Intranet, Extranet, and Mobile devices (such as Personal Digital Assistant device). In addition, XML is introduced for standard and technology designed to accelerate data sharing by seamlessly integrating systems across the construction supply chain effectively (Ranjan, Henry and Pandey, 2014).

Despite the aforementioned possibilities, several studies have concluded that the application of IT construction industry is substantially less widespread than in other branches of industry. Many companies are relatively small and only have a regional focus, so that they have neither the financial nor human resources required to implement and maintain the necessary IT infrastructure.

In general, the use of information technology is a major indicator of SCM best practice, particularly if employed to connect customers, suppliers and value adding services (Power, Sohal and Rahman, 2001).

### 2.1.5   Supply Chain Collaboration / Integration/ in Construction

A traditional arms-length approach to business partnership is not an acceptable or not effective approach in the present forceful and aggressive global business environment.  Thus strategies are required to create a competitive advantage that allows for cost reductions, revenue enhancements, and flexibility when dealing with financial uncertainties. Supply chain management presents that opportunity through collaborative relationships that maximize desired service levels, minimize costs, and generate benefits to customers (Bowersox, 2000).

Collaboration can have a variety of meanings but for the purpose of this study the researcher adopt the definition from, Cohen, Rousell and Joseph (2004) that is: collaboration is the means by which companies within their supply chain work together toward mutual objectives through the sharing of ideas, information, knowledge, risk and rewards. Practically, coordination and collaboration of up-stream and down-stream of a supply chain is difficult because of uncertainty in demand and supply and the lack of communication between members of a supply chain which is amplified through successive linkages. Collaboration and teamwork is crucial in the construction industry since sharing up-to-date information between participant's leads to minimizing errors, reduction of time delays and breaking the widespread rework cycle. It also facilitates more effective procurement of construction materials and services beyond those traditionally associated with the project delivery system. Collaborative teamwork means sharing information and ideas about on-going work within a team engaged with given activities (Horvath and Varga, 1997).

Collaborative supply chain initiatives continue to be developed and gain prominence based on the assumption that closer inter-enterprise relationships and enhanced information exchange will improve the quality of decision-making, reduce demand uncertainty, and, ultimately, improve supply chain performance. Recent research studies have shown that collaboration offers promise for improved supply chain performance in several core areas, including increased sales, improved forecasts, more accurate and timely information, reduced costs, reduced inventory, and improved customer service (Angulo, Nachtmann and Waller, 2004).

## 2.1.5.1 Cooperative Behavior ( Trust and commitment)

Trust is the belief, willingness, and extent to which the partners rely on with whom one has confidence and will act in ways that will bring positive outcomes for the firms and does not want to take unexpected action that may bring a negative outcome (Ganesan and Shankar, 1994).

Commitment of trading partners in the supply chain is the willingness of each partner to exert effort on behalf of the relationship along the supply chain. Therefore, the two fundamental components for improving the relationship among supply chain are trust & commitment. Trust and commitment among the supply chain partners will improve the relationship with their future value.

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**2.1.5.2 Collaborative Planning, Forecasting and Replenishment (CPFR)**

CPFR is aimed improving collaboration between buyer and supplier so that customers' service is improved while inventory management is made more efficient. It is quite obvious that when each company has more information available regarding the customer demand the better the forecast may be. Therefore, in CPFR which was familiarized for the first time in 1995 by Wal-Mart, it was seen that collaboration is used to solve the errors in forecast (Ross 1998). The cooperative behavior, such as trust & commitment will influence both supply chain performance indicators.

**2.1.6   Effect of SCM Practice on Firm Operational Performance**

The competitive priorities literature in operations strategy can offer a useful approach to measure operational performance. Operational performance is a source of competitive advantage for the enterprise to differentiate itself in the eyes of the customers from its competitors by operating at a lower cost and hence at a greater profit (Christopher, 1992).

The concept of competitive advantage is directly related to desired value of the customer. Competitive advantage includes set of capabilities and factors that always demonstrated better performance of company than competitors (Sadri and Lees, 2001). In other words, competitive advantage is factors or a combination of factors that led to very successful organization than other organizations in a competitive environment and competitors cannot easily imitate it. Therefore, to achieve a competitive advantage, an organization must also pay attention to their external position and internal capabilities (Mehri and Hosseini, 2005).

Many empirical literatures have been quite consistent in identifying price/cost, quality, delivery, and flexibility as important competitive priorities which can be conceptualized as measures of operational performance. Li et al. (2006) also describes the dimensions of the competitive advantage constructs are price/cost, quality, delivery dependability, product innovation, and time to market. Based on the above used study, the researcher adopts price/ cost, quality, delivery and time to market as dimensions of competitive advantage to measure operational performance in this study.

### 2.1.7   Effect of SCM Practice on Firm Organizational performance

Organizational performance refers to how well an organization achieves its market oriented goals as well as its financial goals (Li et al., 2006). The short-term objectives of SCM are primarily to increase productivity and reduce inventory and cycle time, while long-term objectives are to increase market share and profits for all members of the supply chain (Tan et al., 1998).

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 (Li et al., 2006). In line with the above literature, the same items will be adopted to measure organizational performance in this study.

Market share, return on investment, the growth of market share, the growth of sales, growth in return on investment, profit margin on sales and overall competitive position are adapted as organizational performance measures in this study.


### 2.2 Empirical Literature Review

On the research topic Supply Chain Management practice, Adebayo (2012) conducted study on SCM Practices in Nigeria Today: Impact on SCM Performance. The SCM practices considered in this paper were namely strategic supplier partnership, customer relations practices, information sharing, information quality and postponement. This paper provides empirical justification for five key dimensions of SCM practices identified and describes the relationship among SCM practices and SCM performance as well as the impact of these practices on SCM performance. The study thus showed that SCM practices definitely impacts SCM performance.

The researchers (Wong et al., 2005) have also attempted to find the applicability of construction SCM on ground by floating questionnaires and taking feedbacks. It has been reported that implementation of SCM in construction has been filled with obstacles. The major problems in the findings are; unfair allocation of risks and benefits commonly adopted in current contracting

systems impede the effective use of SCM in construction. In addition, the degree of seriousness of these problems is found to vary with the scale and duration of projects.

SCM practices and challenges in different industry of Ethiopia were studied in different dissertations. The results of different researches in the practices of SCM in different commercial sectors of Ethiopia are poor.

SCM practices and challenges in different industry of Ethiopia were studied in different dissertations. The results of different researches in the practices of SCM in different commercial sectors of Ethiopia are poor. Admaw (2010) studied the practice of SCM for Ethiopian textile firms. It was found that, SCM practices in Ethiopian textile firms are weak and not considering SCM as a strategic tool for competition. Business managers of the textile firms didn't give attention for SCM theories and practices. Also Dereje, (2012) studied the impact of SCM practices on the organizational performances in metal and engineering industries. The result of the study shows that the implementation of SCM in this industry is weak. Also the SCM practices don't have any relationship with organizational performances except internal lean practices. In addition, Belay, (2011) studied the practices of SCM in cement industries. The result of the thesis shows similar to other industries in the country i.e. the practice of SCM in cement industry is almost poor. There seems that since the demand outweighs the supply of the cement, which contributes for not using SCM as a competitive strategy.

Mesfin (2007) also studied the SCM and model development study as a case study of Mesfin Industrial Engineering plc. The result of this study shows that most of the employees of the company don't have awareness of SCM. The company also don't use supply chain cost analysis rather than using the traditional accounting system. Also there are problems in their warehouses. Besides to the above machine handling problem, ageing, poor preventive maintenance, lack of proper operation, and wear of spare parts are the main reasons for the breakage of machines in Mesfin Industrial Engineering.

Mogus (2015) studies Practice & Challenge of SCM on 11 Ethiopian Private G-1 Road Construction Companies. Major finding shows that; on the degree of relationship across supply chain characterized by less joint product planning with suppliers, but better relationship with customers; information sharing practice of SCM in the case companies is generally moderate, but

poor information sharing on material forecast with suppliers; there is poor and absence of IT & information system within the case companies. Despite the increase of empirical research available on manufacturing sectors, only limited empirical studies undertaken on construction Industry, use of units of analysis, and approaches of performance measurement also varies.

## 2.3 Conceptual Framework

In the study, SCM will be conceptualized as a five- dimension construct.  The five dimensions are strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing and Information Technology. Using literature support and particularly the work of Li et. (2006) and Moslem, Elham, Mohammad and Enayati (2013), the expected relationships among SCM practices, operational performance, and organizational performance will be discussed, and hypotheses relating these variables will be developed as follows:
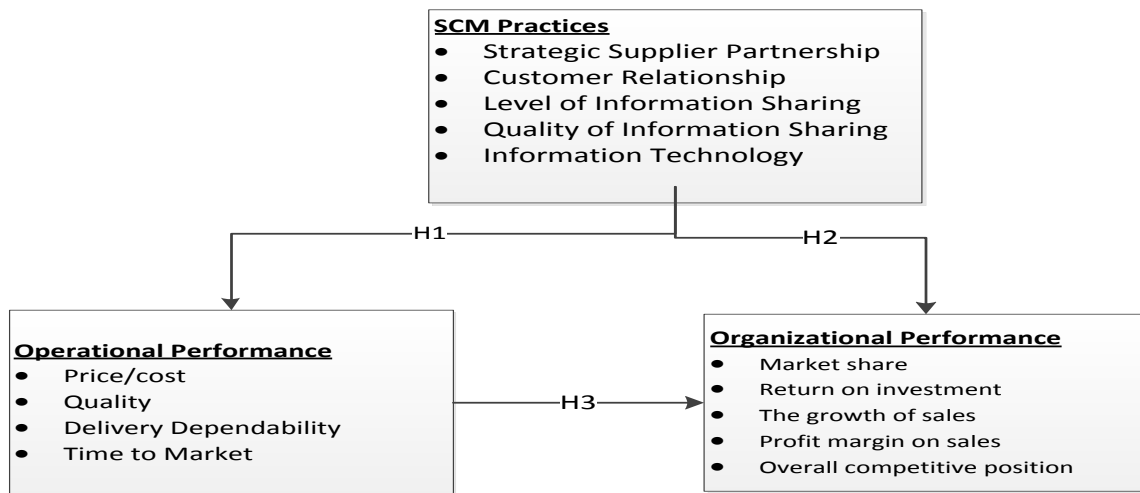


Source: adapted from Li et al. (2006) and Lenny et al. (2007).

Figure 2.2. Conceptual Framework of the study

# CHAPTER THREE

# RESEARCH METHODOLOGY AND DESIGN

## 3.1 Research Design

The research design enables the researcher to answer the basic research question. According to saunders, Lewis and Thornhill (2009) showed that the choice of research design depend on the objective of the study, the availability data source, the cost of obtaining the data and the availability of time.The purpose of this research is to examine supply chain management practice and impact on firm performance. Therefore, the research has employed descriptive study to describe about the SCM practice and use causal study to show relationship of independent variables of SCM practice and firm performance.

## 3.2 Sample and Sampling Techniques

According to Hair, Joseph, William, Black, Barry, Babin, Ronald and Tatham (2010), target population is said to be a specified group of people or object for which questions can be asked or observed made to develop required data structures and information.

## 3.2.1 YOTECK Construction Plc.

The target populations for this study are employees of YOTEK Construction Plc., who are working in Addis Ababa office, particularly those their education level is certificate and above and those employee working in the department related with supply chain management activities. For the purpose of this study, the researcher used purposive sampling technique. Since the study focus on those people who have knowledge and awareness about different supply chain management practices/dimensions, operational performance and organizational performance of the firm, such sampling techniques were used to collect the information through questionnaires from every concerned department or section and interview of few responsible management bodies.

The total numbers of workers in YOTEK Construction Plc., who have been working at Addis Ababa office, are 129. However, majority of workers are non-professional who are not have knowledge related to SCM such as, drivers, messengers, guards, daily labor, janitress etc) and those who are not concerned departments also couldn't be taken as target population. Therefore, the remaining 46 concerned employees (concerned department) were considered as target population and the questionnaires were distributed for 46 concerned people.

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### 3.2.2 YOTECK Supply Chain Members

### 3.2.2.1 Supplier of YOTECK Construction PLC.

YOTECK Construction Company purchase row materials and equipment from various suppliers that produced the raw materials and equipment domestically and imported items from distributers. The major suppliers were Derba MIDROC Cement, EKT Trade and Investment Plc., (MBI) Modern Building Industries PLC and East Steel PLC. Due to in accessibility and other limitations, interview were done with Derba MIDROC Cement and EKT Trade and Investment Plc., to analyze the relationship between YOTECK Construction with suppliers.

### 3.2.2.2 Customers of YOTECK Construction Company

YOTECK Construction PLC has various major customers in Addis Ababa and most of them were Educational Institutions and state owned enterprise such as Ethio Telecom, Addis Ababa University in Commerce and main Compass, and other Universities that found out of Addis Ababa. However, due to in accessibility to get information from all customers, interview were done only with those major customers found in Addis Ababa, such as Ethio Telecom and Addis Ababa University.

### 3.3 Data Type and Sources

There are two types of data, such as primary and secondary data used in the study. The primary data collected from YOTEK by using structured questionnaires and interviews. Using interview questions the data were collected from YOTEK procurement and Supply management and IT administrator. The secondary data also collected by document review from YOTEK to assess SCM practice and to test the relationship between SCM practices and firm's performance.

### 3.4 Procedures of Data Collection

Structured questioners were designed and then primary data collected from professionals who took part in supply chain management functions & company's managers. Questionnaires were prepared in English language and the types of questions are closed ended using five points liker's scale.

Questionnaire: Close ended questionnaire in a 5 point liker's scales was used to collect data from the sample respondents. The questionnaire has 5 rating scales ranging from 1-Very Low to 5-Very High. Data gathered through questionnaires is simple and clear to analyses and it allows for tabulation of responses and quantitatively analyzes factors.

Interview: In order to obtain sufficient information the researcher has used personal interview by management bodies of the case companies on the research issues like SCM practice & collaboration level.

### 3.5 Data Analysis Techniques

Before processing the responses, the completed questionnaires were edited for completeness and consistency. The data were analyzed by the help of two sets of statistics namely, descriptive and inferential statistics. Objective one which is assessing the supply chain practices adopted by YOTECK and objective two which is assessment of collaboration level among supply chain members were analyzed using descriptive statistics such as mean and standard deviation. Inferential statistics was used to analyze objective three and four, which were the relationship of

supply chain management practice with operational and organizational performance using Pearson's correlation coefficient and regression analysis. Specifically a dimension level analysis was also performed using regression analysis which was instrumental in indicating whether the independent variables of SCM practices significantly predict the dependent variable operational as well as organization performance.

Regression model: $Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + \varepsilon$ where Y = Operational or Organization performance; a= the y intercept when x is zero; $b_1$, $b_2$, $b_3$, $b_4$, $b_5$, are regression coefficients of the following variables respectively; $x_1$- strategic supplier management; $x_2$- customer relationship management ; $x_3$- level of information sharing ; $x_4$- quality of information sharing ; $x_5$- Information Technology.

## 3.6 Validity and Reliability Test

### 3.6.1 Assessing Reliability

According to Bryman and Bell (2007), reliability analysis is concerned with the internal consistency of the research instrument. As multiple items in all constructs were used, the internal consistency/reliabilities of SCM practices, operational performance, and organizational performance were assessed with Cronbach's Alpha and the reliability values for all constructs are confirmed as greater than 0.7, which are considered acceptable. The following table shows the summary of reliabilities of all constructs of supply chain management and all values are greater than 0.7, which confirms acceptability of the research instrument.

**Item-Total Statistics**

|  | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| SSP | 16.6183 | 2.163 | .696 | .860 |
| CR | 16.5039 | 2.258 | .685 | .864 |
| LIS | 16.4551 | 2.040 | .628 | .868 |
| LIQ | 16.5492 | 2.124 | .752 | .854 |
| IT | 16.9589 | 2.175 | .365 | .914 |
| OP. Performance | 16.4439 | 1.838 | .909 | .827 |
| Org. Performance | 16.3024 | 1.981 | .831 | .841 |

### 3.6.2 Analysis of Validity

Malhotra & Peterson (2006) mentioned about three types of validity in his study: content validity, predictive validity, and construct validity. This study addressed content validity through the review of literature and adapting instruments used in previous research.

### 3.7 ETHICAL CONSIDERATIONS

All the research participants included in the study were duly informed about the purpose of the study and their willingness and the agreement was secured before the beginning of filling the questionnaire and conducting interview. Regarding the right to privacy of the respondents, the study maintained the confidentiality of the identity of each participant. In all cases, names are kept confidential and collective names such as 'the respondents,' the participants; the interviewees etc. were used in the study.

# CHAPTER FOUR

# RESULTS AND DISCUSSION

This chapter presents the discussion and interpretation of data collected through questionnaires and interview. The discussion focuses respondent profile, SCM practices, and supply chain collaboration/ integration and about the relationship of SCM practices and Company performance.

A total of 46 questionnaires distributed to targeted employee of the company and 41 (89%) were returned; all are valid and used for analysis. Moreover, a structured interview questions were administered by face to face to procurement and supply manager and IT Administrator. The collected data were presented and analyzed using SPSS (version 20) statistical software.

The study used descriptive statics by computing mean and standard deviation to assess the level of SCM practice and extent of collaboration of the company with supply chain me members. In addition, correlation analysis, specifically, Pearson correlation was used to measure the degree of association between SCM variables and the company's operational and organizational performance. Furthermore, regression analysis was also used to test the effect of independent variable on dependent variable based on the research objectives. Thus, based on the responses obtained from the respondents data presentation and analysis were made as follows.

## 4.1 Descriptive Statistics

To examine the supply chain management practices of the company mean and standard deviation statistical analysis were performed  using variable such as strategic supplier relationship, customer relationship, level of information sharing, level of information quality and information technology. Among these statistical analysis tools mean value is an important indicator to determine the extent of the company's practice on each variables. The mean and group mean statistical values of approaching to 2.00 and less indicates poor performance, 3.00 indicates average/moderate, while 4.00, and 5.00, indicate higher and very high/excellent performance respectively.

**4.1.1 Respondents Demographic data**

The demographic profile of the sample respondents is presented below in Table 4.1. Most of the respondents (46.3%) were from supply and procurement department, while remaining 4.1%, 9.8%, 4.9% and 4.9% were from construction, store, Plant & Equipment maintenance and IT departments respectively.

The result of gender frequency analysis of the respondents showed that male respondents were higher (61.0%) than that of female (39.0%). Moreover, the research divided the age of the respondents in to six categories, and majority of the respondents (51.2%) found at age category of 25 – 30 years, while (31.7%) in 31-35 years and the least respondent (2.4%) in less than 25 years, whereas, no respondent in age category of above 40 years. Concerning educational background, majority of the respondents (90.2%) had first degree, 7.3% second degree or above and only 2.4% of them had diploma. In regard to respondents' service year experience, 48% and 39.0% of respondents had working experience between 2-5 and 6-10 years in the organization in the same order.

Table 4.1 Demographic data of the Respondents

| Variables | Category | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| Department | Construction Department | 14 | 34.1 | 34.1 |
| | Supply & Procurement | 19 | 46.3 | 80.4 |
| | Plant & Equipment Maintenance department | 2 | 4.9 | 85.3 |
| | IT department | 2 | 4.9 | 90.2 |
| | Store Department | 4 | 9.8 | 100.0 |
| | **Total** | **41** | **100** | |
| Sex | Male | 25 | 61.0 | 61.0 |
| | Female | 16 | 39.0 | 100.0 |
| | **Total** | **41** | | |
| Age | < 25 years | 1 | 2.4 | 2.4 |
| | 25-30 years | 21 | 51.2 | 53.7 |
| | 31-35 years | 13 | 31.7 | 85.4 |
| | 36-40 years | 6 | 14.6 | 100.0 |
| | 40-45 years | 0 | 0 | |
| | Above 45 years | 0 | 0 | |
| | **Total** | **41** | **100** | |

| | | | | |
|---|---|---|---|---|
| Education | Certificate | 0 | 0 | 0 |
| | Diploma | 1 | 2.4 | 2.4 |
| | First Degree | 37 | 90.2 | 92.7 |
| | Second degree & above | 3 | 7.3 | 100.0 |
| | **Total** | **41** | **100.0** | |
| Service Years | Under 2 years | 4 | 9.8 | 9.8 |
| | 2-5 years | 20 | 48.8 | 58.5 |
| | 6-10 years | 16 | 39.0 | 97.6 |
| | Above 10 years | 1 | 2.4 | 100.0 |
| | **Total** | **41** | **100.0** | |

Source: Researcher's Survey Result, 2017

## 4.1.2 Analysis of Supply Chain Management Practices

This research used descriptive statistical analysis based on the five components of the conceptual framework developed for this study to assess the level of supply chain management practice of the company under this investigation. The most common supply chain management practices are strategic supplier relationship, customer relationship, level of information sharing, level of information quality and information technology (Lazarovic et al., 2007).

## 4.1.2.1 Strategic Suppliers Relationship (SSP)

According to Sadikoglu and Zehir (2010), suppliers play more direct role in an organization's quality performance and this requires strategic partnership with supplier. The most commonly known characteristics of strategic supplier's relationships that mentioned by different authors are: cooperativeness, joint product planning and goal setting, long-term relationship, supplier performance measurement and motivation and others. To measure YOTEK Construction Company's orientation concerning the strategic Supplier Relationship (SSP), six items were developed in this research.

Table 4.2 below indicates the level of relationship that exists between suppliers and the case company. Accordingly, the group means of supplier's relationship was 2.68 and it indicated average/ moderate performance level with respect to the overall measures taken into consideration. Specifically, suppliers' performance measurement system and motivation and

reward to major suppliers as well as level of cooperativeness with suppliers had lower mean value of 2.56, 2.36 and 2.41 respectively. These mean values imply that YOTEK Construction Company had poor practice on supplier performance measurement, motivation of satisfactory suppliers and on cooperativeness with suppliers.

Table 4.2: Descriptive Statistics of Strategic Suppliers Relationship

| S/N | Items | N | Mean | Std. Deviation |
|-----|-------|---|------|----------------|
| 1 | Quality considered as top criterion in selecting suppliers | 41 | 2.7073 | .46065 |
| 2 | The level of cooperativeness with suppliers | 41 | 2.4146 | .54661 |
| 3 | Joint planning and goal setting with suppliers | 41 | 2.8780 | .50966 |
| 4 | Long-term relationship with suppliers | 41 | 2.9756 | .65145 |
| 5 | Suppliers performance measurement systems | 41 | 2.5610 | .54994 |
| 6 | Motivation and rewards for satisfactory suppliers | 41 | 2.3659 | .58121 |
| | Group Mean | | 2.6870 | |

(Source: Researcher's Survey Result, 2017)

On the other hand, quality focused criteria to selecting suppliers, joint planning and goal setting with suppliers as well as long term relationship with supplier's showed mean value of 2.70, 2.87 and 2.97 respectively and all approach to average/ moderate level of performance. This result indicated that there was a larger performance gap on strategic supplier relationship area.

EKT Trade and Investment Plc had years of experience in importing and exporting various European standards products and was the major suppliers of YOTECK in supplying Ceramics and other building finishing materials such as water pipe, sanitation wares, door box and different aluminum materials. According to interview response with EKT Trade and Investment Plc Sales and Marketing, there were very good relationship with YOTECK Construction Company. As the interview response indicates that there were strong cooperativeness, joint planning and goal setting between EKT and YOTECK. For instance, there were positive experience in supplying materials in the last five years; trust each other and EKT also support YOTECK by giving information about materials and equipment's cost during tenders

preparation for various projects and for project cost forecasting as joint planning effort. Although there was strong relationship, effort to discussion to improve relationship and performance between YOTECK and EKT, no any experience of rating performance of suppliers and no rewarding mechanism for best suppliers.

Derba MIDROC Cement (DMC) was another major supplier of YOTECK that provides cements for various projects. Interview response of Derba MIDROC Cement Sales and Marketing Supervisors indicates that there was close cooperativeness, joint planning and goal setting as well as long-term relationship with YOTECK. However, YOTECK did not have supplier's performance measurements system and motivation or reward of satisfactory suppliers.

According to Lee, (2002) Coordinating operational activities through joint planning with suppliers and customers results in inventory reduction, smoothing production, improve product quality, reducing supply uncertainty and lead-time. If the case company is not in a position to improve this and other supplier relationship practices, without any doubt the case company's suppliers have an opportunity to go to its competitor companies and this increase cost of production as well as affect profit margin and also a great possibility to loss its major customer.

### 4.1.2.2 Customer Relationship (CR)

According to Li et al., (2006), all the practice for managing customer relationships could be source of competitive advantage. For example, managing customer complaints, building long-term relationships, and improving customer satisfaction are effective methods of managing customer relationship. In addition, integration with chosen customers will build permanent uniqueness for the companies in the supply chains.

Table 4.3: Descriptive Statistics of Customer Relationship

| S/N | Items | N | Mean | Std. Deviation |
|-----|-------|---|------|----------------|
| 1 | Regularly monitoring customer satisfaction | 41 | 2.8537 | .35784 |
| 2 | Compliance with customer's delivery in- full requirements | 41 | 3.6829 | .47112 |
| 3 | Compliance with customer's delivery on time requirements | 41 | 2.2927 | .46065 |
| 4 | The level of cooperativeness with customers | 41 | 2.9268 | .46852 |
| 5 | Joint product planning with major customers | 41 | 2.8049 | .51086 |
| 6 | Long-term relationship with Customers | 41 | 2.7805 | .75869 |
| 7 | Strives and launches new products and services to the customers | 41 | 2.0976 | .37449 |
| | Group Mean | | 2.8014 | |

(Source: Researcher's Survey Result, 2017)

In general, as indicated in the above tables 4:3, average mean value of 2.8 showed that the company's performance with regard to customer's relationship was approach to moderate level. On the item of compliance with customer's delivery in- full requirements, it had mean value of 3.68 and this was high level performance as compared to the other. Whereas, level of cooperativeness with customers, regularly monitoring customer satisfaction, joint product planning and long-term relationship with customers had mean value of 2.92, 2.85 and 2.80 respectively and it approaches to average/ moderate level of relationship with customers. But very lower mean value had identified in new product launch and service deliver as well as compliance with customer's delivery on time requirements with the mean value of 2.09 and 2.29 respectively. This result indicated about of poor performance of the company related to addressing customer's desires of full requirements and time compliance.

Addis Ababa University was one of the major customers of YOTECK Construction Plc between 2012 and 2017 in two major building projects at Commerce and main campus. As interview results with deputy of building project manager indicates that YOTECK Construction Plc deliver building construction of Commerce campus with full deliver requirements and delivery on time

requirements. In addition, Addis Ababa University main campus building constructions were under construction of structural work at this time and the status was on the right schedule.

Ethio Telecom was another customer of YOTECK Construction Plc between 2005 and 2016 in two building projects that had completed at Mekele and Addis Ababa brunch office. As interview finding with Ethio- Telecom building section Manager showed that, compliance with customer's delivery in-full requirements had moderate performance. The reason was YOTECK could not able to complete the project with expected quality on finishing works. On the other hand, compliance with time requirements on both Mekele and Addis Abab Ethio Telecom building project showed poor performance. For instance, one of Addis Ababa brunch office construction project work was completed and delivered after three years of completion agreement. Some of the reasons for such extended deliver time according to the Interview response was searching for raw materials at lower market price since they win the bid and entered construction agreement with very low price than the market. In addition, there were low level of cooperatives and lack of joint planning as well as low efforts to introduce new construction product and service to customers. As further mentioned during the interview, most of domestic contractor, including YOTECK had lower performance on introduction of new construction products and service as well as joint planning through demand creation effort. These situations further affect long term relationship with customers and reduce customer's relationship and their loyalty.

### 4.1.2.3 Level of Information Sharing

According to Alireza et al. (2011), Information flow is the element in the supply chain that gives the different actors the possibility to plan their activities. Fundamentally, information and trust are the basis of every profitable relationship. Furthermore, integration and coordination across supply chain can be well provided through information sharing.

This study tried to investigate the practices of information sharing among the supply chain participants of the case company with its up-stream and down-stream supply chain partners based on seven items listed in Table 4.4 below.

As indicated on the table below, lowest mean value scored on sense of trust, problem sharing & solving mechanism and skills transfer with partners as well as adequacy and quality of information sharing throughout the supply chain partners with mean value of 2.02 and 2.36 respectively. This implied that trust and joint problem solving as well as quality of information sharing between the company and among SC partners were very low.

Table 4.4: Descriptive Statistics of Level of Information Sharing

| S/N | Items | N | Mean | Std. Deviation |
|-----|-------|---|------|----------------|
| 1 | Material supply forecast Information sharing with Project sites | 41 | 3.2927 | .64202 |
| 2 | Material supply forecast Information sharing with suppliers | 41 | 3.2439 | .73418 |
| 3 | Material required related Information sharing with suppliers | 41 | 2.9756 | .61187 |
| 4 | Material requirement related Information sharing by project sites | 41 | 2.9756 | .56955 |
| 5 | Adequacy and quality of information sharing throughout the supply chain partners | 41 | 2.3659 | .48765 |
| 6 | Overall efforts of Inter-organizational information coordination and sharing | 41 | 3.1707 | .66717 |
| 7 | Sense of trust, problem sharing & solving mechanism and skills transfer with partners | 41 | 2.0244 | .35269 |
| | Group Mean | | 2.8502 | |

(Source: Researcher's Survey Result, 2017)

On the other hand, material supply forecast Information sharing with project sites; material supply forecast Information sharing with suppliers and efforts of Inter-organizational information coordination and sharing had mean value of 3.29, 3.24 and 3.17 respectively. Although this figure was higher than the remaining items listed, still it is moderate performance level. Surprisingly, material required related Information sharing with project sites and material requirement information with suppliers had similar mean value of 2.97 and which approach to average level of performance. Information sharing with company's project sites and inter-organizational information coordination practice though approach to moderate level, it was below expected level and affect company's compliance for full requirement of product and time.

In general, the above individual means value and group mean value of 2.85 revealed that the company's information sharing practice within SC members had moderate performance.

According to the interview response with of EKT Marketing and sales Managers, due to strong relationship, joint planning and cooperative relationship with YOTECK, there is high level, adequate, timely and quality information sharing on material supply forecast and material required information with EKT. As a result, EKT enable to deliver the required raw material and equipment at the project sites on scheduled time without affecting YOTECK inventory cost. In addition, there was trusting relationship and risk sharing when unforeseen things happen in the market. Similarly, as interview result indicates that level of information sharing between YOTECK and Derba MIDROC Cement on material supply forecast and material required related Information had better performance, there was adequate and quality information sharing.

On the other hand, Interview response with Ethio Telecom as a customer indicated that YOTECK could not able to deliver sufficient volume of the required amount of raw materials to the project sites at the right time, but they were purchased insufficient raw material and it takes time to deliver another amount. This in turn creates idle time, extra mobilization cost and longer project completion time. Moreover, there was inefficient utilization of construction project sites due to excess accumulation of few raw materials while with shortage of the other required raw materials. This showed occurrence of poor information sharing at project sites and procurement and supply decision makers and that was one of the reason for failure to delivery completed building on time for Ethio Telecom in the two construction projects.

### 4.1.2.4 Level of Information Quality

In the Supply chain Management practice, quality of information sharing includes aspects such as the accuracy, timelines, adequacy, & credibility of information exchanged. The objective of supply chain management is to quickly obtain real-time information, minimize cost, increase levels of service, improve communication among supply chain components, and increase flexibility in terms of delivery and response time. The empirical study of Lazarevic et al., (2007) states that efficiency in meeting customers' requirement is significantly differentiated by the level and quality of information sharing among SC partners.

Many literature shows that, level of information quality can be explained in terms of timeliness, accuracy, completeness, adequacy and reliability of information sharing among SC members. As indicated in table 4.5 below, accuracy of Information exchange and reliability between supply chain partners had lowest mean value of 2.36 and 2.48 respectively.

Table 4.5: Descriptive Statistics of Level of Information Quality

| S/N | Items | N | Mean | Std. Deviation |
|---|---|---|---|---|
| 1 | Timely Information exchange between supply chain partners | 41 | 2.9756 | .35269 |
| 2 | Accuracy of Information exchange between supply chain partners | 41 | 2.3659 | .48765 |
| 3 | Completeness of Information exchange between supply chain partners | 41 | 2.9024 | .49015 |
| 4 | Adequacy of Information exchange between supply chain partners | 41 | 3.0000 | .63246 |
| 5 | Reliability of Information exchange between supply chain partners | 41 | 2.4878 | .50606 |
| | Group Mean | | 2.7561 | |

(Source: Researcher's Survey Result, 2017)

On the other hand, company's information timeliness, completeness and adequacy of information with supply chain partners scored to 2.97, 2.90 and 3.0 respectively, which was closer to average or moderate level performance. But the groups mean value indicates 2.75 and it is lower than moderate level. Interview results with EKT Sales and Marketing manager showed that YOTECK provide timely, accurate, completed, adequate and reliable information exchange with them to forecast and deliver material and equipment at due time. Similarly, the response of Derba MIDROC Cement also indicates existence of quality information sharing in terms of timeliness, completeness and reliable with regard to market information, material forecast and delivery of materials at project sites.

On the other hand, interview response with Ethio Telecom building section manager indicates that YOTECK Construction Plc communicate the adequate and accurate information on time with Ethio Telecom, but they could not able to correct the gaps or any feedback given to them. But interview responses concerning Addis Ababa University building construction project

showed existence of quality information sharing with YOTECK. In general, both customers agree during the interview on poor application of information technology in construction industry as compared with other industry affect information quality and integration between SC members in general.

### 4.1.2.5 Information Technology

The use of information technology is a major indicator of SCM best practice, particularly if employed to connect customers, suppliers and value adding services. According to Chopra and Meindl (2007), "Information is potentially the biggest driver of performance in the supply chain because it directly affects … the other drivers".

As table 4.6 below revealed that, five items were used to measure IT application of the case company, such as IT based automated ordering from major customers and suppliers, up-to-datedness and adequacy of IT system and use of online system to achieve operating efficiency within and across supply chain members. However, the survey result showed that all these items had lower mean value of less than 2.50. In general, the groups mean value was 2.58 and this indicates about the practice of poor IT application within and across the YOTEK supply chain members.

Table 4.6: Descriptive Statistics of Information Technology

| S/N | Items | N | Mean | Std. deviation |
|-----|-------|---|------|----------------|
| 1 | Level of IT-based automated ordering from major customers | 41 | 2.2927 | .60183 |
| 2 | Level of IT-based automated ordering to major suppliers | 41 | 2.4146 | .59058 |
| 3 | Up-to-datedness of IT technologies throughout the supply chain | 41 | 2.3415 | .57488 |
| 4 | Adequacy of IT systems throughout the supply chain | 41 | 2.3659 | .62274 |
| 5 | Use of online system to achieve operating efficiency within and across supply chain members | 41 | 2.3171 | .64958 |
| | Group Mean | | 2.3463 | |

(Source: Researcher's Survey Result, 2017)

The interview conducted with YOTEK procurement and supply department and IT Specialist also indicated that the level of IT used at their company is very low. The main reason for such gaps were due to insufficient IT development especially on construction industry in the country, poor knowledge and practice of construction supply chain members. Moreover, interview response with Ethio Telecom building section manager indicate that information exchange with YOTECK Company was on the traditional methods by hard copy official letter, phone call and by site visit report. There were no mechanism designed to use internet and other Information system for online ordering, information about project status update and any other process which was valuable for management of customer organization for follow up of the project work from their office. Similarly, interview response with EKT, Derba MIDROC Cement and Addis Ababa University as a customer also indicates similar findings about the limitation of  use of information technology in construction industry.

Eng (2005) illustrates that good experience in information technology have a positive effect on the firm's ability to enhance customer satisfaction and supply chain responsiveness. In addition to the data collected through questionnaire, interview was held with the SC manager and IT administrator of the case company. According to the interview response, there was poor information technologies facilities exist within the company.

Levi, Kaminsky and Levi (2003) pointed out that the objectives of IT in SCM are; to provide the information availability and visibility to supply chain partners, to enable the collaboration with organizations in the supply chain and to allow the decision making based on the total supply chain information.

### 4.1.3   Supply Chain Collaboration / Integration

As companies migrate toward more extended supply chains, collaboration is becoming their most strategic activity. Collaboration may be with customers, suppliers and even with in organization's functional units. Some of the features which many participants anticipate when entering in to collaboration are: joint planning, management and measurement, sharing goals, objectives, resources, information, risks and benefits with partners (Sunil, 2004).

When the level of collaboration is becoming more and more strong it leads to integrated and efficient SCM. Based on this, the researcher has tried to see the extent of integration of the case company with suppliers, customers and cross functional units within the company.

#### 4.1.3.1 Integration With suppliers

In this part, the research assessed the level of integration between YOTEK Construction Company and its suppliers. Integration is the process of combining or coordinating separate functions, processes, or producers and enabling them to interact in a seamless and continuous manner (Kenneth and Brian 2006).

Table 4.7: Descriptive Statics of Company Integration with Suppliers

| S/N | Items | N | Mean | Std. Deviation |
|-----|-------|---|------|----------------|
| 1 | The level of strategic partnership with suppliers | 41 | 3.1951 | 1.00547 |
| 2 | The establishment of quick ordering system | 41 | 2.9024 | .94353 |
| 3 | Availability of stable procurement through network | 41 | 2.9012 | 1.01992 |
| | Group Mean | | 3.0000 | |

(Source: Researcher's Survey Result, 2017)

As illustrated in table 4.7 above, there are three items used to determine the extent of integration of the case company with its suppliers. Accordingly, all items had mean value between 2.9 and 3.2 and group mean of 3.0. This result indicated that YOTEK Construction Company collaboration or integration practices with SC members had moderate performance level. Even if group mean value of the company's integration with suppliers revealed as moderate performance, it was below what expected to be competitive in the market. Interview response with EKT indicates that there was long-term and strategic partnership with YOTECK as their experience showed in joint planning and cooperative by assessing cost of raw materials and equipment for preparation of bids. Thus, because of their joint planning, YOTECK ensure stable procurement and quick ordering process with EKT as suppliers through internet and letter communication. But there were no use of modern communication network due to its absence in

Ethiopia construction industry level. YOTECK had also similar strategic partnership relationship with Derba MIDROC Cement and this enable quick ordering system for material and stable procurement.

### 4.1.4 Integration with Customers

For effective SCM practice, firms need to integrate with their suppliers and customers to achieve both financial and none financial growth objectives (Tan, 2001). In general, the result indicates that the current level of integration with customers was not sufficient to create effective and efficient in SCM activities.

Table 4.8: Descriptive Statics of Company Integration with Customers

| S/N | Items | N | Mean | Std. Deviation |
|-----|-------|---|------|----------------|
| 1 | Follow-up customers for feedback | 41 | 2.9268 | 1.00971 |
| 2 | Monitoring and measuring customer service level | 41 | 3.0732 | .87722 |
| 3 | The level of market information sharing with major customers | 41 | 3.1220 | .92723 |
| 4 | Frequency of contacts with major customers | 41 | 3.6829 | .96018 |
| | Group Mean | | 3.2012 | |

(Source: Researcher's Survey Result, 2017)

As table 4.8 above depicts, four items were used to evaluate the case company's integration with its customers or downstream of the SC. Among these items, frequency of contacts with major customers had higher mean value of 3.6 and this indicated that YOTEK Company had frequently approach customers to build strong relationship with them. Similarly, follow up of customers for feedback, monitoring of service level and information sharing with major customers had mean value of 2.9, 3.0 and 3.1 respectively and this is moderate level of performance on company's collaboration with customers.

Customers are the main source of revenue for any business companies and they need to be at high level performance to create loyal customers. This moderate performance level of

relationship with customers may affect company's market share and profit level. This might also lead to the dissatisfaction of its customers and in a long-run there may be a chance of losing its customers. If it is so, it may be difficult for the company to survive and compete in this intensive competitive market environment. When the level of collaboration between SC partners is becoming strong, it leads them to better integration.

Interview response with Addis Ababa University indicates that YOTECK had made closely follow up customer feedback on the progress and quality of building project every week and month to make timely correction. In addition, they share any market change and related information to forecast the about situation and thus shows better level of integration with customers. Similarly, as interview response with Ethio Telecom indicated that YOTECK Construction Plc had mechanism to follow up customer's feedback and measure customers service level at certain extent, but the effort was not satisfactory. Moreover, there were gaps on utilization of the inputs to improve its project operation. In addition, there was no experience of sharing market information in relation to forecasting of price change on materials and other change that had impact on the project work, no experience of sharing new service and new construction features, equipment that would benefits Ethio Telecom. This gap had seen in most of domestic Construction companies, but foreign construction companies doing very well in this regard by promoting new construction model, equipment and it help to create demand for future projects.

### 4.1.5 Cross functional integration with in a company

Eng (2005) reported that a cross-functional orientation in SCM has positive effects on customer satisfaction and supply chain responsiveness in terms of improved efficiency among different functions in the supply chain. Integration plays a decisive role for successful SCM (Kenneth and Brian, 2006). To realize an effective internal operation functional integration plays a great role.

Table 4.9: Cross Functional Integration with in the Company

| S/N | Items | N | Mean | Std. Deviation |
|-----|-------|---|------|----------------|
| 1 | Data integration among internal functions through network | 41 | 2.9268 | 1.10432 |
| 2 | Information system integration among internal functional units | 41 | 3.1707 | .99756 |
| 3 | Teamwork and intra-organizational coordination | 41 | 3.2195 | .75869 |
| 4 | Extent of interaction between main office supply and project warehouse | 41 | 3.3171 | .56741 |
| 5 | Periodic inter-departmental meetings | 41 | 3.2439 | 1.09042 |
| | Group Mean | | 3.1756 | |

(Source: Researcher's Survey Result, 2017)

Table 4.9 above represents the extent of internal integration of YOTEK's functional units. The survey result indicated that except data integration among internal functions through network , with the mean value of 2.92, which approach to average or moderate level,  the rest items such as Information system integration among internal functional units, team work and intra-organizational coordination, extent of interaction between main office supply and project warehouse and periodic inter-departmental meetings scored mean value greater than 3.0, that is 3.17, 3.21, 3.31 and 3.24 respectively. This individual mean results and group mean value of 3.17 still showed moderate level of collaboration exists within functional units of the company.

As the survey result of low mean value of data integration among internal functions through network and interview response with YOTECK indicated that poor IT application in the company was the reason for such gaps within the functional unit's integration and this further affect the overall collaborative performance of supply chain members.

## 4.2 Inferential Statistics for SCM Practices and Firm Performance

### 4.2.1 Correlation Analysis

Correlations are the measure of the linear relationship between two variables. A correlation coefficient has a value ranging from -1 to 1. Values that are closer to the absolute value of 1 indicate that there is a strong positive relationship, closer to -1 strong negative correlation between the variables being correlated whereas values closer to 0 indicates that there is little or no linear relationship.

As described by Andy (2006), the correlation is a commonly used measure of the size of an effect: values of $\pm$ 0.1 represent a small effect, $\pm$ 0.3 is a medium effect and $\pm$ 0.5 is a large effect.

In this section, correlation analysis conducted in the light of third and fourth research objectives and to test the two hypotheses. The relationship between supply chain management practices and firm performance, in terms of operational performance and organizational performance was investigated using correlation analysis. This provided correlation Coefficients which indicated the strength and direction of relationship. The p-value also indicated the probability of this relationship's significance.

### 4.2.1.1 Correlation Analysis between Construct of SCM Practices and Operational Performance (OP)

The constructs of SCM practices which their relation with operational performance seen in table 4:10 below are Strategic supplier partnership (SSP), customer relation (CR), level of information sharing (LIS), level of information quality (LIQ) and Information Technology (IT).

Table 4.10: Correlation matrix between constructs of SCM practices and OP

**Correlations**

|  |  | SSP | CR | LIS | LIQ | IT | OP |
|---|---|---|---|---|---|---|---|
| SSP | Pearson Correlation | 1 | .499** | .467** | .881** | .110 | .763** |
|  | Sig. (2-tailed) |  | .001 | .002 | .000 | .494 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| CR | Pearson Correlation | .499** | 1 | .559** | .570** | .336* | .683** |
|  | Sig. (2-tailed) | .001 |  | .000 | .000 | .032 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| LIS | Pearson Correlation | .467** | .559** | 1 | .555** | .317* | .639** |
|  | Sig. (2-tailed) | .002 | .000 |  | .000 | .043 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| LIQ | Pearson Correlation | .881** | .570** | .555** | 1 | .208 | .746** |
|  | Sig. (2-tailed) | .000 | .000 | .000 |  | .192 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| IT | Pearson Correlation | .110 | .336* | .317* | .208 | 1 | .415** |
|  | Sig. (2-tailed) | .494 | .032 | .043 | .192 |  | .007 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| OP | Pearson Correlation | .763** | .683** | .639** | .746** | .415** | 1 |
|  | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .007 |  |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |

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

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

The correlation between each constructs of SCM practices with operational performance was seen in the above table. Thus, the result of correlation matrix between each constructs and operational performance were analyzed as follow:

As it is indicated in the table above, there was significant positive correlation between strategic supplier partnership (SSP) and operational performance with correlation coefficient of 0.763 (r=0.763) and significance less than 0.001. Therefore, strategic supplier partnership and operational performance were positively correlated and had strong correlation between them. Similarly, there was strong positive relationship between customer relation (CR) and operational performance with a Pearson correlation coefficient of 0.683 (r=0.683) and significance value less

than 0.001. This significance indicated that there was positive and strong relationship between customer relation and operational performance.

With regard to level of information sharing (LIS) and operational performance, Pearson correlation test indicated that there was significant positive correlation between them. In other words, level of information sharing and operational performance are correlated in high relationship (r=0.639) and with level of significance less than 0.001.

For Pearson correlation test conducted to know whether there was significant positive correlation or not between Level of Information Quality (LIQ) and operational performance, it clearly indicated that there was strong and positive relation between Level of Information Quality and operational performance. The result of correlation analysis between Level of Information Quality and Operational performance was correlation coefficient of 0.746 (r=0.746) and significance value less than 0.001.

Finally, Information Technology (IT) and Operational Performance also correlated by Pearson test. As it is showed in the table above, there was significant positive correlation between IT practices and Operational Performance, but the strength was moderate level. In other words IT and Operational Performance have strong relationship (r=0.415) and with significance value greater than 0.005.

### 4.2.1.2 Correlation between SCM Practices and OP

Pearson correlation test was conducted between SCM practices (collective representative of five constructs of SCM practices) and operational performance and the results are presented in the table 4.11. Hence, there was significantly strong correlation between SCM practices and operational performance. In other words SCM practices and operational performance have strong positive relationship with correlation coefficient of 0.854 (r=0.854) and significance value less than 0.001.

Table 4.11: Correlation between SCM Practices and OP

**Correlations**

|  |  | SCM_Practice | OP |
|---|---|---|---|
| SCM_Practice | Pearson Correlation | 1 | .854** |
|  | Sig. (2-tailed) |  | .000 |
|  | N | 41 | 41 |
| OP_Perform | Pearson Correlation | .854** | 1 |
|  | Sig. (2-tailed) | .000 |  |
|  | N | 41 | 41 |

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

### 4.2.1.2 Correlation between Constructs of SCM Practices and Organizational Performance (Org. P)

The correlation between constructs of SCM practices with organizational performance was run as seen in the above table. The result of correlation matrix between each constructs and organizational performance are analyzed as follow:

As shown in the table 4.12 below, strategic supplier partnership positively related to organizational performance with a Pearson correlation coefficient of 0.702 (r=0.702) and significance value was less than 0.001. This significance amount revealed that there was strong positive relationship between strategic supplier partnership and organizational performance.

Table 4.12 also depicted that as there was strong positive relationship between customer relation (CR) and organizational performance with a Pearson correlation coefficient of 0.609 (r=0.609) and significance value is less than 0.01. This significance level indicated that there was genuine relationship between customer relation and organizational performance.

As the conducted Pearson correlation test indicated in the table 4.12, there was also significant positive correlation between level of information sharing (LIS) and organizational performance with a Pearson correlation coefficient of 0.505 (r=0.505) and with significance value 0.001. This significance tells that there is genuine Level of Information Sharing and Organizational Performance.

Table 4.12: Correlation Matrix between Construct of SCM Practices and Organizational performance

**Correlations**

|  |  | SSP | CR | LIS | LIQ | IT | Org. P |
|---|---|---|---|---|---|---|---|
| SSP | Pearson Correlation | 1 | .499** | .467** | .881** | .110 | .702** |
|  | Sig. (2-tailed) |  | .001 | .002 | .000 | .494 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| CR | Pearson Correlation | .499** | 1 | .559** | .570** | .336* | .609** |
|  | Sig. (2-tailed) | .001 |  | .000 | .000 | .032 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| LIS | Pearson Correlation | .467** | .559** | 1 | .555** | .317* | .505** |
|  | Sig. (2-tailed) | .002 | .000 |  | .000 | .043 | .001 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| LIQ | Pearson Correlation | .881** | .570** | .555** | 1 | .208 | .677** |
|  | Sig. (2-tailed) | .000 | .000 | .000 |  | .192 | .000 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| IT | Pearson Correlation | .110 | .336* | .317* | .208 | 1 | .422** |
|  | Sig. (2-tailed) | .494 | .032 | .043 | .192 |  | .006 |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |
| Org. P | Pearson Correlation | .702** | .609** | .505** | .677** | .422** | 1 |
|  | Sig. (2-tailed) | .000 | .000 | .001 | .000 | .006 |  |
|  | N | 41 | 41 | 41 | 41 | 41 | 41 |

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

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

For Pearson correlation test conducted to know whether there is significant correlation or not between Level of Information Quality (LIQ) and organizational performance, table 4.12 above clearly indicated that there was strong and positive relation between Level of Information Quality and operational performance. The result of correlation analysis between Level of Information Quality and Organizational performance was correlation coefficient of 0.677 (r=0.677) and significance value less than 0.001 which indicates as there is genuine relation between them.

Finally, Information Technology (IT) and Organizational Performance was also conducted Pearson correlation test and the results are shown in table 4.12. As it is shown in the table above, there is positive correlation between Information Technology and Organizational Performance

with a Pearson correlation coefficient of 0.422 (r=0.422) and significance value is greater than 0.005.

## 4.2.1.4 Correlation between SCM Practices and Organizational performance (Org. P)

Table 4.13: Correlation Matrix between SCM Practices and Org. Performance

**Correlations**

|  |  | SCM_Practice | Org. P |
|---|---|---|---|
| SCM_Practice | Pearson Correlation | 1 | .768[**] |
|  | Sig. (2-tailed) |  | .000 |
|  | N | 41 | 41 |
| Org. P | Pearson Correlation | .768[**] | 1 |
|  | Sig. (2-tailed) | .000 |  |
|  | N | 41 | 41 |

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

Pearson correlation test was conducted between SCM practices (collective representative of five constructs of SCM) and organizational performance. As it is shown in the table 4.13 above, there was strong positive relationship between SCM Practices and organizational performance with a Pearson correlation coefficient of 0.768 (r=0.768) and significance value less than 0.001. This significance level indicated that there was genuine relationship between SCM practices and organizational performance.

### 4.2.2   Regression Analysis

Regression analysis is conducted to know by how much the independent variable explains the dependent variable. The regression was conducted between supply chain management practices (independent variable) and operational performance (dependent variable) in the first regression. The second regression was made between supply chain management practices (independent variable) and organizational performance (dependent variable). The results of the regression analysis are presented as follows. In this linear regression model, the p-value ("sig" for

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significance") of the predictor's effect on the criterion variable, if less than .05 is generally considered "statistically significant."

The model specification is as follows:

Regression model: $Y= a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + \varepsilon$ where Y = Operational or Organization performance; a= the y intercept when x is zero; $b_1$, $b_2$, $b_3$, $b_4$, $b_5$, are regression coefficients of the following variables respectively; $x_1$- strategic supplier management; $x_2$- customer relationship management ; $x_3$- level of information sharing ; $x_4$- quality of information sharing ; $x_5$- Information Technology.

### 4.2.2.1 Multi Collinearity Test

Table 4.14 Multi Collinearity test of independent variable

| Model | Collinearity Statistics | |
| :---: | :---: | :---: |
| | Tolerance | VIF |
| Strategic supplier partnership (SSP) | .218 | 4.579 |
| Customer relation (CR) | .565 | 1.771 |
| Level of information sharing (LIS) | .587 | 1.703 |
| Level of information quality (LIQ) | .188 | 5.328 |
| Information Technology (IT) | .841 | 1.189 |

Dependent Variable: Organizational Performances

The result in table 4.14 show that the collinearity between independent variables has no series problem Since the value of tolerance for all independent variable is greater than 0.1 and all VIF is less than ten (VIF<10).

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### 4.2.2.1 Multiple Regression Results of SCM Practices and OP

Table 4.15 Multiple Regression Results of independent variables and OP

| Model | Standardize Coefficients | t | Sig. |
|---|---|---|---|
| | Beta | | |
| (Constant) | | 2.446 | .020 |
| Strategic Supplier Partnership (SSP) | .567 | 3.341 | .002 |
| Customer Relationship (CR) | .292 | 2.313 | .027 |
| Level of Information Sharing (LIS) | .244 | 1.533 | .048 |
| Level of Information Quality (LIQ) | .352 | 2.528 | .016 |
| Information Technology (IT) | .183 | 1.884 | .068 |

Dependent variable: Operational Performance

The beta values above show the magnitude of relationship between variables, higher values being an indication of strong relationship. In this study, strategic supplier partnership had highest Beta coefficient of 0.567. This result implies that strategic supplier partnership had highest impact on operational performance. Whereas, level of Information Quality, is found to be the second most significant SCM dimension with Beta value of 0.352 implying that this dimension is significantly related and strongly influences operational performance. Then the influence followed by customer relationship, level of Information Sharing and Information Technology had with Beta value of 0.292, 0.244 and 0.183 respectively.

Table 4.16: Regression Analysis between SCM Practices and Operational Performance (OP)

| Model | R | R Square | Adjusted R Square | F- value | Sig. |
|---|---|---|---|---|---|
| 1 | .883[a] | .780 | .748 | 24.794 | .000 |

a. Dependent variable: OP

b. Predictors: SSP, CR, LIS, LIQ, IT

As shown in the table 4.16 above, there was causal relationship between SCM practices and operational performance. The value of $R^2$ is 0.748, which implied that SCM practices can account for 74.8% of the variation in operational performance. Although there might be many factors that can explain the variable on operational performance, nearly 74.8% of it was explained by SCM practices. This means that the remaining 25.2% of the variation in operational performance cannot be explained by those dimensions of SCM practices.

### 4.2.2.2 Regression Analysis between SCM Practices and Organizational Performance

Table 4.17 Multiple Regression Results of independent variables and Org. Performance

| Model | Standardize Coefficients | t | Sig. |
|---|---|---|---|
| | Beta | | |
| (Constant) | | 2.840 | .040 |
| Strategic Supplier Partnership (SSP) | .547 | 2.660 | .012 |
| Customer Relationship (CR) | 245 | 1.874 | .032 |
| Level of Information Sharing (LIS) | 229 | 1.724 | .035 |
| Level of Information Quality (LIQ) | .275 | 1.982 | .028 |
| Information Technology (IT) | .195 | 1.634 | .062 |

Dependent variable: Organizational Performance

The beta values above show the magnitude of relationship between variables, higher values being an indication of strong relationship. In this study, strategic supplier partnership had highest Beta coefficient of 0.567. This result implies that strategic supplier partnership had highest impact on operational performance. Whereas, level of information quality was found to be the second most significant SCM dimension with Beta value of 0.275 implying that this dimension is significantly related and strongly influences operational performance. Then its influence on operational performance follows by, customer relationship, level of information sharing and information technology had with Beta value of 0.245, 0.229 and 0.195 respectively.

Table 4.18: Regression Analysis between SCM Practices and Organizational Performance

| Model | R | R Square | Adjusted R Square | F- value | Sig. |
|---|---|---|---|---|---|
| 1 | .808[a] | .653 | .603 | 13.145 | .000 |

   c.   Dependent variable:  Org. P

   d.   Predictors: SSP, CR, LIS, LIQ, IT

As shown in the table 4.18 above, there was causal relationship between SCM practices and organizational performance. There might be many factors that can explain this variable, but our model, which includes SCM practices, can explain approximately 65.3% of it. This suggests that the remaining 34.7% of the variation in organizational performance cannot be explained by those dimensions of SCM practices.

## 4.3  Discussion of the Results

The third and fourth objective of this study was designed to empirically test a framework identifying the relationships among SCM practices and operational performance as well as SCM related to organizational performance with special emphasis on YOTEK Construction PLC. The literature had suggested that there were a relationship between SCM practices with operational performance and organizational performance.

This study makes contributions by exploring the relationship between SCM practices, operational performance and organizational performance. The results of the study are discussed as follows:

This study revealed that there was significant positive relationship between SCM practices and operational performance. As it has seen from the results, strategic supplier partnership, which is one of the construct of SCM practices was positively correlated with coefficient 0.763 (r=0.763) and significant level less than 0.001 with operational performance. As Li et.al (2006) describe,

effective partnerships with suppliers can be critical factor to guide effective operational performance of organizations in the supply chain.

Customer relationship is also another construct of SCM practices that is correlated with operational performance with correlation coefficient 0.683 (r=0.683) and significance value less than 0.001. As pointed out by Day (2000), devoted relationships with customers are the most sustainable advantage because of their essential barriers to competition. This statement indicates that customer relation plays vital role to enhance operational performance of the organization which enables to be competitive in the market.

The other construct of SCM practices was level of information sharing and positively correlated with operational performance with correlation coefficient 0.639 (r=0.639) and confidence level less than 0.001. As Alireza et al. (2011) stated integration and coordination across supply chain can be well provided through information sharing. From Alirezas' statement, it is possible to conclude as there is positive relationship between information sharing and operational performance of the firm in the supply chain.

The other construct of SCM practices which correlated positively with operational performance with correlation coefficient 0.746 (r=0.746) and confidence level less than 0.001 was the level of information quality. As Ahmadi (2005) describes, effective use of relevant and timely information by all the functional elements in the supply chain is considered as a competitive factor and distinctive, and this statement is very consistent with the finding of this study.

The last construct of SCM practices considered in the study was Information Technology practices and was positively correlated with coefficient of 0.415 (r=0.415) with operational performance at level of significant of less than 0.001.

In general, as the finding indicated that there was a genuine relationship between SCM practices and operational performance with a Pearson correlation coefficient of 0.854 (r=0.854) and significance value less than 0.001. Moreover, regression analysis result indicated that 74.8% of the variability in operational performance originates from SCM practices. This result is supported by the work of Moslem (2013), which indicated that when the SCM practices are good, the operational performance of supply chain will also become good.

On the other hand, this study also revealed that there was significant positive relationship between SCM constructs and organizational performance. As the test results indicated there was positive relationship between strategic supplier partnership and organizational performance with correlation coefficient of 0.702 (r=0.702) and significance value less than 0.001. The evidence from the review literature showed as 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 (Tan et al., 2002). From this discussion it is possible to show as there is a relation between strategic supplier partnership and organizational performance.

The other practice of SCM was customer relation and positively correlated with organizational performance with Pearson correlation coefficient 0.609 (r=0.609) and significant level less than 0.001. The finding of this study is consistent with the work of Carr and Pearson (1999) which describe that focusing and maintaining the customer relationship will enable the organizations to be more responsive towards customers' needs and will result creating greater customer loyalty, repeat purchase and willing to pay premium prices for high quality product that will guaranty in increasing market share.

Level of information sharing was one among the constructs of SCM practices which had strong positive relationship with organizational performance with correlation coefficient 0.505 (r=0.505) and significant value less than 0.001. This result also indicated that sharing of information as one of five building blocks that characterize a solid supply chain relationship and had an impact on the performance of organizations in supply chain.

Level of information quality was the other construct of SCM practices which had positive and strong relation with organizational performance with correlation coefficient0.677 (r=0.677) and significance value less than 0.001. The empirical findings of Child house and Towill (2003) 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.

Information Technology practice was also one construct of SCM practices and positively correlated with organizational performance with coefficient 0.422 (r=0.422) and significance

level less than 0.001. However, the degree was not significance in the relation of IT practices with both operational and organizational performance. As explained on above, due to poor practice of IT across the SC members, the impact of IT on the company's operational and organization performance was not significantly correlated.

In general, SCM practices had strong positive relationship with organizational performance with Pearson correlation coefficient 0.768 (r=0.768) and significance value less than 0.001. It also explains 76.8% organizational performance. Moreover, regression analysis result indicated that 60.3% of the variability in organization performance originates from SCM practices. This finding is consistence with Adebayo (2012) who describes SCM practices as 'the task of integrating organizational units along a supply chain and coordinating materials, information and financial flows in order to fulfill (ultimate) customer demands with the aim of improving competitiveness of the supply chain as a whole'.

# CHAPTER FIVE

# SUMMARY OF RESULTS, CONCLUSSION AND RECOMMENDATION

This chapter presents the summary of the findings of this study followed by conclusions and recommendations. This study was designed to assess the YOTEK Construction Plc., supply chain management practice, collaboration or integration level within the SC partners and to test empirically the relationship between the constructs of SCM practice and company's operational and organizational performance. In the study, supply chain management practice was analyzed in terms of strategic supplier relationship, customer relationship, level of information sharing, level of information quality and information Technology used in their operation.

## 5.1 SUMMARY OF RESULTS

Based on the quantitative and qualitative data analysis, discussion of results was done with respect to the basic questions and the following are the summary of major results of the study.

The level of strategic supplier relationship between the company and suppliers was analyzed based on descriptive statistical analysis considering supplier performance measurement, motivation of competent suppliers and cooperativeness with supplier as variables. The obtained mean value of these variables was 2.56, 2.36 and 2.41 respectively and this implies that the company under this study had poor practice of strategic relationship with its suppliers.

Whereas, the mean value of long-term relationship with suppliers was 2.97 which is relatively better and close to moderate level of performance but it is lower than the expected. Similarly, quality criterion for selecting suppliers and joint-planning and goal setting with suppliers were also analyzed and their corresponding mean result was 2.70 and 2.87 respectively. This value implies that the company's practice of quality criterion for supplies selection and joint planning, and goal setting with suppliers was below expected.

Customer relationship was another construct of SCM practice that affects company's operations and its performance. The group mean of such relationship was 2.80 and approach to moderate

level. This gap highly reflected due to poor performance of compliance with customer's delivery on time requirements, and strives and launches new products and services to the customers, with the mean value of 2.29 and 2.09 respectively. Whereas, regular monitoring of customers' satisfaction, cooperativeness with customers, joint product planning and long-term relationship with customers had mean value of 2.85, 2.92, 2.8 and 2.78 respectively; all were below standard, but closer to moderate performance level. On the other hand, compliance with customers' delivery in- full requirements had better practice with mean value of 3.68.

In regard to the level of Information sharing practice, the case company performance level was generally moderate, with mean value of 2.85. Surprisingly, material requirement related Information sharing with suppliers and project sites scored similar mean value of 2.97, while material supply forecast Information sharing with Project sites and with suppliers, as well as overall efforts of Inter-organizational information coordination and sharing scored 3.29, 3.24 and 3.17 respectively and was better than the other items.

On the other hand, adequacy and quality of information sharing throughout the supply chain partners was poor. This is reflected in the mean value of sense of trust, problem sharing & solving mechanism and skills transfer with partners which is 2.36 and 2.02 respectively.

The other information related construct was quality of information and this importantly affect SCM practice of the company. The findings indicated that the mean value of timely information exchange, completeness and adequacy of information between supply chain partners was 2.97, 2.9 and 3.0 respectively and approach to moderate level practice. But, the mean value of information accuracy and reliability of information exchange between supply chain partners was 2.36 and 2.48 respectively which is an indication of poor practice of the organization.

Concerning information technology, quantitative and qualitative analysis indicated that, there was poor application and absence of IT tool with in the case company and had 2.34 groups mean. This was reflected based on the analysis of IT-based automated ordering from major customers and suppliers, up-to-datedness of IT technologies, adequacy of IT systems and the use of online system to achieve operating efficiency within and across supply chain members. All these five items scored mean value between 2.29 and 2.41 that all indicated poor application of IT within the company and across the supply chain members.

The level of collaboration and integration of the company with supply chain partners also assessed, with respect to integration with suppliers, customers and cross functional integration within a company. Regarding to company integration with its supplier's, level of strategic partnership with suppliers, establishment of quick ordering system and availability of stable procurement network was analyzed and obtain a group mean 3.0, which is moderate level. But the qualitative analysis of IT application and level of information sharing as well as its quality, sense of trust levels response also revealed that the level of integration with suppliers were not as of expected.

In relation to the level of integration with customers, group mean value scored to 3.20 and this indicates that moderate level of integration. The items considered are follow-up of customer feedback, measuring of customer service level, market information sharing and frequency of contact with customers. Specially, frequency of contact with major customers had mean value of 3.68 and it shows higher level of performance.

Finally, internal integration within the functional units also assessed and the assessment value showed that a mean value of 3.17 which indicates moderate level of performance. On this category, data integration with network, IS integration among internal function, team work, interaction of main office supply and project warehouse and periodic inter-departmental meetings were assessed. All items have mean value between 2.9 and 3.31. However, to increase the efficiency of any company, internal integration should have better performance and this also contribute for efficiency in SC partners.

This study also had the objective of testing relationship between SCM practices and operational performance as well as SCM practice and organizational performance. The test result indicated that SCM practices have had positive and strong correlation (r=0.854) with operational performance at significance level less than 0.001. In other way, SCM practices have also contributed 78.0% for the variability of operational performance. Similarly, the test result of SCM practices and organizational performance indicates that SCM practices had significant positive correlation (r=0.768) at significance level less than 0.001 with organizational performance and 65.3% of variability of organizational performance explained by SCM practices.

## 5.2 CONCLUSSION

The following conclusions were drawn based on the current findings from both quantitative and qualitative data collected and analyzed on the level of supply chain management practice.

Strategic supplier relationship was one of the most important areas that facilitate effectiveness of SCM practice within the company and with supply chain members. The survey results and interview response revealed that the existing performance was not satisfactory. Specifically, noticeable gaps were identified from the view point of level of cooperativeness, suppliers' performance measurements and motivation of satisfactory suppliers. This implies that the purchasing activities of the company have done in traditionally, low cost and sale-buy approach instead of strategic relationship for common benefits.

Similarly, customer relationship was another major area that describes for the practice of supply chain management. The findings indicated that there was moderate performance level of customer relationship. In this category, compliance with customer's delivery in-full requirements had better performance. However, poor performance had revealed in compliance with customer's delivery on time requirements and new products and service launching to the customers. The reasons for such gaps were due to traditional approach relationship with suppliers and this in turn affect material requirement and timely provision of materials. As a result, the company was not unable to address customer's requirement on due time.

The other important practice that reflects level of SCM practice of the company was level of information sharing and quality of information among the supply chain members. On the level of information sharing, the result showed that there was moderate level of information sharing on material supply forecast with project sites, suppliers, material requirement related information with project sites and suppliers and inter-organizational information coordination and sharing. However, more gaps were identified on adequacy and quality of information and sense of trust among the SC partners. Similarly, the quality of information sharing between the company and SC members (suppliers and customers) were not satisfactory. Lack of completeness and reliability of information exchange between the SC members were the major gaps identified by this research.

Information Technology utilization was the last construct that explain SCM practice in the study. The findings indicated that there were major gaps on application of IT within the company as well as across the supply chain members. The majority of activities in the company as well as across supply chain information had done by traditional manual work and little depends on information facilities.

The studies also assessed the level of collaboration and integration of the case company with supply chain members, in terms of integration with suppliers, customers and across functional integration within the company. The study result showed that 3.1 mean values of level of integration with suppliers, customers and internal integration within functional units and this imply that the level of integration was moderate. However, these moderate level performances are not satisfactory and hinder integration among supply chain members. In addition, the interview response showed that there were more gaps on these five major areas of SCM practices and this in turn affect performance level of integration with suppliers and customers.

Finally, the relationship of SCM practice and company performance indicated that there was strong and positive relationship between SCM practices and operational and organizational performance. In addition, SCM practice had significant influence on both operational and organizational performance.

## 5.3 RECOMMENDATION

Based on the findings of this research and the subsequent conclusions drawn, the following points are recommended

❖ As many literatures reflect that strategic supplier relationship and customer relationship are the major area that company should give priority to improve supply chain management practice. This requires mind shift to strategic thinking and build knowledge on such area instead of the traditional way of buy-sale relationship with suppliers and customers.

❖ To improve strategic relationship with suppliers, the company should select potential supplier that can be willing and cooperative for long-term relationship and plan jointly. In addition, they need to measure performance and reward for best achievements, share information continuously for suppliers. In addition, quality should be given priority rather low cost approach for material purchasing from supplier.

❖ Regarding to customer relationship, the company should give more attention to create loyal customer through improvement collecting feedback from customer, launch new construction design and service, long term relationship as well as improving strategic relationship with suppliers which help to get material on time and enable to complaints with customer's full requirements of the product and time requirements.

❖ Information sharing and its quality were another important point that increase effectiveness and efficiency of decision making process as well contribute for improvement of supplier and customer relationship among the supply chain members. As the research findings revealed that there were more gaps on adequacy, timeliness, reliability and completeness of information and build trust and problem sharing or joint risk taking behavior.

❖ The current information technology practice of the case company was poor and it affects communication and integration of data within the companies. Moreover, these poor applications of IT have strong effect on the level of integration within functional units and integration with suppliers and customers as well. Therefore, the case company has to invest more on IT facilities, improve the knowledge and experience of existing IT specialists and other responsible workers on SCM practice.

❖    As the result indicated on the level of cross function integration within the company, there was moderate performance level and a company cannot achieve its objectives alone with such performance level. Hence, the management should know that effective SCM practice positively and strongly influence performance of the organization and this can be achieved through collaboration and integration within functional units as well as with suppliers and customers.  This can be done first, by networking the functional units of the organization with appropriate. IT and integrated information system.

❖  Generally, to increase operational and organization performance, the management and all stakeholders have to give due emphasis on SCM practices in modern way.


## 5.4 IMPLICATION FOR FUTURE RESEARCH

The concept of SCM is complex and involves a network of company's effort for collaboration, joint planning and cooperative as well as strategic thinking and mind shift for mutual benefits within the supply chain members rather than focus on individually as traditional approach. Since SCM has rooted in manufacturing industry, there is lack of many literature and empirical evidence for construction industry in general and particularly for Ethiopian Construction Industry. As a result, most of the variables and measurements of SCM practice adopted from manufacturing literature have limitation to evaluate and measure the SCM practices of construction industry. In addition, as many literature supports, the fragmentation of the various actors such as, suppliers, customers, contractors, consultants and other actors are the challenge for the industries to bring SCM practice successful. Moreover, there is limitation of the right IT application that can be adopted for Construction Industry in general and more importantly a major challenge for Ethiopian construction industry cases.

Few of these situations and other concern call for more studies on SCM practice in the Construction Industry in general and specifically focusing on Ethiopian Construction industry. Future research can expand the domain of SCM practice by considering additional dimensions such as logistics integration, and agreed supply chain leadership, which have been ignored from this study. In addition, though this study also tried to test the relationship between the five dimensions of SCM practices with operational and organizational performance, other major dimensions that can affect performance has to be included in future study.

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# APPENDICES

**ST MARYS' UNIVERSITY**

**SCHOOL OF GRADUATE STUDIES**

**MASTERS OF BUSINESS ADMINISTRATION**

**QUESTIONNAIRE**

Dear respondents, the purpose of this questionnaire is to gather data to "assesse supply chain management practices in the case company". 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.

*General Instructions*

- There is no need of writing your name
- Where answer options are available please tick ($\sqrt{}$) 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 38 73 43 or e-mail: *tmsgn2009@gmail.com*)

*Thank you for scarifying your precious time in advance!*

**PART I: Demographic Information**

1. **Sex:**  Male ☐          Female ☐

2. **Age:**

   Below 25 years ☐          25-30 years ☐          31-35 years ☐
   36-40 years ☐          41-45 years ☐          above 45 years ☐

3. **Educational Qualification:**

   Certificate ☐                                    Diploma ☐
   First Degree ☐                        Second Degree and above ☐

4. **Years of service at the organization:**

   Under 2 years ☐     2–5 years ☐     6–10 years ☐     above 10 years ☐

5. **Your department/work unit** _____

6. **Your Current Position** _____

**Part II: Instruments for supply chain management practices, operational performance and organizational performance**

**Section One: Supply Chain Management Practices**

With regard to SCM practices of your firm, use the following Rating Scales under the columns and please, tick (√) only one box from the given box after reading the variable.

1= Very Low,     2= Low,     3= Average,     4= High,     5= Very High

| A | Strategic supplier partnership: | Very Low (1) | Low (2) | Aver-age (3) | High (4) | Very High (5) |
|---|---|---|---|---|---|---|
| 1 | Quality considered as number one criterion in selecting suppliers | | | | | |
| 2 | The level of cooperativeness with suppliers | | | | | |
| 3 | Key suppliers participation in planning and goal-setting activities | | | | | |
| 4 | Long-term relationship with suppliers | | | | | |
| 5 | Suppliers performance measurement systems | | | | | |
| 6 | Motivation and rewards for satisfactory suppliers | | | | | |

| B | Customer Relationship | Very Low (1) | Low (2) | Aver-age (3) | High (4) | Very High (5) |
|---|---|---|---|---|---|---|
| 1 | Regularly monitoring and evaluation of customer satisfaction | | | | | |
| 2 | Compliance with customer's delivery in- full requirements | | | | | |
| 3 | Compliance with customer's delivery on time requirements | | | | | |
| 4 | The level of cooperativeness with customers | | | | | |
| 5 | Joint product planning with major customers | | | | | |
| 6 | Long-term relationship with Customers | | | | | |
| 7 | Strives and launches new products and services to the customers | | | | | |

| C | Level of Information Sharing | Very Low (1) | Low (2) | Aver-age (3) | High (4) | Very High (5) |
|---|---|---|---|---|---|---|
| 1 | Material supply forecast Information sharing with Project sites | | | | | |
| 2 | Material supply forecast Information sharing with suppliers | | | | | |
| 3 | Material required related Information sharing with suppliers | | | | | |
| 4 | Material requirement related Information sharing by project sites | | | | | |
| 5 | Adequacy and quality of information sharing throughout the supply chain partners | | | | | |
| 6 | Overall efforts of Inter-organizational information coordination and sharing | | | | | |
| 7 | Sense of trust, problem sharing & solving mechanism and skills transfer with partners | | | | | |
| **D** | **Level of Information Quality** | (1) | (2) | (3) | (4) | (5) |
| 1 | Timely Information exchange between supply chain partners | | | | | |
| 2 | Accuracy of Information exchange between supply chain partners | | | | | |
| 3 | Completeness of Information exchange between supply chain partners | | | | | |
| 4 | Adequacy of Information exchange between supply chain partners | | | | | |
| 5 | Reliability of Information exchange between supply chain partners | | | | | |
| **E** | **Information Technology** | Very Low (1) | Low (2) | Aver-age (3) | High (4) | Very High (5) |
| 1 | Level of IT-based automated ordering from major customers | | | | | |
| 2 | Level of IT-based automated ordering to major suppliers | | | | | |
| 3 | Up-to-datedness of IT technologies throughout the supply chain | | | | | |
| 4 | Adequacy of IT systems throughout the supply chain | | | | | |
| 5 | Use of online system to achieve operating efficiency within and across supply chain members | | | | | |

| F | Supply Chain Collaboration | Very Low (1) | Low (2) | Aver-age (3) | High (4) | Very High (5) |
|---|---|---|---|---|---|---|
| | **Company's integration with suppliers** | | | | | |
| 1 | The level of strategic partnership with suppliers | | | | | |
| 2 | The establishment of quick ordering system | | | | | |
| 3 | Availability of stable procurement through network | | | | | |
| | **Company's Integration with Customers** | | | | | |
| 1 | Follow-up customers for feedback | | | | | |
| 2 | Monitoring and measuring customer service level | | | | | |
| 3 | The level of market information sharing with major customers | | | | | |
| 4 | Frequency of contacts with major customers | | | | | |
| | **Cross functional integration within a company** | | | | | |
| 1 | Data integration among internal functions through network | | | | | |
| 2 | Information system integration among internal functional units | | | | | |
| 3 | Teamwork and intra-organizational coordination | | | | | |
| 4 | Extent of interaction between main office supply and project warehouse | | | | | |
| 5 | Periodic inter-departmental meetings | | | | | |

**Section Two: Operational Performance**

With regard to operational performance of your firm, use the following Rating Scales under the columns and please, tick (√) only one box from the given box after reading the variable.

1= Very Low,     2= Low,     3= Average,     4= High,     5= Very High

| A | Price/ Cost | Very Low (1) | Low (2) | Aver-age (3) | High (4) | Very High (5) |
|---|---|---|---|---|---|---|
| 1 | Ability to offer prices as lower(in attractive price) than competitors | | | | | |
| 2 | Level of capacity utilization | | | | | |
| 3 | Level of Inventory turnover | | | | | |
| 4 | Ability to run operation with less Production cost | | | | | |
| 5 | Ability to offer competitive prices | | | | | |
| **B. Quality:** an organization is capable of offering product quality and performance that creates higher value for customers. | | (1) | (2) | (3) | (4) | (5) |
| 1 | Ability to compete based on quality. | | | | | |
| 2 | Ability to offer products that are highly reliable | | | | | |
| 3 | Ability offer products that are very durable | | | | | |
| 4 | Capacity to offer high quality products to customer | | | | | |
| **C. Delivery dependability:** an organization is capable of providing on time the type and volume of product required by customer(s). | | (1) | (2) | (3) | (4) | (5) |
| 1 | Ability to deliver the kind of products needed | | | | | |
| 2 | Ability to deliver customer order on time | | | | | |
| 3 | Ability to provide dependable/faithful delivery | | | | | |
| 4 | Time to solve customer complaints | | | | | |
| 5 | Customer order processing time | | | | | |
| **D. Time to market:** an organization is capable of introducing new products faster than major competitors | | (1) | (2) | (3) | (4) | (5) |
| 1 | Ability to deliver product to market quickly | | | | | |
| 2 | Ability to introducing new products first in the market | | | | | |
| 3 | Ability to develop new product frequently | | | | | |

**Section Three: Organizational Performance**

Regarding organizational performance, use the following Rating Scales under the columns and please, tick (√) only one box from the given box after reading the variable.

1= Very Low,     2= Low,       3= Average,     4= High,     5= Very High

| **Organizational performance:** how well an organization achieves its market-oriented goals as well as its financial goals in the past five years? | **Very Low (1)** | **Low (2)** | **Aver-age (3)** | **High (4)** | **Very High (5)** |
|---|---|---|---|---|---|
| 1 | Market share | | | | | |
| 2 | Return on investment | | | | | |
| 3 | The growth of market share | | | | | |
| 4 | The growth of sales | | | | | |
| 5 | Growth in return on investment | | | | | |
| 6 | Profit margin on sales | | | | | |
| 7 | Overall competitive position | | | | | |

If any comment:

_____
_____
_____
_____
_____

**Thank you again very much!!!**

# LIST OF INTERVIEW QUESTIONS

**For YOTECK Procurement and Supply Manager;**

1. How can you explain the overall supply chain management practices of the company?

2. How do you select the supplier – by quality or low price/cost?

3. Is there strategic / long term relationship with suppliers? How long you continue to buy from them? Is there joint planning, performance measurement system, rewarding best suppliers?

4. How can you manage relationship with customers? Monitor their satisfaction, deliver on time, with expected standards, and launch new design / art of building and joint planning?

5. What about the extent of collaboration with suppliers and customers? Market information sharing, stable procurement by network and frequency of contact with customers etc.?

6. How can you explain about the level and quality of information sharing between SC members?

7. Are there sufficient IT facilities that help collaboration between supply chain members?

8. Is there mechanism that the company measures the effect of SCM practice on operational and organizational performance?

9. Is there any challenge you want to say regarding the supply chain management practices of the company?

**For YOTECK Construction plc. Customers**

1. How would you see your company relationship with YOTECK Construction Company?

2. Does YOTECK complete the required building with expected standard and quality on time?

3. Is there long term relationship, cooperativeness and joint planning effort with YOTECK?

4. How do you see information sharing practice between your company and YOTECK? (With trust, risk and gain sharing practice, timely, accurate, reliable & adequate information sharing)

5. How would you see the company's compliant management and its effectiveness?

6. What was the level of IT utilization for communication with YOTECK?

7. What about the level of integration with your company and YOTECK?

8. Does YOTECK can introduce new design or better building model and equipment than competitor?

**For YOTECK Construction PLC Domestic Supplier:**

1. What are the types of materials your company supply to YOTECK?
2. How do you see your company relationship with YOTECK Construction plc?
3. Are there strategic /long-term relationship, cooperativeness, joint planning, and risk sharing practice with YOTECK?
4. Do you think YOTECK give priority for quality of materials rather than least cost in selecting suppliers?
5. Does material supply forecast & other information sharing with YOTECK is complete, accurate, on time & adequate?
6. Is there sufficient information system and IT for quality and timely communication with YITECK?
7. Is there any difficulty your company faces as supplier relationship with YOTECK as compared with other Construction Company?