

S.T MARRY UNIVERSITY

SCHOOL OF GRADUATE MBA- PROGRAM



**THE EFFECT OF SUPPLY CHAIN MANAGEMENT PRACTICE
ON FIRM PERFORMANCE:
(THE CASE OF KALITY METAL PRODUCT FACTORY)**

**RESEARCH PAPER SUBMITTED ST.MARRY UNIVERSITY FOR THE
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BY

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ADDIS ABABA, ETHIOPIA

Title Page

The Effect of Supply Chain Management Practice on Firm performances
The case of Kality Metal Factory

Declaration

I, Mekasha Tekleab, declare that this paper is a result of my independent research work on the topic entitled “The effect of Supply chain management practice on firm performance: In the case of Kality Metal factory” for the partial fulfillment of the requirements for the Degree of Masters of General MBA at ST.Marry University, School of Graduate. This work has not been submitted for a degree to any other university. All the references are also duly acknowledged.

Mekasha Tekleab

Date: _____

Certification

This is to certify that Mekasha Tekleab has carried out this research work on the topic entitled “The effect of Supply chain management practice Firm performance: In the case of Kality Metal Factory” under my supervision. This work is original in nature and it can be submitted for the partial fulfillment of the requirements for the award of the degree of Masters of Art in General MBA.

Dr. Mohamed Nour

Date _____

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APPROVED BY THE COMMITTEE OF EXAMINERS

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Department Head	Signature
_____	_____
Advisor	Signature
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Internal Examiner	Signature
_____	_____
External Examiner	Signature

Acronyms

CLM	Council of Logistics Management
CR	Customer Relation
EFA	Exploratory Factor Analysis
ILP	Internal Lean Practices
IT	Information technology
LIQ	Level of Information Quality
LIs	Level of Information Sharing
OC	Organizational culture
<u>OMS</u>	Outsourcing and Multi-Suppliers
OP	Operational Performance
ORP	Organizational Performance
RBV	Resource-Based View
ROI	Return on Investment
RV	Relational View
SCLP	Strategic Collaboration and Lean Practices
SCMP	Supply Chain Management practice
SMEs	Small and Micro Enterprises
SSP	strategic Supplier Partnership

Abstract

The main objective of this study was to examine the effect of supply chain management (SCM) practices on Firm performance the case of Kality Metal Factory. The population of the study 317 employees of Kality Metal Factory who are direct relationship with research subject matter and 192 of them selected as a target sample size. In this study, both primary and secondary data used. The primary data were gather through questionnaire from 189 respondents of Kality Metal Factory. Journal, books, internet and other references used as a secondary source of data. The researcher used explanatory research design and quantitative research approach. Data was using descriptive and inferential statistics that include correlation and multiple liner regressions to analysis the SCM practices on Firm performance in Kality Metal Factory. In this study, a multiple regression analysis was conducted to test effect of supply chain management (SCM) practices on Operational firm, the finding shows that a low quality of information's sharing of supply chain activities is leading to a negatively decrease the Firm performance by 17.1% per annual. Another result shows that there is low Operation system responsiveness of supply chain Activities that leads to a 7.7% negatively decrease the Firm performance per annual. As a result low Logistic process responsiveness of supply chain activities that lead to a 77.7% negatively decrease the Firm performance. Logistic process responsiveness in supply chain activity shows negatively affected the ability of Kality Metal Factory outbound transformation, distribution and warehousing system to address changes in customer demand. The findings also shows that there is low Supplier network responsiveness of supply chain Activities will lead to a 13.4 % negatively decrease the Firm performance per annual. The finding indicated that, Supplier network responsiveness have low ability to the kality metal product factories major suppliers to address changes in the firm's demand. Finally, the study suggests that Kality metal product factories performance should develop their supply chain in order to get customer responses.

Keywords: supply chain management, Firm performance

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

In today's highly unsteady and competitive markets, rivalry among companies is transformed from competing on the basis of own capabilities to competing with the whole supply chain (Ketchen and Hult, 2007). With this intensified competition, organizations began to realize that it is not enough to improve efficiencies within an organization, but their whole supply chain has to be made competitive (Child and Towel, 2003).

These has seen in the last few years and the focus has shifted from the factory level management of supply chains to enterprise level management of supply chains (Gunasekaran *et al.*, 2005). To make the whole supply chain competitive and enhance their performance, coordination of the supply chain has become strategically important (Puigjaner and Lainez, 2008). Moslem *et al.* (2013) also stated as understanding and implementation of supply chain management (SCM) is a necessary condition to remain competitive in the global competition and improving profitability. Similarly, to this, it is a network consisting of downstream and upstream organizations which are involved in different processes and activities that create value for end customers in the form of products or services (Christopher, 1998).

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). Effective partnerships with suppliers can be a critical factor to guide supply chain management (Li *et.al*, 2006). The other factor is having good relationships with customers, which are needed for successful implementation of SCM programs (Moberget *al.*, 2002).

Furthermore, Wang *et al.* (2008) stated that integration and coordination across supply chain can be well provided through information sharing. Supply chain partners that exchange information regularly are able to work together as a single key.

Information sharing is important, the significance of its impact on SCM depends on the extent of quality of information shared, when and how it is shared, and with whom (Holmberg, 2000 and Chizzo, 1998). They are better able to understand the needs of the final consumer and hence are able to respond quickly to changing market (Li *et al.*, 2006). Power

(2005) also state that the failures can occur in case of information delays, shortage or distortion across the supply chain.

According to Moslem *et al.* (2013) internal lean practice is the other factor that affects supply chain performance. Lean production is a production system that aims to optimize production process by reducing waste and other inefficient factors.

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 *et al.*, 1998). Li *et al.* (2006) stated that any organizational initiative, including supply chain management, should ultimately lead to enhanced organizational performance.

Therefore, in light of this background, this study will determine the Effects of supply chain management (SCM) practices on firm performance in case of Kality Metal Factory.

1.2. Statements of the problem

According JICA (2018), Kality Metal Factory, the previous study clearly shows that the Kality Metal Factory depends on raw material import from multiple countries such as Italy, Turkey, Germany, Thailand, India, Ukraine and China, rather than domestic iron making process.

Survey study Kitaw (2014) shows that, the Kality Metal Factory used import raw materials for production process. This indicates that Kality Metal Factory highly dependent on imported raw materials for its production of metal products. This is due to unavailability of raw materials locally, poor quality of local raw materials, lack of sufficient local supplier and fragmental local supply chain management systems are the major cause for relying on imported raw materials Dametew (2015).

Damtew remarked in his finding to the related with imported inputs were, high material cost, reliability in foreign suppliers is problematic, supply chain management problems, lack of JIT and in cleaning goods through custom clearance area are the major problems that faced in Kality Metal Factory.

According to JICA (2018) study shows that Kality Metal Factory faced various problems on quality and related issue, for comparing international metal industries. These quality problems found due to insufficient basic metal inputs at the required quantity, quality of local raw materials, high cost of imported raw materials quality and delay on time delivery are make the firms to produce products below their customer expectations (Dametew, 2016).

Since Metal product factories should work effectively for organize and implementing quality Supply chain management systems to related problems for Kality Metal Factory production constraints include costs of logistics and transport, problems port facility, insufficient electricity and problems for power utilization, problems internet connection for upgrading their performance and telephone connections and poor quality of services (Fourtunne-Addis, 2016).

Due to SCM practice ineffectiveness, Kality Metal Factory invest highest amount of cost for logistics processes, this shows the factory and the implementation is going smooth, its supply chain management practice its infant stage.

Therefore, Kality Metal Factory regardless of their supply chain problem or the condition of their input and product delivery, forced to make conceive study motive in order to analysis what is the impact of SCMP on Kality Metal Factory performance. To the extent of researcher knowledge, there is no previous study on issue of Supply chain management practice on any metal product factory of Ethiopia. Let alone study has not been studied on issue of supply chain management practice on Firm performance, those other researchers studied which is prompted the effect of SCMP without any of detail explanations of effect. This is initiate the researcher to emphasize conducting current research instead.

1.3. Research Question

This study was addressed the following basic research questions:

1. What is the effect of Strategic supplier partnership on Kality Metal Factory performance?
2. What is the effects of customer relationship on Kality Metal Factory performance?
3. What is the effect of Supply Chain Responsiveness (Operation system responsiveness, Logistic process responsiveness, Supplier network responsiveness) on Kality Metal Factory performance?
4. What is the effects of Quality of information on Kality Metal Factory performance?
5. What is the effect of Internal Lean Practices on Kality Metal Factory performance?

1.4 Objectives of Study

1.4.1 General Objective

The main objective of this study was to examine the effect of supply chain management (SCM) practices on Kality Metal Factory Performances.

1.4.2 Specific objectives

The specific objectives of the study are: -

1. To examine the effect of Strategic supplier partnership on Kality Metal Factory performance.
2. To examine the effects of customer relationship on Kality Metal Factory performance.
3. To examine the effect of Supply Chain Responsiveness (Operation system responsiveness, Logistic process responsiveness, Supplier network responsiveness) on Kality Metal Factory performance.
4. To examine the effects of Quality of information on Kality Metal Factory performance.
5. To examine is the effect of Internal Lean Practices on Kality Metal Factory performance.

1.5 Significance of the Study

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

1.6 Scope of the Study

SCM encompasses vast areas of managerial practices. However, it is difficult and unmanageable to conduct the study in all areas that summarizes SCM in terms of time, finance, and research manageability. Therefore, the scope of this study is delimited to analysis effect of SCM practices (i.e. Strategic supplier partnerships, customer relations ship, information's sharing and internal lean practice) on Operational firm performance Kality Metal Factory processing in terms of topic.

The area of the study also delimited to the case company, which known Kality Metal Factory, which is located to Akaki kality sub city.

1.7. Operational definitions

Supply chain: is all inter-linked resources and activities needed to create and deliver products and services to customers.

Supply Chain Management: is a network of relationships, with the goal to deliver superior value, i.e., the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole

Strategic supplier partnership: The long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities so fin dividable participating organizations to help the achieves significant ongoing benefits.

Firm performance: -Firm performance refers to how well a Firm meets its financial and non-financial goals and market criteria.

1.8 Organization of the Study

This project paper is organized into five chapters: Chapter one contains the introduction part dealing with back ground of the study, the research problem, objectives of the study, scope and significance of the study and limitation of the study. The second chapter discusses the literature review about the subject matter. In chapter three the research methodologies were presented. In chapter four presents results and discussion of the study and finally, chapter five presents the summary of major findings, conclusion and forwarded suggestions.

CHAPTER TWO

2. RELATED LITERATURE REVIEW

2.1. Concepts and Definitions of Supply Chain Management

The traditional understanding of supply chain management is to leverage the supply chain to achieve the lowest initial purchase prices while assuring supply. Typical characteristics include: multiple partners; partner evaluations based on purchase price; cost-based information bases; arm's-length negotiations; formal short-term contracts; and centralized purchasing (Li et al., 2006).

Operating under these conditions encourages fierce competition among suppliers, often requiring playing one supplier against the others, and uses rewards or punishment based on performance. The fundamental assumption in this environment is that trading partners are interchangeable and that they will take advantage if they become too important.

In addition, there is a belief that maximum competition, under the discipline of a free market, promotes a healthy and vigorous supply base which is predicated on the "survival of the fittest" (Robert, 1998). The term SCM was first used in the 1980s and as such is a relatively new discipline within management theory with tools and concepts still being developed. According to Tan et al. (2002) in last few years the concept of SCM has received increasing attention from academicians, consultants, and business managers alike. Furthermore, Li et al.(2006) identify as 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.

As Burgess et al. (2006) and Harland et al. (2006) describe, the academic debate over the last 20 or more years contributed to develop the SCM understanding and its relevance to firm strategy. However, the concept of SCM has been considered from different points of view in different bodies of literature such as purchasing and supply management, logistics and transportation, operations management, marketing, organizational theory, and management information systems (Croom et al., 2000). Various theories have offered various insights on specific aspects or perspectives of SCM, such as industrial organization and associated transaction cost analysis (Ellram, 1990), resource-based theory and its extension relational view theory (Rugtusanatham, 2003), competitive strategy (Porter, 1985), and social-political perspective (Stem and Reve, 1980). In addition those academic debates over the last years

also produced a fragmented literature, lacking commonly accepted frameworks and clear constructs, undermining knowledge advancement (Burgess et al., 2006; and Harland et al. 2006). Even though different things contribute for differences on the concepts of SCM, different researchers tried to describe the concepts of SCM as follows. Ellram and Cooper (1990) identify SCM as an integrating philosophy to manage the total flow of a distribution channel from supplier to the ultimate customer. Whereas Robinson and Kalakota (2000) view the supply chain quite simply as a “process umbrella” under which products are developed and delivered to customers. From a structural viewpoint, they argue, the supply chain refers to the complex network of relationships that organizations maintain with trading partners to source, manufacture and deliver products. 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. In addition, according to Arawati (2011), SCM includes managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer. Generally, the SCM concept used in the research in its essence assumes that firms set up alliances with members of the same chain (i.e., upward stream, supplier, and downward stream, customer) to improve its competitive advantage revealed by superior operational performance of all chain member. Regarding definitions of SCM, many definitions have also been used to explain the term. The frequency with which the term SCM is used in today’s environment would suggest that it is a well understood concept accompanied by an accepted set of managerial practices. However, definitions of and approaches to SCM vary substantially from organization to organization because it is influenced by many different fields and researchers in the area of SCM. 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). Supply chain by Christopher (1998) defined as a network of various organisations involved both through upstream and downstream linkages in different kinds of activities and processes. Meanwhile, Adebayo (2012) summed up the many definitions of SCM by various authors and researchers as ‘the task of integrating organisational 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’.

Thus, in the end produce value whether in the form of products or services to the end user. The key elements of supply chain and its management from these definitions are therefore the upstream parties, the downstream parties and the integration of all the organisations involved, together with the internal function of an organisation itself. The upstream parties, as being described by Handfield and Nichols (1999) consists of an organisation’s functions, processes and network of suppliers while the downstream function on the other hand concerns the distribution channels, processes and functions where the product passes through to the end customer. Where external downstream and upstream functions are concerned, the managers involved in each upstream and downstream supplier and functions are responsible in making sure that the deliveries of products and services are done as scheduled to their destinations. If there are cases where delays are inevitable, the managers are to ensure that the impact of the delays to the supply chain and the value it carries will be minimal.

In general, regarding the definition of SCM, the researcher conceptualize it as the strategic coordination of the traditional business functions (i.e., coordinating the firm/organization with the supplier and customer) and the tactics across these businesses functions within a particular organization and across businesses within the supply chain for the purposes of improving short-term and long-term performance of the individual organizations and the supply chain as a whole.

2.2. Theoretical view supply Chain Management

One of the relevant theoretical supports for the relation between SCM practices and performance is the resource-based view (RBV) and its extensions relational view (RV). The RBV considers that firms are heterogeneous and achieve competitive advantage due to rare, valuable, inimitable and not substitutable resources and capabilities (Barney, 1991 and Peteraf, 1993). The original approach of the RBV, focused on the internal resources owned by a firm, was broadened to consider the relationship as a source of competitive advantage and improvement of performance. This gave rise to the Relational View (RV) (Dyer & Singh, 1998). The RV considers relationships as potential sources of superior performance. It identifies four different sources of relational rents: investments in relation specific assets, substantial knowledge exchange, complementary and rare resources, and lower transaction costs. All these sources are influenced by more effective governance mechanisms based on informal safeguards, such as trust and reputation (Dyer & Singh, 1998; Holcomb & Hitt, 2007; and Rungtusanatham *et al.*, 2003). As in the RBV perspective, the relational resources and capabilities should be rare, valuable, and hard to imitate or to substitute in order to provide sustainable competitive advantage.

2.2.1. Characteristics of Supply Chain Management

Generally, the relation and impact of SCM in performance can be better understood if we interpret its practices using the relational view. Information sharing and quality of information maps directly into accurate and timeliness knowledge exchange. Long-term relationships with suppliers and customers can help to reduce transaction costs through the development of trust and reputation (Cooper *et al.*, 1997; Mentzer *et al.*, 2001 and Li *et al.*, 2006).

It also can contribute to developing knowledge exchange and assure investments in specific assets. Moslem *et al.* (2013), on the other hand, described that internal lean practice can reduce waste and contribute to lower transaction cost.

According to Van der Vorst (2004) is relatively new. It first appeared in logistics literature in 1982 as an inventory management approach with an emphasis on the supply of raw materials (Oliver and Webber 1982). By 1990, academics first described SCM from a theoretical standpoint to clarify how it differed from more traditional approaches to managing the flow of materials and the associated flow of information (Cooper and Ellram 1993). The growing interest in SCM, according to Lummus and Vokurka (1999) is attributable to three (3) basic

factors, thus, growing specialization or focus on core activities by many firms, intense competition from both local and international sources, and the realization by firms that maximizing performance of one department or function may lead to less than optimal performance for the whole company. Agreeing with this assertion, Cooper et al. (1997) in their research concluded that, the concept of SCM arose over the recognition that sub-optimization occurs if each organization in a supply chain attempts to optimize its own results rather than to integrate its goals and activities with other organization to optimize the results of the chain.

For any market driven organization to be able to compete effectively with its competitors it must sustain certain core competencies, such as process management, integration of knowledge, and diffusion of learning. Competitive position of a business arguably results from the assessment of what the firm offers with regards to value creation as compared to that of its competitors (Gorynia 2004). Indeed, basic measures of the competitive position of a firm are its market share and financial position. Additionally, factors such as product quality, customer loyalty, and reputations are also used as additional measures of business performance and competitive position of a firm (Gorynia, 2004).

Consequently, Lee and Billington (1992) pointed out that, SCM can be used as a strategic weapon to develop a sustainable competitive advantage by reducing investment without sacrificing customer satisfaction.

SCM includes a set of approaches and practices that effectively integrate suppliers, manufacturers, distributors, and customers to improve the long-term performance of firms and their supply chains (Chopra and Meindl, 2001). These practices represent opportunities for organizations to differentiate themselves on the basis of superior performance in the context of demand forecasting, product availability, inventory management, and distribution (Zielke and Pohl, 1996). Thus, organizations that successfully implement SCM practices achieve superior supply chain performance. This, however, requires internal cross-functional integration within a firm and external integration with suppliers or customers (Narasimhan, 1997).

2.3. Supply chain management practice Measurement

SCM practices defined as a set of activities undertaken in an organization to promote effective management of its supply chain. Donlon (1996; 117:54) describes the latest evolution of SCM practices, which include supplier partnership, outsourcing, cycle time

compression, continuous process flow, and information technology sharing. Tan et al. (1998; 34) describes in use purchasing, quality, and customer relations to represent SCM practices, in their empirical study. Alvarado and Kotzab (2001) include in their list of SCM practices concentration on core competencies, use of inter-organizational systems such as EDI, and elimination of excess inventory levels by postponing customization toward the end of the supply chain. 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 JIT capability.

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). Sandikiglu and zehir (2010) also stated that in strategic supplier partnership, suppliers play more direct role in an organization's quality performance.

Through close bonded relationships, supply chain partners are more willing to share risks and reward and be able to maintain the relationship over a longer period of time (Lascelles and Dale, 1989; Landros and Moncza, 1989).

It designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits (Noble, 1997 and Sheridan, 1998). Such strategic partnerships entered into to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as core raw materials, technology, products, and markets (Yoshino and Rangan, 1995).

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). Strategically aligned organizations can work closely together and eliminate wasteful time and effort (Balsmeier and Voisin, 1996).

Chen and Paulraj (2004) use supplier base reduction, long-term relationship, communication, cross-functional teams and supplier involvement to measure buyer-supplier relationships. Min and Meltzer (2004) identify the concept SCM practice as including agreed vision and

goals, information sharing, risk and award sharing, cooperation, process integration, long-term relationship and agreed supply chain leadership.

In this study, SCM practices are defined as a set of activities aimed at improving the performance of the supply chain (Li et al., 2005; Li et al., 2006; Wong et al., 2005; Zhou and Benton, 2007; Koh et al., 2007). Table 2.4 shows the SCM practices construct and its sub constructs' definitions and literature support.

2.3.1 Strategic Supplier Partnership

Dyer et al. (1998) suggest that not all suppliers should be considered as strategic suppliers. They argue that, first; suppliers should be analyzed strategically to determine which suppliers contribute to the core competence and competitive advantage of the buying firm. Only then should companies conduct a strategic supplier partnership with them.

Sarkis and Talluri, (2002) propose an analytical network process (ANP) model to address the selection of strategic suppliers. The ANP model shows a graphical representation of an analytical network hierarchy for strategic supplier selection. The model consists of a number of factors that determine how to select strategic suppliers. One of those factors is the strategic performance metric. Strategic performance metrics focus on considering the quality, cost, delivery speed, and flexibility of the suppliers in determining whether they are strategic suppliers.

Strategic supplier partnerships require a high degree of coordination between the organization and its suppliers; companies tend to have a long-term relationship with suppliers that create value to each party.

In this study, a strategic supplier partnership is defined as the long term relationship between the organization and its suppliers which influences the strategic and operational capabilities of individual participating companies to help them achieve significant ongoing benefits (Li et al., 2005; Li et al., 2006; Monczka et al., 1998).

It is important to differentiate a strategic supplier partnership from a simple long-term partnership. A strategic supplier partnership is not only about buying goods and services from suppliers, but it is also about impacting the suppliers' systems and operational capabilities, adding value to the goods and services, and improving the performance of the whole supply chain (Monczka et al., 1998). This kind of partnership emphasizes a direct, long-term association with suppliers, encouraging mutual planning and problem solving efforts, and selecting fewer suppliers (Maloni and Benton, 1997; Gunasegaram et al., 2001). Furthermore,

Graham et al. (1994) found that a strategic supplier partnership improves the quality of supplier operations and improves the quality of parts that are supplied, which results in better product quality. Thus, strategic partnerships will encourage suppliers to be involved and participate in quality certification programs.

In another empirical study on strategic supplier partnership, Stuart (1993) suggests that sharing of information, continuous improvement, and the joint problem-solving effort are the keys to a successful strategic partnership with suppliers.

2.3.2 Customer Relationship

Customer relationship is defined as the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction (Li et al., 2005; Li et al., 2006).

Tan et al. (1998) suggest that customer relationship is an important element of SCM practices; it involves the downstream element of SCM. In their study, customer-relations practices include the following: evaluating customer complaints, following-up with customers for feedback, enhancing customer support, predicting key factors affecting customer relationships, predicting customer's future expectations, interacting with customers to set standards, and measuring customer satisfaction. It encompasses the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers, and improving customer satisfaction (Claycombb et al. 1999 and Tan et al., 1998).

As pointed out by Day (2000), devoted relationships are the most sustainable advantage because of their essential barriers to competition. 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 (Carr and Pearson, 1999).

As discussed in Niknia (2007), the main customer relationship goals are identifying new business opportunities, reduce missed opportunities, reducing customer defection, creating customer loyalty, improve customer service, improve organization appearance, reduce costs, and increase revenue. For this research purpose, customer relationship is conceptualized from the literature review and practicability in Ethiopia as the way of building long-term relation with customers through creating customer loyalty, reducing defect products, improving customer services, reducing price/cost, managing customer complaints and working on

improving customer satisfaction. Furthermore, the result of their survey suggests that firms that have strong customer relationships are confident in their ability to evaluate customer complaints and provide support to their customers. They reviewed the literature and identified a list of lean manufacturing practices:

It is a bottleneck removal (production smoothing), cellular manufacturing, competitive benchmarking, continuous-improvement programs, cross-functional work forces, cycle time reduction, focused factory production, lot sizing reduction, maintenance optimization, new process equipment/technologies, planning and scheduling strategies, preventive maintenance, process capability measurements, pull production/Kanban, quality management programs, quick changeover techniques, reengineered production processes, safety improvement programs, self-directed work teams, and total quality management.

Just as manufacturing firms are required to change and adopt lean practices, so are the firm's suppliers. Li et al. (2005) suggest that if organizations do not attempt to eliminate waste from their internal supply chain, then the organization will run the risk of losing customers. Hence, organizations must extend lean practices down through the supply chain in order for the company to gain the full effectiveness of the lean system (McIvor, 2001).

Internal lean practices are defined as the practices of eliminating waste (cost, time, etc.) in manufacturing systems, characterized by reduced set-up times, small lot sizes, and pull-production (Li et al., 2005, Li et al., 2006). Lean practices focus on eliminating waste. The former president of Toyota, Fujio Cho, defines waste as “anything other than the minimum amount of equipment, materials, parts, and workers (working time) which are essential to production”.

Furthermore, Fujio Cho identified seven types of waste to be eliminated from the supply chain: (1) waste from overproduction, (2) waste of waiting time, (3) transportation waste, (4) inventory waste, (5) processing waste, (6) waste of motion, and (7) waste from production (Jacobs and Chase 2008).

2.3. 3. Quality of Information Sharing

Information quality includes an aspect such as accuracy, timeliness, adequacy and information exchanged credibility Tan et al. (1998). It appears that there is a built in reluctance within organizations to give away more than minimal information (Berry et al. 1994) since information disclosure is perceived as a loss of power. Given these

predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM (Feldmann and Muller, 2003).

Based on Li et al. (2005), organization needs to review their information as a strategic asset and ensure that the information flows with minimum delay and distortion. In addition, Li et al. (2005) also notes that 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). While information sharing is important, the significance of its impact on SCM depends on information by all functional elements within the supply chain as a key competitive and distinguishing factor. 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

2.3.4 Internal Lean Practices

Another supply chain management practices is the use of internal lean practices. Internal lean practices refer to consume less system resources uses with the same speed mass production and offers greater variety to customers. In other way James and Jones (2003) internal lean practices as Lean production associated with continuous pursuit of improving the processes, a philosophy of eliminating all non-value adding activities and reducing waste within an organization. One of the fundamental ideas in internal lean practices is removed surplus (Hassanzadeh and Jafarian, 2010). The most famous of internal lean practices can be mentioned timely and lean produce. Production of lean and timely is production system that its aims are to optimize processes and production process by reducing waste and other inefficient factors (White, 1993). Internal lean practices understanding for the study is waste elimination regarding to setup time, continuous improvement and just in time.

2.3.5. Supply chain responsiveness

In business competitive world nowadays, business organization should to develop their supply chain in order to get customer responses. According to Thatte, (2007) the sub-constructs for supply chain responsiveness includes operation system responsiveness, logistic process responsiveness and supplier network responsiveness. Operation system responsiveness is the ability of firm's manufacturing system to address changes in customer demand. Its includes both manufacturing and service operation. Duclos et al (2003)

emphasize that responsiveness at each company of the chain is an integral component of supply chain responsiveness.

In the competitive business, better relationship management with customers is crucial for organization success (Wines, 1996). Good relationship with business partners, including key customers are important role to success of supply chain management practiced by organization (Moberg et al, 2002; Tathee, 2007). Customer relationship recognized as an internal component of an organization's market strategy to increase sales and profits (Bommer et, 2001; Thatte, 2007). Close customer relationship allow product differentiation from competitors, help sustain customer satisfaction and loyalty, and elevated the value provide to customer (Margaretta, 198; Thatte, 2007).

Simatupang and Sridharan, (2002) defined information sharing as the access to private data between business partners thus enabling them to monitor the progress of products and orders as they pass through various processes in the supply chain. They identified some of element that comprise information sharing, consisting data acquisition, processing, storage, presentation, retrieval, and broadcasting of demand and forecast data, inventory status and location, order status, cost-related data, and performance status. They also add that information sharing pertaining to key performance metric and process data improves the supply chain visibility thus enabling effective decision making. Information shared in a supply chain is of use only if it is relevant, accurate, timely, and reliable (Simatupang and Sridharan, 2005). Responsiveness with business partners enables organizations making better decisions and making action on the basis of greater visibility.

Lumnus and Vokurka (1999, cited in Thatte, 2007) stated that in order to make the supply chain competitive, a necessary first step is to acquire a clear understanding of supply chain concepts and be willing to openly share information with supply chain partners.

2.3.6. Logistic process Responsiveness

Logistic process responsiveness is the ability of company's outbound transformation, distribution and warehousing system to address changes in customer demand. Fawcett (1992) stated that the responsive in logistic process is a crucial component in the supply of a responsive supply chain strategy. Logistics and distribution management encompasses the transformation activities of goods from suppliers to manufacturer to distribution centers to final point of end users.

These activities include warehousing, packaging and shipping, transportation planning and management, management inventory, reserve logistics and order tracking and delivery. Supplier network responsiveness is the ability of the firm's major suppliers to address changes in the firm's demand. A key to responsiveness is the presence of responsive and flexibility partners upstream and downstream of the firm (Christopher and Peck, 2004). The ability of the firms to react quickly to customer demand is depending on the reaction time of suppliers to make volume of changes. In the changing world, competitive advantage emerges from the creation of supplier competencies to create customer value and achieve cost and/or differentiation advantages, resulting in market share and firm profitability (Thatte, 2007).

To obtain competitive advantage, firms need to set up barriers that make imitation difficult through continual investment to improve the firm advantage, making this a long-run cyclical process. Souza and William (2000) suggested that cost and quality is a part of competitive advantage dimension. Wheelwright (1978) and Thatte (2007) also suggested cost, quality, dependability and speed of delivery as some of the critical competitive priorities for manufacturing.

Vokurka et al. (2002) described the competitive advantage dimensions included price/cost, quality, delivery dependability, and time to market. In describe the following five dimensions of competitive capabilities: competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and product innovation. Thatte (2007) suggested that dimension of competitive advantage: price, quality, delivery dependability, time to market, and product innovation. These dimensions, author used in this research.

2.4. Firm performance

The competitive priorities literature (Ward et al., 1998) 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). Competitive priorities, which are realized by operational performances, are the extent that an organization is able to create a state of defense against competitors and includes a feature that allows an organization to distinguish itself from its competitors (Li et al., 2006). The concept of competitive advantage is directly related to desired value of the customer (Mehri and Hosseini, 2004). 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 (Barny, 1999).

The competitive priorities can also be thought as a way to conceptualize and measure operational performance. Improvements in performance can manifest themselves in different aspects like inventory reduction, lead time reduction or quality improvement. Grouping these types of improvements under the broader classes of competitive priorities as cost, quality, delivery and time can be a useful measurement approach allowing comparability, comprehensiveness and theoretical underpinning (Priscila and Luiz, 2011).

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 (Tracey, 1999). In addition, recent studies have included time-based competition as an important competitive priority. Research by Kessler and Chakrabarti (1996), and Zhang (2001) identifies time as the next source of competitive advantage.

On the basis of prior literature, Koufteros et al. (1997) describe a research framework for competitive capabilities and define the following five dimensions: competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and production innovation. 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.

2.5. Review of Empirical Theories

According Shah et al. (2002), much of the current theoretical/ empirical research in SCM focuses on only the upstream or downstream side of the supply chain, or certain aspects/perspectives of SCM. However, there are certain previous researchers have devoted deal of attention to the relationship of supply chain management practice (s) and certain

aspects of overall organizational performance from different perspective/dimensions or overall supply chain. Some of these researches finding are discussed as follow:

Alireza et al. (2011) conducted study on Malaysia Electronic Industry to present a model for supply chain performance by employing supply chain design, supply chain information sharing, and flexibility and delivery components as independent variables influencing supply chain performance. The results from this study depicted that supply chain design influences supply chain performance through delivery and information sharing. Furthermore, information sharing and delivery have a direct influence on supply chain performance. The findings also showed that flexibility influences supply chain performance through delivery. Information sharing affects supply chain performance directly and has also an indirect impact on supply chain performance through flexibility. This study elaborates the significant effect of the design of the supply chain on its performance while considering the impact of information sharing.

Moslem (2013), conducted research on impact of supply chain management practices on competitive advantage in manufacturing companies of Khuzestan province (Iran) by using strategic partnerships with supplier, customer relationship, information sharing, Quality of information sharing and internal lean practices are independent variables affecting the competitive advantage. The result from this study was indicates as there is relationships between SCM practices and competitive advantage.

Lenny et al. (2007) conducted study on the impact of supply chain management practices on performance of SMEs in Turkey. Based on exploratory factor analysis (EFA), researchers were grouped SCM practices in two factors: outsourcing and multi-suppliers (OMS), and strategic collaboration and lean practices (SCLP). The results indicate that both factors of SCLP and OMS have direct positive and significant impact on operational performance. In contrast, both SCLP and OMS do not have a significant and direct impact on SCM-related organizational performance. Also, as the direct relationship between the two performance-constructs was found significant, both factors of SCM practices have an indirect and significant positive effect on organizational performance through operational.

On the research topic Supply Chain Management measurement and its influence on Operational Performance conducted by Priscila and Luiz (2011), SCM measurements were considered as consists of information sharing, long term relations, cooperation and process integration as independent variables influences operational performance in case of Brazilian

companies. The empirical results of this study provided evidence of a positive impact of SCM measurements on operational performance.

Supply Chain Management, Product Quality and Business Performance in case of Malaysian manufacturing companies conducted by Arawati (2011) and the study specifically investigates relationships between SCM, product quality and business performance and these associations are analyzed and the result demonstrates that SCM dimensions namely 'lean production', 'new- technology and innovation', 'strategic supplier partnership' and 'postponement concept' appear to be of primary importance and exhibit significant effects on product quality and business performance. debayo (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.

Mahbubul (2013) conducted research on Effects of Supply Chain Management Practices on Customer Satisfaction in the pharmaceutical industry of Bangladesh: Evidence from Pharmaceutical Industry of Bangladesh. The results of the study indicate that SCM practices as observed in the industry comprise three dimensions, namely, collaboration and information sharing, logistics design and IT infrastructure, and organizational culture (OC). However, while the first two exerts their impact on customer satisfaction, OC does not have any influence on it.

To sum up, from above literature reviews it can be easily understandable that the work on supply chain management measurements/ practices and its influences on different perspectives of the organization and overall supply chain partners increasing and yields good backgrounds.

However, the relationship of SCM with performance cannot be regarded as conclusive (Cousins, et al., 2006). Despite the increase of empirical research in the last few years, important differences in research design undermine comparability: lack of consensus about the definition and dimensionality of the SCM construct, use of different units of analysis, and different approaches to performance measurement.

For that matters, the study showed that supply chain management practice has mostly impacted by information's sharing and strategic management. But, empirical research has not seen the how the postponement or operations or activities (making, sourcing and delivering) look like and the strategic supplier relationship instead.

2.6. Conceptual Framework

Based on overall review of related literature, and particularly the work of Li *et al.* (2006), Lenny *et al.* (2007), Priscila and Luiz (2011) and Moslem *et al.* (2013), the following conceptual framework in which this specific study governed was developed as follows: SCM measurements: Strategic Supplier partnership, Customer Relationship, Level of Information Sharing, Quality of Information Sharing & Internal lean practice.

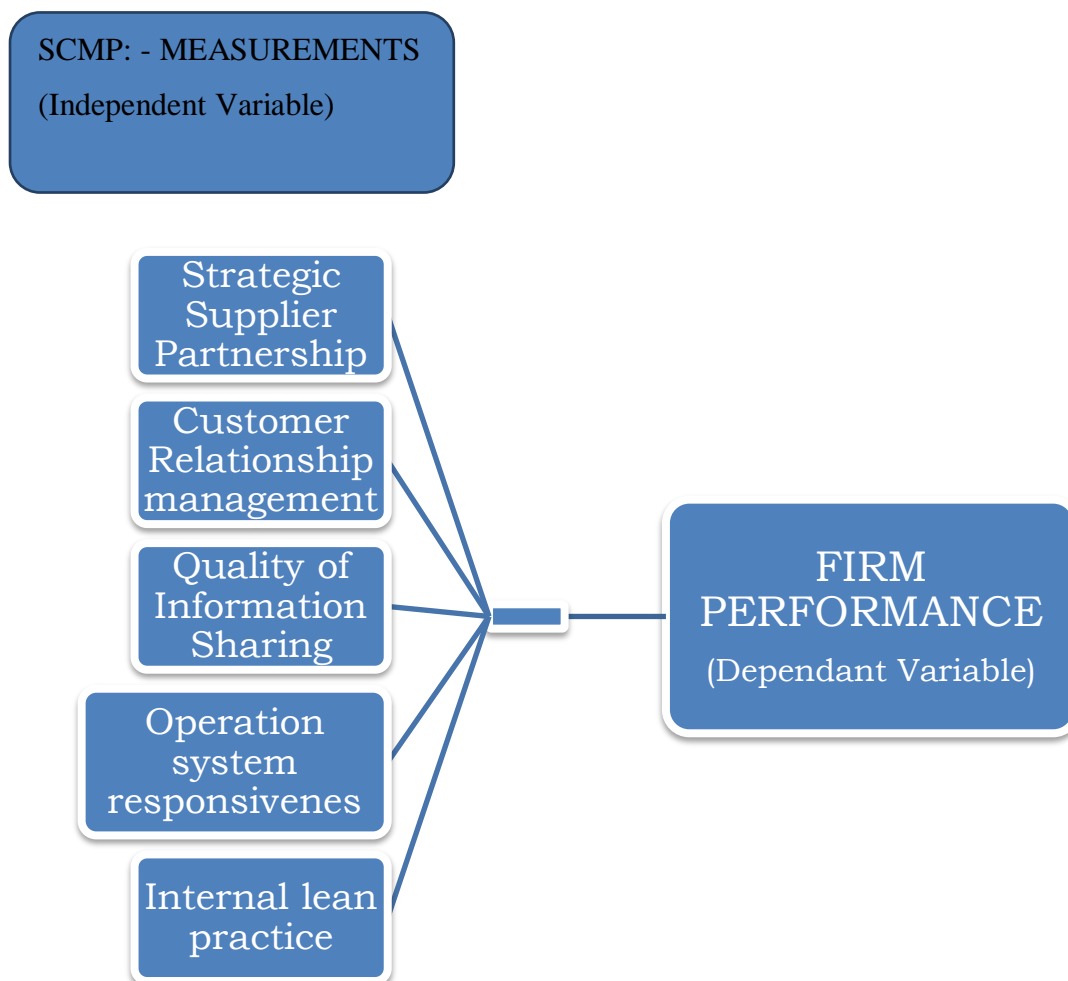


Figure 2.1 Source: adapted from Li et al. (2006) and Lenny et al. (2007).

CHAPTER THREE

3. METHODOLOGY OF THE STUDY

3.1. Research Design

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

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

Therefore, the research designs employed in this study are descriptive and explanatory. Descriptive research design is preferred for better describe the group of individuals over the set of variables. Correlation are applied to investigate the association of variables and the regression is used to show the cause and effect relationship between the dependent variables and the independent of supply chain management practices. The rationale behind selection of this method is to get an accurate representation of characteristics of a particular situation and group.

3.2 Research Approach

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

For data collection, a research question developed to explore the effect of supply chain practice in the firm performance and then theoretical model based on former theories and concepts was develop based on it. Close-ended Likert type questioners has distributed to and collected from the selected employees of kality metal factory and then it was summarize and analyzed in order to describe it and to make inference on the population.

3.3. Target populations Sampling and Sampling Techniques

3.3.1 Target Population

According to Hair et al. (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.

Therefore, for this study, the target populations are 317 Employees of Kality Metal Factory supply chain, Finance and sales departments i.e. Operational Management, Facilities and Operational Management Office, Financial Management Office, Warehousing and Logistics Department, Human Resources Office, Information Management Office, Procurement and Supply Chain Management Office) 192 of them are selected as target populations for the study.

3.3.2 Sampling Design

A simple random sampling technique was employed from the employees of the factory. Stratified sampling was employed based on the strata of the departments and simple random sampling using random table was done accordingly.

3.3.3. Sampling Frame

A list of those within a population who can be sampled, are optioned form the company oracle data based on March, 2019. The summary list is present on the following table.

Table 3.1. Employee stratifications from Kality metal factory report March,2019

Ser. No	Departments/Sections	Population	Sample
1	Operational Management	9	5
2	Facilities And Operational Management Office	178	89
3	Financial Management Office	23	17
4	War Housing And Logistics Department	111	46
5	Human Resources Office	13	11
6	Information Management Office	25	14
7	Procurement And Supply Chain Management Office	13	10
<u>Total No. of employees</u>		<u>317</u>	<u>192</u>

***Source: from March Kality Metal Factory report, March 4, 2019

3.3.4. Sampling Technique

In order found the appropriate number of respondents for the survey, the researched have taken 192 employees of KMF. Then, Non-probability Convenience sampling have been used to arrive the correct sampling size for the selection of employees, the researcher have used Krejcie and Morgan (1970) sampling formula for selecting staff level employees. Many researchers (and research texts) suggest the minimum Confidence Level = 95% and the Margin of Error = 5%. Therefore, sample

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

$$N = \frac{1.96^2 \cdot 0.5 \cdot 0.5 \cdot 193}{1.96(192-1) + 1.96^2 \cdot 0.5 \cdot 0.5}$$

- Z = Z score level of confidence of the estimate (in the case of 95% = 1.96).
- e = Marginal error, 5%
- P = proportion of the sample successfully collected =P=0.5
- Q = failure of sample (1-0.5)= 0.5
- N = population of the staff sample=192

Therefore, based on the above given information and sample size formula, 192 employees are select for the survey and questioners are distribute to them. From 192 distributed questioners, only 189(97.4%) are used for the analysis.

3.4. Data Source and Methods of Collection

The researcher used primary and secondary data for the entire analysis of this study. The information gathered through questionnaire from the selected respondent has sample employees of Kality Metal Factory. The data collected from the respondents through questionnaires. According to Biggam (2008), primary source of data is the information that the researcher finds out by himself regarding a specific topic using questionnaires.

Secondary source gathered from magazine, books and related journals and articles. The main advantage with this type of data is that collected by the research's purpose in mind. It implies that the information resulting from it is more consistent with the research questions and objectives. The primary data gathered particularly by using likert scaled standard questionnaires.

3.4.1 Measurement Instrument

The researcher was distributed the questionnaire to those who are selected respondents. For the purpose of this study, a quantitative methodology involving a close-ended questionnaire used as the measuring instrument. The close-ended questionnaires can administered to groups of people simultaneously, since they are less costly and less time consuming than other measuring instruments. The secondary source was used book, magazine, reports and different source. The standard questionnaire used to collect the necessary information regarding the study adopted from the work of Li et al. (2006), Lenny etal. (2007), and Priscila and Luiz (2011).

The Likert-type scale method uses a range of responses: 'Strongly Disagree', 'Disagree', 'Neutral', 'Agree', and 'Strongly Agree', with a numeric value of 1-5, respectively. The usage of this particular scaling method ensured that the research study illustrate the ability to assess the responses and measure the responses quantifiably. So that, a pattern or trend may produce in order to assess research problem of statement. As Neuman (2003) hypothesize, it is a process of asking many people the same questions and examining their answers.

3.4.2 Source of Data collection

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

- First briefing on the questioners was given to the selected respondents before the distribution of the questioner and then questioner were distributed to the respondents.
- Second depending on the distribution time, the questions were collected from the respondents after a week.
- Third, a reminder made for the non-responding employees and lagged questioners were collected.
- Fourth, the questioners coded and analyzed for usability of the questioners made.
- Finally, the analysis of the data using different statistics on SPSS version 20 was made and this paper is produced.

3.5. Validity and Reliability

Validity concerns the degree to which a question measures what it was intended to measure. To assure the validity of the study, the researcher reflected with the advisor and other management staffs about the questionnaires before it persists to distributed. It was developed on the basis of previous studies and review of related literature. In addition, the researcher provided explanations concerning on the questions to the respondents. As per Khotari (2004) reliability refers to consistency, where internal consistency involves correlating the responses to each question in the questionnaire with those other questions in the questionnaire. The student researcher employed Cronbach's alpha to calculate the internal consistency of the instrument.

3.5.1 Validity

Validity concerns the degree to which a question measures what it was intended to measure. Validity is the extent to which a score on a scale or test predicts scores on some criterion measure (Cronbach & Meehl, 1955; as cited in Gleam & Rosemary, 2003). Based on the pilot test data using 40 respondents, the Pearson the correlation between all independent variables and the dependent validity are shown on the following table.

Table 3.2: Validity Variables

		FP	SSPS	CRS	QIS	ILP
Firm performance	Pearson Correlation	1	.528**	.57**	.309**	.333**
	Sig. (2-tailed)	.000	.000	.000	.001	.006
	N	40	40	40	40	40

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

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

Source: Survey data, 2019

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

3.5.2 Reliability

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

Every question using the Likert Scaling method must be tested for its reliability. Therefore, in the study, after verifying the construct and content validity, the questioners has been reproduced and distributed to a sample of 40 respondents for the pilot test and the test results of readability is presented on the following table and in the Appendix 1A

Table 3.3: Cronbach's Alpha

Indicators	Number of items	Cronbach Alpha
1) Strategic supply-partner ship	6	0.714
2) Customer relation- ship	7	0.73
3) Quality of information's sharing	5	0.729
4) Internal lean implementations	7	0.864
5) Supply Chain Responsiveness	7	0.751
Firm performance ^a	8	0.895

Source: Survey Data, 2019

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

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

3.6. Methods of Data Analysis

Both descriptive and inferential statistics were used to analyze and interpret the findings. Demographic variables of the respondents and mean scores of the supply chain management practice model are interpreted using descriptive statistics whereas inferential statistics is used to find out the relationship between supply chain management practice model and Operational firm performance using correlation and multiple liner regression analysis via SPSS.

Descriptive analysis

The descriptive statistical results were presented by tables, frequency distributions and percentages to analyze the data. This was achieved through summary statistics, which includes the mean values and percentages which were computed for each variable in this study.

Pearson Correlation analysis

In this study Pearson's correlation coefficient was used to determine the relationships between supply chain management practice model dimensions (Strategic supplier partnership, Customer relationship, Information sharing, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness) and on Firm performance.

Multiple Regression Analysis

Multiple regression analysis will have used to examine the effect of supply chain management practice model (Strategic supplier partnership, Customer relationship, Information sharing, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness) on Firm performance.

Variables of the Study

Independent variables

- *Strategic supplier partnership*
- *Customer relationship*
- *Information sharing*
- *Supply Chain Responsiveness*
- *Operation system responsiveness*
- *Logistic process responsiveness*
- *Supplier network responsiveness*

Dependent variables

Firm performance

Regress Firm performance on the Supply Chain Management Practice

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \dots + \epsilon$$

Where Y is the dependent variable- Firm performance

X₂, X₃, X₄, X₅, X₆, and X₇ are the explanatory variables (or the repressors)

β₁ is the intercept term- it gives the mean or average effect on Y of all the variables excluded from the equation, although its linear mechanical functional interpretation is the average value of Y when the stated independent variables are set equal to zero.

β₂, β₃, β₄, β₅, β₆ and β₇ refer to the coefficient of their respective independent variable which measures the change in the mean value of Y, per unit change in their respective independent variables.

3.7. Ethical Consideration

Research ethics refers to the type of agreement that the researcher enters into with his or her research participants. Ethical considerations play a role in all research studies and all researchers must be aware of and attend to the ethical considerations related to their studies. Therefore, the researcher was asked legally and smoothly. The purpose of the study is marked clear and understandable for all participants. Any communication with the concerned bodies were accomplished at their voluntarily agreement without harming and threatening the personal and institutional wellbeing.

CHAPTER FOUR

4. 1. Data Presentation, Analysis and Interpretation

This chapter deals with the analysis and presentation of the quantitative data collected through questionnaire. The questionnaires composed open and close-ended questions, which are summarized and presented quantitatively in tables using SPSS 20 software. The researcher used some secondary data from published and unpublished documents of the case organization.

4.2. Response Rate

Only 189 questioners are collected out of 192 distributed questioners to the selected respondents that make 97.4% response rate and 2.6% non-response rate. However, in order to reduce the possible errors in the data administration, immediately after the collection of data the researcher has cleanses the outlier, missing values and discrepancies. Finally, 184 complete respondents' data are used for the survey analysis using SPSS 20.0.

4.3. Descriptive Analysis

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

4.3.1 Demographic Characteristics of Respondents

The study analyzed the demographic characteristics of respondents involved in the study. In this section the respondents profile presented. It includes gender, age, marital status and level of educational obtained. Analyzing these variables was meant to provide any evidence of association between these variables and the various responses. female consisting 33.0%. From the above table it can be observed that the difference in gender composition in the

sector is marginally high which the respondents rating promotes gender balance in its employment practices.

Table 4.1: Profile of Respondents

S.N	Variables	Type	Frequency	%	Cumulative %
1	Gender	Male	128	67.0	67.0
		Female	61	33.0	100
Total			189	100	
2	Age	21-25 Years	4	2.6	2.6
		26-30 Years	79	52	48
		31-35 Years	25	16.4	79.6
		36-40 Years	31	20.4	100
		40 ≤ Years	13	8.5	100
Total			189	100	
3	Marital Status	Single	83	54.6	54.6
		Married	37	24.3	45.4
		Divorced	32	21.1	100
Total			152	100	
4	Level of Education	Diploma	47	30.9	30.9
		Degree	78	51.3	48.7
		Masters	27	17.7	100
		Others	0	0	100
Total			189	100	

***Source: from *Kality Metal Factory Respondent Data, 2019*

The above Table 2, shows that, from a total of 189 respondents, 128 were male while 61 were female. Out this we can see that 91 respondents are male consisting 67.0% of the workforce while 61 respondents are out this we can see that 79 respondents (52%) were within the age group of 26-30 years. 31 (20.4%) of the respondents were between the age group of 36-40 years and 25 (16.4%) of the respondents were between the age group of 31-35 years. The rest 4 (2.6%) and 13 (8.5%) were between the age of 21-25 years and more than the age of 40 years respectively. Therefore, this implies that more than half of the respondents' of Kality Metal Factory workers are between the age group of 26-30 years. Table 4.1 above marital status indicates that, out of the 152 respondents captured in the research work 83 respondents

representing 54.6% of the total population are not married in other words they are single. (37) respondents representing 24.3 % are married, on the other hand indicated they are married whilst the remaining (32) respondents representing only 21.1% of the total population are divorced. Therefore, be deduced from the statistics in the table above that 24.3 % of the staff at the various sections of the Kality Metal Factory employees were not married.

With regard to the level of education, 47 respondents (30.9%) are Diploma holders, 78 respondents (51.3%) have Bachelor’s Degree and 27 respondents (17.7%) have Master’s Degree. This shows that majority of the respondents are educated to a level of Bachelor’s Degree or have first degree.

4.3.2. Descriptive Analysis on Variables’ Used

4.3.2.1. Descriptive statistics on Aggregated Variables

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

Table 4.2 Group response results

Statistic	SCMP					FP	SCMP
	LP	ssp	CR	Is	IQ		
N	189	189	189	189	189	189	189
Mean	3.31	3.33	3.44	3.17	3.16	3.15	3.28
Median	3.5	3.33	3.4	3.33	3.2	3.14	3.33
Mode	4	4	3	3	4	4	4 ^a
skewness	-.872	-.132	-.090	-.014	-.188	.015	-.177
kurtosis	.300	-.339	-.827	-.706	-1.097	-1.037	-1.050

^aMultiple modes exist.

Source: Survey data, 2019

Based on the output data which is shown on the table 4.2, out of the 134 respondents, the mean score is greater than the midpoint of the scale which is 3. Of the five independent variables customer relationship has the highest mean (3.44) which is followed by 3.33 mean score for supplier relationship of the company. However, information sharing and

information quality with the suppliers has the lowest, which is 3.17 and 3.16 respectively. The mean value of the dependent variable (Operational performance of the company) is also above 3. Based on the value of skewness and kurtosis, we can also see the normality of the data distribution. Since this value falls within the normality range i.e. for skewness and kurtosis the data should be within +2 and -2 range. Therefore, the collected data are normally distributed. This implies that in ethio telecom, the results have confirmed that supply chain practices and operational performance of the company shows above average performance.

4.3.2.2. Descriptive analysis on Independent Variables (SCMP)

4.3.2.2.1. Strategic Suppliers' Partnership (SSP):

In order to assess the supplier relationship, the selected employees were requested to respond for seven related question in order to assess the strategic partnership of KMF with the suppliers. The questions are focused on criteria for supplier selection in Kality Metal factory; alignment and involvement of key suppliers in problem solving; joint involvement for new product development and improvement of existing products and services; and joint goal setting and planning activates of KMF and suppliers.

Table 4.3: Descriptive statistics on strategic supplier relationships

Strategic supplier partnership: Variables	N Valid	Mean	Median	Mode	Skewness	Kurtosis
We consider quality as our number one criterion in selecting suppliers.	189	3.84	4	4	-0.333	-0.713
We regularly solve problems jointly with our suppliers.	189	3.62	4	4	-0.804	0.112
We have been helping our suppliers to improve their product quality.	189	3.4	3	3	0.077	-0.614
We have continuous improvement programs that include our key suppliers.	189	3.04	3	3	0.076	-1.276
We include our key suppliers in our planning and goal-setting activities.	189	3.1	3	3	-0.119	-0.505
We actively involve our key suppliers in new product development Processes.	189	2.97	3	3	-0.117	-0.254

Source: Survey data 2019

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

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

4.3.2.2.2. Customer Relationship (CS)

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

Table 4.4: Descriptive statistics on Customer Relationship

Customer relationship:	N Valid	Mean	Median	Mode	Skewness	Kurtosis
We frequently interact with customers to set reliability, responsiveness, and other	189	3.67	4	4	-0.312	-0.664
We frequently measure and evaluate customer satisfaction.	189	3.4	3	3	-0.026	-1.348
We frequently determine future customer expectations	189	3.24	3	3	-0.085	-0.885
We facilitate customers' ability to seek assistance from us.	189	3.32	4	4	-0.159	-0.857

Table 4.4 shows that, on the average all variables mean is higher than the middle point and the data collected using the survey questioner are normally distributed as it is indicated by the skewness and kurtosis. The mean ranged from the highest 3.4 for reliable information exchange with the suppliers to the lowest 3.03 for timely information exchange of information. Highest respondents agreed that Kality Metal Factory has complete, adequate and reliable information exchange with the suppliers. However, highest respondents do not believe KMF has on time information exchange with its suppliers.

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

4.3.2.3.3 Internal Lean Practices (LP):

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

Table 4.5: Descriptive Statistics on Lean Practice

Customer relationship:	N Valid	Mean	Median	Mode	Skewness	Kurtosis
Our firm reduces process set-up time (time required to prepare or refit equipment/workstation for production)	189	3.06	3.10 ^a	4	-0.164	-0.592
Our firm produces only what is demanded by customers when needed (e.g. JIT)	189	3.55	360 ^a	3	-264	-0.813

4.3.3 Descriptive Analysis on Dependent Variable

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

Table 4.6: Descriptive Statistics on Firm Performance

OP Variables	N Valid	Mean	Median	Mode	Skewness	Kurtosis
We offer product or services at reasonable prices	189	3.11	3.17a	4	-.283	-.666
We are deliver quality product and service to the customers whenever needed (On reasonable response time).	189	3.10	2.97a	2	.275	-1.093
Our planning is always meet the customer need(Correct on our forecasting)	189	3.04	2.89a	2	.366	-1.051
Our planning(budget and optimization plan) is accurate	189	2.90	2.78a	2	.327	-.881
We receive product and service on time	189	2.80	2.68a	2	.725	-.636
We offer products that are highly reliable.	189	2.96	2.93a	2	.132	-.957
We offer high quality products and service to our customer.	189	3.03	3.04a	4	-.005	-1.052
We deliver the kind of products and service needed.	189	3.22	3.32a	4	-.413	-1.056
We deliver customer order on time.	189	3.42	3.50a	4	-.539	-.805
We provide dependable delivery.	189	3.13	3.13a	3	.133	-.990
We alter our product offerings to meet client needs	189	3.09	3.09a	4	.101	-1.129
We respond well to customer demand for “new” features	189	3.42	3.50a	4	-.567	-.867
We deliver product and service to market quickly	189	3.40	3.43a	4	-.090	-.974
We have fast product/ service development.	189	3.48	3.52a	4	-.177	-.911

a. Calculated from grouped data.

Source: Survey data, 2019

As it is presented in Table 4.8, The data's collected for the assessment the firm performance variables of KMF is normally distributed i.e. the skewness and kurtosis values are between +2 and -2. Based on the survey result, on the average the respondents agree that the company delivers services and products to the customers whenever needed as per their need and demand, it serve the customers' quickly and the company has also respond well to the customers on new features needs. However, on average the respondents' do not agree on the company dependable delivery system, on timely delivery of products and services to the customer, on the company's correct planning system to meet the customer need and demand. As it is observed from the perception of the respondents, majority of the respondents stated that companies are not providing low cost products, are not innovative, do not supply variety of products and the company are not working in a sustainable manner for the customer. Respondents are neutral on the dependable delivery for KMF. Therefore, the company has to improve the observed gaps on firm performance. The previous empirical studies has shown that to improve the firm performance of any organization, it needs to improve the supply chain practices

4.4 Regression Analysis for Supply chain management Practices and Firm Performance

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

The model applied to show this influence presented as follows;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \epsilon$$

Where: Y = Firm performance of kaliti Metal Factory.

β_0 = Constant (value of Y when X1, X2, X3, X4 and X5= 0)

β_1 = Regression coefficient for strategic Supplier relationships

X1= Strategic supplier partnership

B2=Regression coefficient for strategic partnership

X2= Customer relationship

B3=Regression coefficient for customer relationship

X3= Level of information sharing

B4=Coefficient of regression for level of information

X4= Level of information quality

B5=Coefficient of regression for level of information quality

X5= Internal lean practices

ε = the error

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

4.4.1 Multiple Regression Assumptions

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

4.4.2 Reliability Test

A reliability analyses was conducted to each variable of the instrument. The reliability of the measures was examined through the calculation of Cronbach's alpha coefficients. For scale acceptability, Hair et al. (1998) suggested that Cronbach's alpha coefficient of construct is 0.6. If each domain obtains the value 0.6, it means that, the items in each domain are understood by most of the respondents.

Table 4.7: Reliability Test measures		
Indicators	Number of items	Cronbach Alpha
1) Strategic supply-partner ship	6	0.714
2) Customer relation- ship	7	0.730
3) Quality of information's sharing	5	0.729
4) Internal lean implementations	7	0.864
5) Supply Chain Responsiveness	7	0.751
6) Operation system responsiveness	7	0.813
7) Logistic process responsiveness	6	0.765
8) Supplier network responsiveness	7	0.884
Firm performace ^a	4	0.895

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

****Source:** from field survey data, 2019

On the other hand, if the findings are far from the expected value of 0.6, this might be caused by respondents' different perception toward each item of the domain. The Cronbach's alpha values are reported as follow. Strategic supply-partnership yield Cronbach's alpha =0.714, Customer relation- ship Cronbach's alpha = .730, the Cronbach's alpha for Quality of information's sharing was at .729, Cronbach's alpha for Supply Chain Responsiveness was at 0.751 and Cronbach's alpha for Operation system responsiveness was= 0.813, Cronbach's alpha for Logistic process responsiveness was= 0.765.

Cronbach's alpha for Supplier network responsiveness was=.884, Cronbach's alpha for firm performance is 0.895. The Cronbach's alpha values for all the variables considered are greater than 0.6 and this indicates the items in each of the domains are well understood by the respondents. The items have measured what they were designed to measure.

4.4.2.1 Sample Size

Sample size is another important factor to be considered while conducting the regression analysis As it is cited Field (2009), Green (1991) makes two rules of thumb for the minimum acceptable sample size, the first based on whether you want to test the overall fit of your regression model (i.e. test the R²), and the second based on whether you want to test the individual predictors within the model (i.e. test b-values of the model). If you want to test the

model overall, then he recommends a minimum sample size of $50 + 8k$, where k is the number of predictors. So, with five predictors, you'd need a sample size of $50 + 40 = 90$. If you want to test the individual predictors then he suggests a minimum sample size of $104 + k$, so again taking the example of 5 predictors you'd need a sample size of $104 + 5 = 109$ (Field, 2009). Therefore, since the samples for this survey is 134 that means it provide enough case for the survey in predicting both the model overall or individual predictors in the model.

4.4.2.2 Multi-Co linearity

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

Table: 4.8: Multi-Collinearity Test

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

a. Dependent Variable:OP

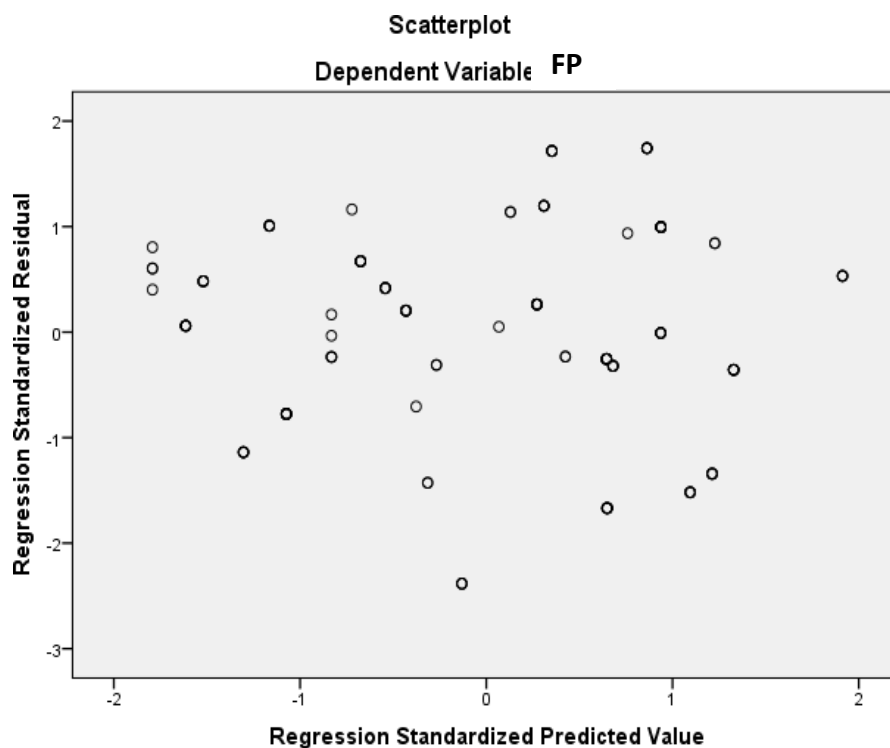
Source: Survey data, 2017

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

4.4.2.3 Homoscedasticity

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

Figure 4.1: Scatterplot based on Residual



Source: Survey data, 2019

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

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

4.4.2.4 Normally Distributed Error vs Normally Distributed Outcome Variables

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

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

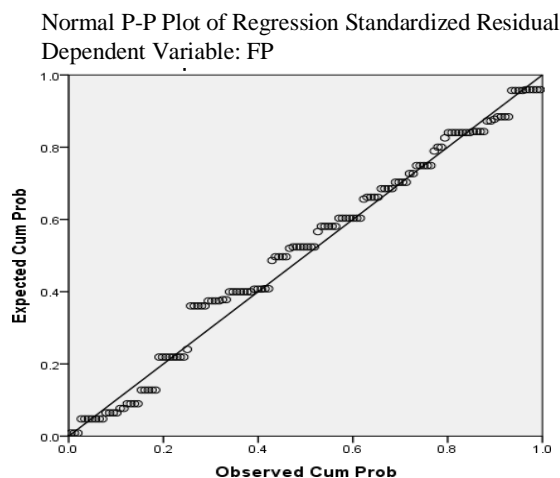


Figure 4.2 Normal P-Plot of Regression

Source: Survey data, 2019 Figure 4.5 shows that the residuals have a sound normal distribution because the plotted residuals were around the diagonal straight line instead of making any other shape or curve.

4.5. Multiple liner Regression Analysis

Multiple liner regression analysis was employed on constructive statistical technique that can be used to analyze the association between a single dependent and several independent variables. One of the vital considerations in multiple regression is the sample size of the data.

4.5.1. Regression Analysis (Independent variables as predictors to Firm performance)

Table 4.9: Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.614 ^a	.725	.094	1.262
a. Predictors: (Constant), Strategic supplier partnership, Customer relationship, quality of Information sharing, internal lean practice, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness				
b. Dependent Variable: Operational firm performance				

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

*******Source: from field survey data, 2019**

In this study, a multiple regression analysis conducted to test relationship among variables i.e. dependent and independent variables. The analysis was done to establish how the specific supply chain management practices affect Firm performance at Kality Metal Factory. A regression analysis results presented in Model Summary table 6.

The result as shown in the model summary indicates that Strategic supplier partnership, Customer relationship, quality of Information sharing, internal lean practice, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness explained 61.4% of change in Firm performance.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	724.151	4	6.038	165.792	.000 ^b
	Residual	168.786	106	1.592		
	Total	192.937	189			
a. Dependent Variable: Operational firm performance						
b. Predictors: (Constant), Strategic supplier partnership, Customer relationship, quality of Information sharing, internal lean practice, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness						

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

*****Source: from field survey data, 2017

From above table 7, The F-ratio found in the ANOVA table measures the probability of chance departure from a straight line. The significance value is 0.00 which is less than 0.05 thus the model is statistically significance in predicting how Strategic supplier partnership, Customer relationship, quality of Information sharing, internal lean practice, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness affect firm performance.

The F critical at 5% level of significance was 0.00. Since F calculated is greater than the F critical (value = 165.791), this shows that the overall model was significant.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.764	.222		-3.448	.001
	Strategic supply-partner ship	.036	.200	.018	.181	.000
	Customer relation- ship	.306	.320	.136	.958	.000
	Quality of information's Sharing	.171	.316	.084	.543	.588
	Internal lean practice	.331	.253	.181	1.306	.194
	Supply Chain Responsiveness	.212	.099	.238	2.146	.035
	Operation system responsiveness	.077	.053	.114	1.469	.000
	Logistic process responsiveness	.777	.0223	.73	1.278	.004
	Supplier network responsiveness	.134	.135	.246	.111	.000
a. Dependent Variable: firm performance						

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

*****Source: from field survey data, 2019.

The coefficients table sought to identify which predictors are significant contributors to the 61.4% of explained variance in Y (i.e., $R^2=.72.5$) and which ones are not – and in what way (s) do the significant ones help us to explain Y.

The established regression equation was

$$Y = -.764 + .036 X_1 + .306 X_2 - .171 X_3 + .331 X_4 + .212 X_5 - .077 X_6 - .777 X_7 - .134 X_8 + \sum$$

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables. Or the percentage of variation in the dependent variable (Firm performance) that is explained by all the four independent variables (Strategic supplier partnership, Customer relationship, quality of Information sharing, internal lean practice, Supply Chain Responsiveness, Operation system responsiveness, Logistic process responsiveness and Supplier network responsiveness).

4. Discussion

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

“How the strategic supplier partnership influence the firm performance of Kality Metal Factory?”

Based on generated data, strategic supplier partnership has a positively and significantly influence the firm performance of Kality Metal Factory, where the t- statistic value was calculated to be 3.448 at p value < 0.05. The value of the coefficient of strategic supplier partnership was also found to be 0.810 which means that, keeping other things constant, a unit change in strategic partnership cause 8.10% increase firm performance of the company.

“How the customer relationship influence the firm performance of Kality Metal Factory?”

The coefficient of customer relationship was .136, which means a unit change in this variable increases operational performance by 13.6%, keeping other variables constant. The t-statistic value of customer relationship was .958 significant at p value < 0.05, which makes the customer relationship and firm performance has positive and statistically significant relationship.

“How the level of information sharing influence the firm performance of Kality Metal Factory?”

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

“How the level of information quality influence the firm performance of Kality Metal Factory?”

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

“How lean practice influence the firm performance of Kality Metal Factory?”

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

In general, the survey result showed that there is a significant and positive relationship between independent variables of supply chain practices and the firm performance of kality metal factory.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMENDATION

5.1 Summary of the Findings

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

The findings of the survey also shows that that 88.5% of corresponding change in determining firm performance Kality Metal Factory is the results of the change in supply chain practices of all the five predictor variables jointly. The test of overall significance of all the five variables jointly i.e. strategic supply chain relationship, customer relationship, level of information sharing, level of information quality and lean practices are significant at .05 level which found out that the model used for this survey is also to be significant.

5.2 Conclusion

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

- Strategic supply chain relationship and operational performance are significantly and positively related. So strategic supply chain relationship is one of the main predictor of the firm performance Kality Metal Factory. As strategic relationship, KMF considered quality as number one criteria for supplier selection and the company jointly solve problems with the suppliers. However, KMF do not involve suppliers in the continuous improvement programs, on planning and goal setting as well as in product and service development.
- Customer relationship and operational performance are also significantly and positively related. KMF evaluates the customer satisfaction and facilitates the interaction for customer assistance. However, the company's determination for fulfilling the customer satisfaction is not clear.

- The relationship between the level of information sharing and operational performance are positive and significant. KMF inform the suppliers about the changing need, proprietary information and any issues. However, KMF do not plan to get her with its suppliers.
- The relationship between the level of information quality and operational performance are also positive and significant. KMF has complete, adequate and reliable information exchange with the suppliers. However, KMF do not have on time information exchange with its suppliers.
- Lean practice and operational performance relationship are positive and significant in KMF. The company provides products and services whenever needed by the customer. However, the company has problem in equipment set up time for delivering product and service

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

5.3 Recommendation

The study suggested the following measure to be taken by Kality metal product factories performance:

- The study has suggested that the key to the seamless supply chain is making available undistorted and up-to-date marketing data at every node within the supply chain using better information technology.
- Supply chain partners who exchange information regularly are able to work as a single entity. so the postponement must have the technique how effective use of relevant and timely information by all functional elements within the supply chain as a key distinguishing factor.
- Such strategic partnerships are entered into to work have to share a benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets.
- Kality metal product factories should have relations 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.

Finally, the study suggests that Kality metal product factories performance should be developed their supply chain in order to get customer responses

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APPENDIXES
SAINT MARY UNIVERSITY
SCHOOL OF GRADUATE STUDIES
MBA PROGRAM

QUESTIONNAIRE

Dear respondents, the purpose of this questionnaire is to gather data to evaluate the effect of Supply Chain Management practices on Firm performance in the in Kality Metal Factory. 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 (√) in the appropriate box for part
- ❖ Please Nike it or circle for your response to each statements of part II.

Thank you for scarifying your precious time in advance!

Part One: Demographics of respondents

1. Department _____
2. Position _____

Please circle or underline for the below questionaries'

1. Gender:
 - a) Male
 - b) Female
2. Age
 - a) Age: 21 – 25 years
 - b) 26 – 30 years
 - c) 31 – 35 years
 - d) 36 – 40 years
 - e) 41 – above years
3. Marital Status
 - a) Single
 - b) Married
 - c) Divorced

4. Level of Education:

- a) Diploma
- b) Bachelor degree
- c) Master degree
- d) Others, please specify _____

Part II: Instruments for supply chain management practices on organizational performance

Section one: supply chain management practices

With regard to SCM practices of your firm, please circle the appropriate number to indicate the extent to which you agree or disagree with each statement. The item scales are five-point Likert type scales with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree,

Strategic supplier partnership:		1	2	3	4	5
1	We consider quality as our number one criterion in selecting suppliers.	1	2	3	4	5
2	We regularly solve problems jointly with our suppliers.	1	2	3	4	5
3	We have been helping our suppliers to improve their product quality.	1	2	3	4	5
4	We have continuous improvement programs that include our key suppliers.	1	2	3	4	5
5	We include our key suppliers in our planning and goal-setting activities.	1	2	3	4	5
6	We actively involve our key suppliers in new product development Processes.	1	2	3	4	5
Customer relationship:		1	2	3	4	5
1	We frequently interact with customers to set reliability, responsiveness, and other standards for	1	2	3	4	5
2	We frequently measure and evaluate customer	1	2	3	4	5
3	We frequently determine future customer	1	2	3	4	5
4	We facilitate customers' ability to seek assistance	1	2	3	4	5

Quality of information sharing:		1	2	3	4	5
1	We inform trading partners in advance of changing	1	2	3	4	5
2	Our trading partners share proprietary information with us.	1	2	3	4	5
3	Our trading partners keep us fully informed about issues that affect us Business.	1	2	3	4	5
4	Our trading partners share business knowledge of core	1	2	3	4	5
5	We and our trading partners exchange information that	1	2	3	4	5
6	Exchange of information with our partners (formal or informally) is frequent.	1	2	3	4	5
7	We and our trading partners keep each other informed about events or changes that may affect the other partners	1	2	3	4	5
Internal lean practice		1	1	2	3	4
1	Our firm reduces process set-up time (time required to prepare or refit equipment/workstation for production)	1	2	3	4	5
2	Our firm has continuous quality improvement programs	1	2	3	4	5
3	Our firm produces only what is demanded by customers when needed (e.g. JIT)	1	2	3	4	5
4	We got deliver product to market quickly	1	2	3	4	5
5	We are first in the market in prospected on SCM	1	2	3	4	5

Items	1	2	3	4	5
Operation system responsiveness	1	2	3	4	5
1. Responds rapidly to changes in product volume demanded by customers	1	2	3	4	5
2. Responds rapidly to changes in product mix demanded by customers	1	2	3	4	5
3. Effectively expedites emergency customer orders	1	2	3	4	5
4. Rapidly reconfigures equipment to address demand changes	1	2	3	4	5
5. Rapidly changes manufacturing processes to address demand changes	1	2	3	4	5
6. Rapidly adjusts capacity to address demand changes	1	2	3	4	5
Logistic process responsiveness	1	2	3	4	5
1. Responds rapidly to unexpected demand change	1	2	3	4	5
2. Rapidly adjusts warehouse capacity to address demand	1	2	3	4	5
3. Rapidly varies transportation carriers to address demand	1	2	3	4	5
4. Rapidly accommodates special or non-routine customer	1	2	3	4	5
5. Effectively delivers expedited shipments	1	2	3	4	5
Supplier network responsiveness	1	2	3	4	5
1. Major suppliers change product volume in a relatively short time	1	2	3	4	5
2. Major suppliers change product mix in a relatively short time	1	2	3	4	5
3. Major suppliers consistently accommodate our requests	1	2	3	4	5
4. Major suppliers have outstanding on-time delivery record with us	1	2	3	4	5
5. Major suppliers effectively expedite our emergency orders	1	2	3	4	5
6. Major suppliers provide quick inbound logistics to us	1	2	3	4	5

Operational firm performance:	1	2	3	4	5
Nb: Operational firm performance: how well an organization achieves its market-oriented goals as well as its financial goals in the past five years?					
1. We offer competitive prices	1	2	3	4	5
2. Offer prices as low or lower than our competitors	1	2	3	4	5
3. Compete based on quality	1	2	3	4	5
4. Offer products that are highly reliable	1	2	3	4	5
5. Offer products that are very durable	1	2	3	4	5
6. Offer high quality products to our customers	1	2	3	4	5
7. Deliver customer orders on time	1	2	3	4	5
8. Provide dependable delivery	1	2	3	4	5
9. Provide customized products	1	2	3	4	5
10. Alter our product offerings to meet client needs	1	2	3	4	5
11. Cater to customer needs for “new” features	1	2	3	4	5
12. We are first in the market in introducing new products	1	2	3	4	5
13. We have time-to-market lower than industry average	1	2	3	4	5
14. We have fast product development	1	2	3	4	5

If any comment you have it better be say it below:

Thank you again very much!!!