DETERMINANTS OF SUPPLY CHAIN MANAGEMENT EFFECTIVENESS IN MEDIUM AND LARGE MANUFACTURING ENTERPRISES IN DIREDAWA ADMINISTRATION

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ACRONYMS

AHP:	Analytical Hierarchical process
ANP:	Analytical Network Process
CLM:	Council of Logistic Management
CPFR:	Collaboration, Planning, Forecasting and Replenishment
CRM:	Customer Relationship Management
CSA:	Central Statistical Agency
CSCMP:	Council of Supply Chain Management Professionals
DDSA:	Dire Dawa Statistical Agency
ILP:	Internal Lean Practices
LIS:	Level of Information Sharing
QIS:	Quality of the Information Shared
RBV:	Resource Based View
RV:	Relational View
SBR:	Supplier-Buyer Relations
SCM:	Supply Chain Management
SCMP:	Supply Chain Management Performance
SPSS:	Statistical Package for the Social Sciences
SSP:	Strategic Supplier Partnership
TLM:	Transport and Logistics Management
TMS:	Transport Management System

Abstract

The purpose of the study was to investigate the determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

A descriptive survey research design was adopted using both quantitative and qualitative methods. The study targeted 372 respondents at a 96% response but 282 were returned fully completed, giving a response rate of 76 %. Stratified sampling technique used to select the manufacturing enterprises, Simple random sampling technique was used to select the study company while purposive sampling was used to select the Management Staff, and stratified sampling was used to select the Employees. Data analysis involved frequencies, percentages, and inferential statistics such as Binary logistic regression analysis. The Nagelkereke R2 indicates the model estimate for 44.3% of the variance in the determinants of supply chain management effectiveness in the medium and large manufacturing enterprise. The findings suggested that there was significantly associated with SCM effectiveness of medium and large manufacturing enterprises but Transportation and Logistics Management there was not significantly associated with SCM effectiveness of medium and large manufacturing enterprises. It is advisable to consider all aspects of SCM dimensions in the manufacturing enterprises, as this study investigated; each SCM construct improves different aspects of SCM practices. In general, the managers in the medium and large manufacturing enterprises should consider implementing the SCM dimensions by implementing SCOR model on their operational activities as this study has indicated there is a strong positive relationship between most of SCM dimensions & SCM effectiveness.

Key Words: Dire Dawa Administration, Effectiveness, Medium & Large Manufacturing Enterprise and Supply Chain Management.

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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

In today's highly competitive business environment every organizations whether profit-oriented or not has its mission to achieve for organizations to meet their goals. Their first focus is to fulfil its customers' needs and expectations. In the early 1990s due to globalization and intense competition, firms start to think a mechanism to cope up with the environment and succeed in the competitive markets. Supply chain management (SCM) takes center stage as a means to respond rapidly, correctly, and profitably to market demands (Robinson & Malhotra, 2005, cited in Dinberu, 2016). Hilletofth (2009, cited in Khathutshelo, 2015) defines supply chain management as a set of approaches utilized to efficiently integrate and coordinate the materials, information, and financial flow across the supply chain so that merchandise is supplied, produced, and distributed at the right quantities, to the right location, at the right time, in the most cost-efficient way, whilst satisfying customer requirements. Therefore, Supply Chain Management (SCM) represents one of the most significant paradigm shifts of modern business management by recognizing that individual businesses no longer compete as solely autonomous entities, but rather as supply chains (Moh'D Anwer et al., 2018).

A supply chain includes all the activities involved in delivering a product from raw material through to the customer including sourcing raw materials and parts, manufacturing and assembly, transportation, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities (Lummus & Vokurka, 1999, cited in Khathutshelo, 2015). In other words, the supply chain 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; cited in Akdogan et al., 2014).

Manufacturing industries receive raw materials from suppliers, turn the materials into end products in the manufacturing facilities, and distribute the end product through distribution centers among customers (Alinezhad et al., 2014). Supply chain management aims to run the aforementioned process in a way that customers are enabled to receive reliable services or products at the lowest cost and quickly. According to Akdogan et al., (2014), the appropriate performance of the supply chain plays an important role in the success of a company from different aspects including but not limited to its profitability, agility, responsiveness, reliability, cost reduction, supply chain assets management. Suppliers are confronted by increasing pressures on flexibility, variety, and time and value basis. Performance measurement in the supply chain is a process of analysis to reduce costs, risks and ensures reliable and delivery of products and associated information to the ultimate customer creating value and improving operational excellence.

The best supply chain management practices (SCMPs) have become an essential factor for low performing firms to remain competitive in the global race (Okongwu *et al*., 2015). The nature of SCMPs will be able to explain the dual purpose of SCM as it improves the performance of an individual firm as well as the performance of the whole supply chain. This could be achieved through the effective adoption and construction of the best SCM practices (Kim, 2006; cited by Moh'D Anwer et al., 2018). Effective supply chain management is necessary for large and medium manufacturing companies to survive and is a competitive weapon with rivalry companies (Okongwu *et al*., 2015).

SCM practices are considered as a perfect recipe for the success of several firms from various industries (Gorane and Kant, 2015). Despite the role of supply chain management as a competitive tool, the supply chain operational excellence in the manufacturing industry in Ethiopia is under research and there is a knowledge gap in how well is supply chain management practiced in Ethiopia. Consequently, this thesis focused on investigating the determinants of supply chain management effectiveness in a medium and large manufacturing enterprise in DireDawa administration in terms of, strategic supplier partnership, transport and logistics management, customer relationship, level of information sharing, quality of

information sharing, internal lean practice, and size as an independent variable, and quality, delivery, price/cost, time to market as a dependent variable.

1.2 Statement of the Problem

The efficiency of SCM plays a very important role in the competitiveness and sustainability of any organization. Suppliers play an important role in achieving the objectives of the SCM (Shahbandarzadeh, 2012; cited in Soheila et al., 2015). Therefore, better supplier selection criteria and specific selection procedures are needed. This would affect product or service delivery or lead time irregularities, product qualities, and inventory management. Therefore, supplier selection is a problem that cannot be easily overlooked as the purchasing department's ability to contract the best suppliers of the organization could lead to significant cost reductions (David Jonathan & Samuel, 2012; cited in Solomon, 2017).

The growth of the manufacturing sector within the industry is essential to build national technological capacity, industrial capability, and create broad-based job opportunity and improve income. In addition to this, the development of the manufacturing industry helps to improve the total factor productivity and competitiveness of the overall economy and its trickledown effect to up and down the supply chain. Because of the existence of several comparative advantages in the country and to strengthen its competitiveness, the Government of Ethiopia offered multiple incentives for the growth of the manufacturing sector. Though the manufacturing sector is a way out for sustainable economic development its growth is not without challenges. The major ones include unskilled labour forces with limited experience; limited infrastructure; external pressure from the global market, shallow industrial research and development activities, underdeveloped market information system, problems related to trade logistics, and limited promotion made on the resources and other opportunities (Tekeba, 2018).

Currently, the Ethiopian business environment is becoming customer-driven, competitive, and technology-based. Hence, it is unquestionable that companies should build an integrated and efficient system through which resources would flow seamlessly and instantaneously across the supply chain. The current practices of Ethiopian manufacturing industries concerning

supply chain management are traditional in that, partners involved across the supply chain act independently in designing, developing, and executing strategies with a minimum effort made to align strategies with the partners doing business with them particularly suppliers, whole-sellers, distributors, and customers, (Assefa, 2011). Similarly, National Planning Commission Report, (2016) indicated that the major factor for low performance of the medium and large scale manufacturing sector in Ethiopia during the first growth and transformation plan is a shortfall which is witnessed in attracting a large number of new and quality export-oriented private investments in the manufacturing sector.

Different scholars studied the impact of the supply chain practice on firms' performance by taking different variables as supply chain practices in Ethiopia. The study conducted by (Mutuerandu, 2014); (Karimi and Rafiee, 2014) and (Mustefa, 2014) investigated the impact of supply chain management practices on operational performance. The studies mainly focus on the impact of supply chain practices on competitive advantage and organizational performance. The finding showed that the higher level of supply chain practices i.e. strategic supplier partnership, customer relationship, level, and quality of information sharing can lead to enhanced competitive advantage and improved organizational performance and competitive advantage.

Arkebe ,(2015) pointed out that despite government efforts to put the Ethiopian economy on a high growth path, the share of manufacturing in GDP remains low and the sector is characterized by many structural constraints such as low productivity, low value, and lack of international competitiveness. In Ethiopia, the practice of integration, collaboration, and having the willingness and the trend of managing the SC from supplier to the customer is traditional i.e., not more than just buy–sale/ transactional relationship. Even if there is SC by default it is not well managed and implemented for getting the benefits resulted from effective SCM. According to Haftom, (2014), Supply chain inefficiencies lead Ethio-telecom to incur additional costs and receive many complaints from the customers who lost their trust in the company. Some of these inefficiencies are: Ethio-telecom has suffered a long time lag in the process of delivering the goods to end customers, fragmented contracts with suppliers, and

internal/external integration problems, which are all related to the operational performance of the company.

Banchiyrgu, (2017) in her study, shows the impact of supply chain management practice on organizational performance on the case company Horizon Addis tire S.C. To identify factors that need to be considered to improve the organization's performance concerning supply chain management and supply chain management was constructed by five constructs namely strategic supplier partnership, customer relation, level of information sharing, quality of information sharing, and internal lean practice. Her finding showed that, all supply chain constructs have a positive statistically significant relationship with organizational performance, but there are some cases statistically insignificant that need improvement in the case company these are implementing the strategic supplier partnership and implementing a pull production system.

According to Wendimu et al., (2015) associated the issue of supply chain management performance of sugar factories both from the perspectives of the demand side and supply side. Sugarcane agro-industrial supply chain performance demonstrated in very low and poor performances or was in critical condition. Such a condition required strategies for improvement in supply chain performance to preserve the company and enhance productivity. It is a well-known fact that many companies have not succeeded in maximizing their supply chains perspective because they have failed to develop the performance measures and metrics desired to fully integrate their supply chain, thereby maximizing effectiveness and efficiency (Gunasekaran et al., 2007, cited by Amit Kumar et al. 2014).

In response to the gap that SCM has taken as a tool for only improve operational performances, little attention given its importance in market competitiveness and other, in existing literature, this study, therefore, the investigator has, thus, been inspired to conduct a study to investigate the determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration. And forward possible suggestions that would enable the enterprises to be competitive.

1.3 Research Questions

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

1. What is the extent of effectiveness of SCM practices in M&LMEs in Dire Dawa Administration?
2. What are the determinant factors of Supply Chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration?
3. What is the effectiveness of SCM practices of M&LM enterprises?

1.4 Objectives of the Study

1.4.1. General objective

The general objective of this study was to investigate the determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

1.4.2. Specific objective

1. To assess the extent of effectiveness of SCM practices in M&LMEs in Dire Dawa city administration.
1. Investigate the determinant factors of Supply Chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.
2. To identify factors that benefits to the effectiveness of SCM practices of M&LM enterprises.

1.5 Hypotheses of the study

The study hypothesized that:

H1. Strategic supplier integration has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

H2. Transportation and logistics management has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

H3. Customer relationship has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

H4. Level of information sharing has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

H5. Quality of information sharing has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

H6. Internal lean practice has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

H7. Size of M&L enterprises has a significant positive influence on supply chain management effectiveness in medium and large manufacturing enterprises.

1.6 Significance of the Study

The study focused on the determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration. This would be the background on the realization that supply chain management effectiveness is very important to the sector even with the little attention is given by different researchers in the discipline. The rationale of the study was it provides SCM managers with a useful tool for modifying their current SCM practices, helps to identify which SCM practice (s) more is contributing to the success of the operational and organizational performance of the company. The new entrants who are planning to implement proper SCM practices in their organization for the first time, the set of identifying practices will surely help them in getting desired results. Government and non-government factories will be benefited from the findings of this study by getting to understand the effect and contributions of SCM practices and procedures that

promote efficient service, to cope-up the changing technology/environment, and to stay competitive.

This research developed a model for SCMP which integrates existing theory, and explains the critical factors influencing SCM effectiveness and their impact on performance in the medium and large manufacturing enterprises. Finally, academicians and research institutions will gain insight into the SCM practices applied by small and medium manufacturing industries. Thus it can be used as a ground for those who wish to further research on SCM and related areas.

1.7 Scope of the Study

SCM encompasses vast areas of managerial practices. However, it was 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 delimited to supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration. The subject scope of this study was also delimited to the company's point of reference towards strategic supplier partnership, Transportation and logistics management, customer relationship, level of information sharing, quality of information sharing, and internal lean practice. In terms of the company's effectiveness, the study was delimited to in medium and large manufacturing enterprises (Price /cost, Quality, Delivery dependability, and Time to market). The period between October 2019 and March 2020 was considered for this study. The study population was drawn from some selected medium and large manufacturing enterprises Dire Dawa Administration. Geographically, the study was conducted in medium and large manufacturing enterprises in Dire Dawa Administration.

1.8 Limitation of the Study:

The limitation of the study is that it was conducted on the organization's sides which uncover the other stakeholders such as government (government regulation on industries) and this factor limited the outcome of the research. Since it was difficult to cover the entire domain of supply chain just in one study, the research sample did not incorporate all the supply chain participants namely the suppliers and customers due to time-constrained so that it could not be applied to the complete chain of the company under investigation. On the other hand

constructs of SCM are not only limited to SCM practices selected in this study. Therefore it was not representing all constructs that could explain SCM practices.

1.9 Organization of the Paper

The research paper was organized into five chapters: Chapter one deals with the introduction part consisting of the background of the study, statement of the problem, research questions, research objectives, significance of the study, the scope of the study, limitation of the study and definition of terms. The second chapter discussed the review of related literature about the subject matter, in chapter three was focus on research methodologies chapter four was contained data analysis interpretation and discussions of the result. Finally, chapter five was covered with conclusions and recommendations.

1.10 Operational Definition of Key Terms

Supply Chain: A supply chain is a set of three or more organizations linked directly by one or more of the upstream or downstream flows of products, services, finances, and information from a source to a customer. (Robert M. et al., 2009).

Supply Chain Management: Supply chain management is the integration of business processes from the original suppliers to the end-user through that provides products, services, and information that add value to customers (Galaskiewicz Joseph, 2011).

Supply Chain Management Practice: is a set of activities undertaken in an organization to promote effective management of the supply chain (Beamon, 1998).

Customer Relationship Management: It is the practice of serving the purpose of building long term relationships with customers, managing customer complaints, and improving customer satisfaction (Li et al. 2006).

Information Sharing: is defined as "The extent to which critical and proprietary information is communicated to one's supply chain partner" (Li et al., 2005).

Internal Integration: is defined as "the degree to which a manufacturer structures its organizational strategies, practices, and processes into collaborative, synchronized processes, to fulfill its customers' requirements and efficiently interact with its suppliers" (Flynn et al., 2010).

Supplier Integration: is defined as "The long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits" (Li et al., 2005).

Delivery Lead Time: is the time interval between when new stock is ordered and when it is received and available for use (USAID /DELIVER PROJECT, Task Order1, 2011).

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.1 Theoretical Literature Review

A theoretical framework can be defined as a collection of interrelated ideas based on theories. It is a reasoned set of prepositions that are derived and supported by data or evidence. This section provided the theoretical framework.

2.1.1 Concepts and Definitions of Supply Chain Management

In the 1950s and 1960s, most manufacturers emphasized mass production to minimize unit production cost as the primary operations strategy, with little product or process flexibility. New product development was slow and relied exclusively on in-house technology and capacity. Bottleneck operations were cushioned with inventory to maintain a balanced line flow, resulting in huge investment in work in process (WIP) inventory. Sharing technology and expertise with customers or suppliers was considered too risky and unacceptable and little emphasis appears to have been placed on cooperative and strategic buyer-supplier partnership. The purchasing function was generally regarded as being a service to production, and managers paid limited attention to issues concerned with purchasing. In the 1970s, Manufacturing Resource Planning was introduced and managers realized the impact of huge WIP on manufacturing cost, quality, and new product development and delivery lead-time.

The evolution of supply chain management continued into the 1990s accompanied by increasing logistics and inventory costs and the trend toward market globalization, the challenges associated with improving quality, manufacturing efficiency, customer service, and new product design and development also increased. To deal with these challenges, manufacturers began purchasing from a selected number of certified, high- quality suppliers with excellent service reputations and involved these suppliers in their new product design and development activities as well as in cost, quality, and service improvement initiatives. This is done so by reducing the supply base as much as a single supplier and enter into a long

term agreement as a strategic alliance in doing their business. As companies began implementing supply chain management initiatives, they began to understand the necessity of integrating all key business processes among the supply chain participants enabling the supply chain to act and react as one entity (Ensermu, 2013).

According to Dawe Lu, (2011) Supply chain is defined as a group of interconnected participating companies that add value to a stream of transformed inputs from their sources of origin to the end products or services that are demanded by designated end-consumer. Supply chain management is simply and ultimately the business management, whatever it may be in its specific context, which is perceived and enacted from the relevant Supply chain perspective. The objective of SCM is to maximize the overall value generated to minimize the cost and effective and timely distribution of products needed by ultimate customers.

Supply chain profitability in the abstract is one of the objectives, which means profit-sharing among partner organizations. Profitability due to low cost to all partners creates value for customers. Value is created utilizing the same or higher quality in lesser costs as compared to competitor‘s products. Supply chain responsiveness is another most sought supply chain objective. Responding to a wide range of customers demand, short lead times and wide ranges of products at appropriate cost creates value to customers (Gupta & Sahay, 2007). According to Li *et al.* (2006) identify as many organizations have begun to recognize that SCM is the key to building a 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 developing 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). Besides, those academic debates over the last years also produced 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 to differences in 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 a 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.

Manufacturers resorted to new materials management concepts to improve performance within the "four walls" of the company (Tan, 2001).

The intense global competition in the 1980s forced world-class organizations to offer low cost, high quality, and reliable products with greater design flexibility. Manufacturers utilized just in time (JIT) and other management initiatives to improve manufacturing efficiency and cycle time. In the fast-paced JIT manufacturing environment with little inventory to cushion production or scheduling problems, manufacturers began to realize the potential benefit and importance of a strategic and cooperative buyer-supplier relationship. The concept of supply chain management emerged as manufacturers experimented with strategic partnerships with their immediate suppliers. In addition to the procurement professionals, experts in transportation and logistics carried the concept of materials management a step further to incorporate the physical distribution and transportation functions, resulting in the integrated logistics concept, also known as supply chain management (Tan, 2001).

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 to improve 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).

Several scholars in the discipline of supply chain management have tried to define and provide an in-depth reflection on the supply chain. A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. All in all, the prevalence of a supply chain is unthinkable without the integration of its business functions, value creation for customers at all levels, and a collaborative business thinking and practice.

2.1.2 Resource-Based View and Relational View Theory

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 concerning 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 to provide a sustainable competitive advantage.

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 & 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 costs. Therefore, the researcher conducted a study based on the above theory.

2.2 Supply Chain Management Practices

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

Alvarado and Kotzab (2001) include in their list of SCM practices concentration on core competencies, use of inter-organizational systems such as elimination of excess inventory levels by postponing customization toward the end of the supply chain. Chen and Paulraj (2004) presented SCM framework/practice that encompassed three dimensions: supply network structure, characterized by strong linkages between members, low levels of vertical integration, non-power based relationships; long-term relationships, managed with effective communication, cross-functional teams, and early supplier involvement in crucial projects, planning processes; and logistics integration. Min and Mentzer (2004) identify the practices of SCM as including agreed vision and goals, information sharing, risk and award sharing, cooperation, process integration, a long-term relationship, and agreed supply chain leadership.

Arawati (2011) identify SCM dimensions as it encompasses: Strategic Supplier Partnership, developing trust and collaboration among supply chain partners as well as customers; Lean Production is associated with the continuous pursuit of improving the processes, philosophy of eliminating all non-value-adding activities and reducing waste within an organization; Postponement Concept, Postponement involves the process of delaying final product configuration until the actual order requirement is specified by the customer.

Other factors, such as geographical proximity, structural aspect (Tan et al., 2002), cross-functional teams, logistics integration (Chen and Pauraj, 2004), agreed with vision and goals, and agreed supply chain leadership (Min and Mentzer, 2004) are also identified in the literature. Though these factors are of great interest, they are not included due to the concerns regarding the length of the survey and the parsimony of measurement instruments. The present study, therefore, proposes SCM practices as a multi-dimensional concept.

2.2.1 Strategic Supplier Integration

It is the long term relationship between its supplier and the organization. The purpose of a strategic supplier partnership is to leverage the strategic and operational capabilities of the individual participating organization in achieving significant ongoing benefit (Subba Rao et al. 2004). Empirical studies on SCM revealed that Strategic supplier partnerships enable the organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of mutual objective. According to Balsmeier PW, Voisin W, (1996) strategically aligned organizations can work closely together and eliminate wasteful time and effort.

Supplier integration is defined as "The long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organizations to help them achieve significant ongoing benefits". Supplier integration characterized by various aspects and activities such as information sharing, coordination, trust, shared technology, integrated processes, long-term contracts, assisting suppliers to improve production processes, fostering quality improvements, investing in supplier's assets, including suppliers in new product development, improving supplier's overall capabilities, risk and reward sharing, and shared gains from development efforts (Dyer et al, 1998; Bahjat. et.al,2014). As such, integration results in improved decision making, enhanced knowledge sharing, aligned capabilities, built learning routines, and increased performance of SC partners. Trust enhances the degree of commitment between the two parties, reduces transactional costs, improves cooperation, enhances the satisfaction of the two parties, decreases the formal contracts, and reduces conflicts (Bahjat. et.al, 2014).

A strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem-solving efforts. Such strategic partnerships are entered into to promote shared benefits among the parties and ongoing participation in one or more key strategic areas such as technology, products, and markets. Strategic partnerships with suppliers enable organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products. Suppliers participating early in the product design process can offer more cost-effective design choices, help select the best components and technologies, and help in design assessment. Strategically aligned organizations can work closely together and eliminate wasteful time and effort. An effective supplier partnership can be a critical component of a leading-edge supply chain (Karim & Rafiee, 2014).

Therefore, strategically managed long-term relationship with the supplier has a positive impact on a firm's supplier performance (Cooper and Ellram, 1993).

2.2.1.1. Procurement Management

Procurement practices are used in the logistics and supply chain industry to support the operational needs of the company by focusing on how purchasing is done, how the product is received from suppliers, building relationships with vendors, and managing the procurement process by identifying opportunities and managing internal operations (Fantazy & Kumar, 2010).

In today's procurement environment, importance has been placed on reducing costs during purchasing which leads to the best costs and value to its customers. Companies like Wal-Mart who go straight to the manufacturer, are very strong when they negotiate their price with vendors and make sure no other company is getting their products at the same low price. Integrating procurement with other systems like warehouse management and financial systems to help gain better visibility and control of their procurement process and prevent any industry procurement challenges, like deliveries, pricing, and quality standards, as well as help suppliers, spend more time creating value for retail business companies (Kothari, Hu, & Roehl, 2005).

According to the Council of Supply Chain Management Professionals (CSCMP) 2011 cited on Clement K. Odoom 2012, Logistics management is a supply chain function that plans, implements, and controls the efficient, flow and storage of goods, services to meet customers' requirements. Its activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third-party logistics services providers. It is an integrating task that coordinates all logistics activities, as well as integrating these activities with marketing, operation management, finance, and information technology (Clement K. Odoom 2012) Logistics management has direct impacts on marketing performance which, in turn, impacts financial performance. (Kenneth W. Green Jr, 2008)

2.2.1.2. Supply Chain Strategies and Logistics

According to de Kluyver and Pearce (2006), the ultimate goal of the strategy is “long-term, sustainable superior performance.” Such superior performance now depends on the ability of a manufacturing organization to become a fully integrated partner within a supply chain context, thus all but requiring that manufacturing organizations adopt a supply chain strategy. Such supply chain strategies focus on how both internal and external business processes can be integrated and coordinated throughout the supply chain to better serve ultimate customers and consumers while enhancing the performance of the individual supply chain members. Examples of business processes that must be integrated include manufacturing, purchasing, selling, logistics, and the delivery of real-time, seamless information to all supply chain partners. Managing at the supply chain level requires a new focus and new ways of managing. Manufacturing managers must learn to communicate, coordinate, and cooperate with supply chain partners. (Green Jr, Whitten, and Inman, 2008)

According to the “unionist” perspective on the relationship between supply chain management and logistics this perspective holds that supply chain management incorporates logistics as a key supply chain focused function (Council of Supply Chain Management Professionals, 2007). Organizational managers are asked to focus attention and resources directly on supply chain functions such as logistics to bolster the competitiveness of the supply chains. The

managers are, however, ultimately judged on the marketing and financial performance of their organizations. Does a supply chain focus lead to improved logistics performance, which, in turn, results in improved organizational performance? (Green Jr, Whitten, and Inman, 2008)

Logistics is an important component of supply chain management. The (Council of Supply Chain Management Professionals, 2007) defines logistics management as "part of Supply Chain Management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services, and related information between the point of origin and the point of consumption to meet customers'" requirements. (Both Stank et al. 2002 and Lin 2006) describe the importance of integrating the logistics processes of all supply chain partners to better serve the needs of ultimate customers.

Rabinovich and Knemeyer, (2006) identify a new breed of logistics-related firms: logistics service providers that support internet supply chains. These logistics service providers help internet sellers integrate with the myriad of available logistics firms to fulfill customer orders more effectively and efficiently. Logistics service providers establish relationships with both internet sellers and third-party logistics providers and integrate the selling and flow processes throughout the supply chain through the provision of what call "hub functionalities."

Vaidyanathan (2005) describes a similar role for fourth-party logistics providers in more traditional supply chain configurations such as those that link manufacturers with ultimate customers. Lai and Cheng (2003) discuss the importance of a supply chain focus on the part of transport logistics service providers as they function to link suppliers, manufacturers, sellers, and customers throughout the supply chain. They argue that transport logistics service providers must focus on supply chain performance in addition to organizational performance.

To develop an effective logistics strategy, it is necessary to understand such factors and characteristics. Successful negotiation requires a full understanding of transportation economics. An overview of transportation economics and pricing builds upon four topics: (1) the factors that drive transport costs, (2) the cost structures or classifications, (3) carrier pricing strategy, and (4) transportation rates and ratings Transportation costs are driven by seven factors. While not direct components of transport tariffs, each factor influences rates. The factors are (I) distance, (2) volume, (3) density, (4) storability, (5) handling, (6) liability,

and (7) market. In general, the discussion sequence reflects the relative importance of each factor from the shipper's perspective. Keep in mind that the precise impact of each factor varies based on specific product characteristics.

The second dimension is cost structures or classifications concerns the criteria used to allocate cost. Cost allocation is primarily the carrier's concern, but since cost structure influences negotiating ability, the shipper's perspective is important as well. Transportation costs are classified into several categories.

Carrier Pricing Strategies when setting rates to charge shippers, carriers typically follow one or a combination of two strategies. Although it is possible to employ a single strategy, the combination approach considers trade-offs between the cost of service incurred by the carrier and the value of service to the shipper.

Rates and Rating the above discussion reviewed key strategies used by carriers to set prices. Building on this foundation, this presents the pricing mechanics used by carriers. This applies specifically to common carriers, although contract carriers utilize a similar approach (Bowersox, Closs, & Cooper, 2002).

2.2.2. Level and Quality of Information Sharing

Information sharing has two aspects quantity and quality. Both aspects are important for the practices of SCM and have been treated as independent constructs in the past SCM studies. The level (quantity aspect) of information sharing refers to the extent to which critical and proprietary information is communicated to one's supply chain partner. Shared information can vary from strategic to tactical in nature and information about logistics activities to the general market and customer information. Many researchers have suggested that the key to the seamless supply chain is making available undistorted and up-to-date marketing data at every node within the supply chain. By taking the data available and sharing it with other parties within the supply chain, information can be used as a source of competitive advantage. The sharing of information is one of five building blocks that characterize a solid supply chain relationship.

According to Stein and Sweat, as cited in (Karim and Rafiee, 2014), supply chain partners who exchange information regularly can work as a single entity. Together, they can understand the needs of the end customer better and hence can respond to market change quicker. In this study, information sharing in the supply chain is conceptualized as the extent of sharing business knowledge formally or informally with supply chain partners. Also, it is associated with the amount of information shared among supply chain partners in the downstream and upstream side of the supply chain and also the information intensity.

Quality of information sharing includes such aspects as the accuracy, timeliness, adequacy, and credibility of information exchanged. While information sharing is important, the significance of its impact on SCM depends on what information is shared, when and how it is shared, and with whom. Literature is replete with example of the dysfunctional effects of inaccurate/delayed information, as information moves along the supply chain. Divergent interests and opportunistic behavior of supply chain partners, and informational asymmetries across supply chain affect the quality of information. It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors but also their suppliers and customers. It appears that there is a built-in reluctance within organizations to give away more than minimal information since information disclosure is perceived as a loss of power. Given these predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM. Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and distortion (Li et.al, 2006). Therefore, for the study, information quality is conceptualized as accuracy, timeliness, adequacy, information exchanged reliability, and completeness.

2.2.3. Customer Relationship Management

Supplier and customer relationship is defined as a set of firms' activities in managing its relationships with customers and suppliers to improve customer satisfaction and synchronize supply chain activities with suppliers, leverage suppliers' capacity to deliver superior products to customers. This is due to the ultimate objective of SCM is to deliver products to the satisfaction of end customers (Tan, 2001, cited by Assefa Balda,2011).

It is the practice of serving the purpose of building long term relationships with customers, managing customer complaints, and improving customer satisfaction (Li et al. 2005). It needs fast solutions to their problems this helps the organization for maintaining the long term and good relationship with the customers and giving the customer more satisfaction (Claycomb et al. 1998). Noble (1997) and Tan et al. (1998) consider customer relationship management as an important component of SCM practices. 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 willingness to pay premium prices for a high-quality product (Carr and Pearson, 1999). The growth of mass customization and personalized service is leading to an era in which relationship management with customers is becoming crucial for corporate survival (Wines, 1996).

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. The growth of mass customization and personalized service is leading to an era in which relationship management with customers is becoming crucial for corporate survival. Good relationships with supply chain members, including customers, are needed for the successful implementation of SCM programs. Close customer relationship allows an organization to differentiate its product from competitors, sustain customer loyalty, and dramatically extend the value it provides to its customers (Karimi & Rafiee, 2014). For this research purpose, customer relationship is conceptualized from the literature review and practicability in Ethiopia as the way of building long term relationships with customers through creating customer loyalty, reducing defect products, improving customer services, reducing price/cost, and managing customer complaints.

2.2.4. Internal Lean Practice

According to Li et al. (2005 cited in Cheng Choon Ho), lean practice is conceptualized as the exercise of ruining out the extra cost, time, and other wastes from the supply chain. It will help the entire supply chain to be more competitive and comparable to compete with each other. James and Jones (2003) associated internal lean practices with the continuous pursuit of

improving the processes, philosophy of eliminating all non-value-adding activities, and reducing waste within an organization. Hassanzadeh and Jafarian, (2010) define internal lean practices as removing of surplus. The lean and timely is a production system that aims 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 setup time, continuous improvement, and just in time.

Vonderembse et al. (2006), states that "a lean supply chain employs continuous improvement efforts that focus on eliminating waste or non-value steps along the chain. It is supported by the reduction of setup times to allow for the economic production of small quantities; thereby achieving cost reduction, flexibility, and internal responsiveness. It cannot mass customize and be adaptable easily to future market requirements." This type of supply chain is essentially based on the lean principle s, which advocates the reengineering of business processes to remove all non-value-added activity, generally ascribed as the source of waste in the system. Lean manufacturing emphasizes the optimization across organization and supply bases, not just the functional silos. It promotes close partnership relations with the first tier suppliers and other strategic partners in the distribution channel it created the tiered supply base structure. The waste between the organizations often ignored in the past has been identified as a key improvement area. All in all the lean system has also transformed supply chain management to lean supply management (Dawe Lu, 2011).

According to literature building and maintaining a lean supply chain, revolves around two main areas i.e. waste management and demand management. Demand management is providing products when demanded while waste management is the elimination of process, activities, or anything else that does not add value to customers.

2.2.4.1. Waste Management

The focus of the lean concept is to eliminate all waste i.e. all activities that do not add value. Waste can be measured in time, inventory, and unnecessary costs. Value-added activities are those that contribute to efficiently placing the final product at the customer. The supply chain and the inventory contained in the chain should flow. Any activity that stops the flow should create value. Any activity that touches inventory should create value. The lean concept can be

easily applied in a relatively stable and therefore predictable environment where the requirements (demands) of customers are similar (Barac & Milovanovic, 2006).

Associated costs include quarantining inventory, re-inspecting, rescheduling, and capacity loss. In the latest edition of the Lean Manufacturing classic Lean Thinking, Underutilization of Employees has been added as an eighth waste to the original seven wastes (Harish & Selvam, 2015).

2.2.4.2. Demand Management

One of the key principles of Lean is to move to a pull system‘, in which products or services are pulled (work initiated, services performed, products delivered) only when requested by the final customer. In its purest form, such a system would be developed using data from the point of sale and conveyed upstream to all members of the supply chain, from point to point, without a change in the volume. End-user requirements for the finished product, however, would typically be meaningless to an upstream supplier, who may provide only a fraction of the materials included, and most probably do not understand how their materials contribute to the end-product structure. Therefore, suppliers at each level of the process must receive their downstream customer‘s demand signal and convert it to something usable) to their upstream partners. This can be difficult to accomplish, especially when choosing to work in a virtually real-time manner.

A Lean supply chain will work to have products pulled through the channel using customer demand from the point of sale in real-time (Manrodt &Vitasek, 2008). Therefore, for this research, internal lean practice is conceptualized as waste reduction, continuous quality improvement, and demand management.

2.5. Effectiveness of SCM

SCOR Model: There are several methods or approaches that can be used to measure the performance of a supply chain in an industry. SCOR, which is an acronym for the Supply Chain Operations Reference, is a model or method of approach begun in 1996 which was initiated by the Supply Chain Council called APICS (The Association for Operations Management). This SCOR Model is a framework that is used to help measure the

performance of supply chains in an industry, help in terms of management, business processes, and how a company performs with market demand. SCOR Model also changes in the variable and attributes it had before; this is due to adjustments to the industrial reality or conditions. The SCOR Model includes the business processes of a company that consists of

a.) Plan, which is the main activity in a supply chain. Regarding production planning, material needed, finance, scheduling, distribution plan, along with planning to provide value to the customer.

b.) Source, related to the activity of procuring raw materials and materials needed for business processes. Therefore it will be very related to suppliers.

c.) Make, is the core stage in providing added value processes to products that will be offered to customers. This stage includes the production process, work-in-process, until becomes semi-finished or finished goods.

d.) Deliver, related to the stages of distributing both products and services to customers. This stage also plays an important role in supply chain performance measurement due to its relationship with the customer which is the core or main point of the product made or offered.

e.) Return, is the process of returning the product, either in a condition rejected by the customer or in an effort to improve the product. This condition occurs in a certain moment, for example mismatch with market demand or with other conditions.

f.) Enable, is a process related to the establishment, maintenance and monitoring of information, relationships, resources, assets, business rules, suitability, and contracts needed to carry out from processes in supply chain. This process related to High-Level Management, Finance, HR, IT, Facility Management, Product Management, Sales Processes and Support. For the purpose of this study, Price/Cost as Make, Quality as Plan, Delivery Dependability as Source, and Time to Market as Deliver has been taken.

2.5.1. Planning and Supply Chain Management (SCM)

Planning to define marketing making plans and market forecasting methods enhance the efficiency of SCM. For efficient working, compare prices of different suppliers and select

those who have low prices, good quality of raw material, and obtain discounts Underutilized capacity, industrial planning, and machine upgrading planning are environment and related resources. SWOT analysis, analytical hierarchical process (AHP), and analytical network analysis (ANP) are the main tools for making planning link and these steps are important for strategic decisions which lead to competitiveness (Hussain et al., (2012).

2.5.2. Quality and Supply Chain Management (SCM)

Quality management is the system that leads to long term benefits by continuous improvements in processes by using different quality techniques. Due to globalization companies adopted those suppliers and partners who provide them a good quality of raw material for the final product. When the practices of SCM and quality management are integrated and communicated then it leads to continuous improvement and gains a competitive advantage. Quality management activities like quality policy, objectives, responsibility, and quality planning are important for efficient processes. Quality control, quality assurance, and quality improvements lead to an effective supply chain and increase the value of products and systems (Ramos & Majetic, 2007).

2.5.3. Sourcing and Supply Chain Management (SCM)

Sourcing and Effectiveness of SCM are very important to each other; outsourcing decreases the cost because companies prefer those sources which make material and products at low cost. Where labor and technological costs are the lowest companies outsource from those countries. Sourcing also decreases Lead time to deliver material and inventory goods. For the effective supply chain firstly decided to work with single or multiple suppliers, delegating or parallel sourcing. For an outsourcing needs assessment, negotiation, and relationship management is very important. Through outsourcing companies can gain a sustainable competitive advantage over competitors because they can access new technologies, skills, flexibility, speed, and innovation in production systems that access world-class capabilities (Alim & M.R.Hasan, 2010). Today's information technology helps organizations to ascertain close and long-standing contact with foremost suppliers in the course of enterprise resource planning (ERP), companies inter systems, electronic resource function, and (MRP), procurement electronic data transaction (Abbasi & Afzal, 2011).

2.5.4. ON - Time Delivery and Supply Chain Management (SCM)

On-Time delivery is a factor influences supply chain efficiency. Contacting the ability of the retailers to respond is important, if they respond quickly then the material will reach on time for activities and demand will be fulfilled easily. The functions of auto-identification to recover four basic logistics activities: distribution, transportation, getting, and in-capability operations. It assigns the unique number to every item, store the product information, and work electronically. That has the ultimate affected on-time delivery it reduces the cost and lead time. The beginning of such systems represents a main prospect to repair and develop tracing, Tracking operations, procedure control, and management of inventory. New technologies are useful to do the work efficiently in the supply chain and refused the cost and wastes (McFarlane & Sheffi 2000).

2.6. Empirical Literature Review

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

Certain previous researchers have devoted a deal of attention to the relationship of supply chain management practices and certain aspects of organizational performance from different perspectives/dimensions of the overall supply chain. Some of these researches findings are discussed as follows. Lenny *et al*. (2007) conducted a study on the impact of supply chain management practices on the performance of Small and Micro Enterprises in Turkey. Based on exploratory factor analysis, researchers have grouped SCM practices in two factors: outsourcing and multi-suppliers, and strategic collaboration and lean practices. The results indicate that both factors of strategic collaboration and lean practices and outsourcing and multi-suppliers have a direct positive and significant impact on operational performance. In contrast, both significant impact on operational performance and outsourcing and multi-suppliers 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. Li et al, (2006) conducted a study on the impact of supply chain management practice on competitive advantage and organizational performance by collecting data from 190 organizations by developing five dimensions of SCM practice(strategic supplier partnership, customer relationship level of information sharing, quality of information sharing and postpone mental and the research test the relationships between SCM practice competitive advantage and organizational performance and the result indicate that higher levels of SCM practices can lead to enhanced competitive. advantage and improved organizational performance and competitive advantage can have a direct and positive impact on organizational performance and from the five dimensions developed postponement has not been a strong indicator or SCM practice compared to the other four dimensions.

Janatabadi *et al*, (2013) conduct a study on the impact of supply chain management on the relationship between enterprise resource planning system and organizational performance the objective of this study was to investigate the enterprise resource planning adoption and its influence on organizational performance through supply chain management. The data required for this research was collected from 174 companies in Malaysia through prepared surveys. And from the data collected the research found out that there exists a positive effect of enterprise resource planning on the supply chain which ultimately results in the improved overall performance of the studied organizations.

Mustefa, (2014) conduct a study on the supply chain management practices and firm performance in the case of Awash Tannery P.L.C. in Ethiopia according to this research there was collected from employees of Awash Tannery Company and the research. Conceptualizes and develops five dimensions of SCM practice(strategic supplier partnership, customer relationship, level of information sharing, quality of information sharing, and internal lean practice) and it tests the relationship between SCM practices operational performance and organizational performance and the research found out that there is a strong relationship between SCM practices operational performance and organizational performance and shows that SCM practice have an influence both on operational performance and organizational

performance and it finds out that operational performance has also an influence on organizational performance.

Yap and Tan, (2012) conduct a study on the effect of service supply chain management practices on the public health care organizational performance in Malaysia in this study a total of five dimensions of service supply chain management practice were used to study the effect of supply chain management on organization performance from these information and technology management demand management, customer relationship management, supplier relationship management capacity and resource management were found to have a significant and positive direct relationship with organizational performance and alliance network was found to have the mediation effect on the direct relationship.

Mwilu, (2013) also conduct a study on supply chain management practices and performance among public research institutions in Kenya. One of the objectives of this study was to determine the impact of SCM practice on the performance of research institutions in Kenya and to evaluate the challenges faced by public research institutions in Kenya. And to evaluate the challenges faced by public research institutions in Kenya while adopting SCM. By developing seven dimensions of SCM practices from these the research founds out that three variables namely logistics lean suppliers and information technology were found to have strong statistically significant relationships with performance. The other three variables namely green supply chain practices, long term supplier relationships, and outsourcing were found to have week relationships which were not statistically significant.

Some of these researches finding there methodologies are summarized in table as follows:-

Table 2.1: Annotated bibliography

literatures	Paper Objective	SCM Practices Concepts	Performance Concepts	Sample and Main Methods	Findings
(Li, et al., 2006)	to assess the impact of supply chain management practices on performance	*Strategic supplier partnership *Customer relationship *Level of information sharing *Quality of information	Competitive advantage; Organizational performance	196 firms using structural equation modeling	• Higher levels of SCM practice can lead to enhanced competitive advantage and improved organizational performance • Competitive advantage can have a direct, positive

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

	operational performance and SCM-related organizational performance	*Internal lean practice	margin on sales *Overall competitive position		

Source: from literatures

As can be realized in the above table 2.1, different scholars studied the impact of the supply chain practice on firms' performance by taking different variables as supply chain practices. The study conducted by (Li, *et al*., 2006), (Mutuerandu, 2014); (Karimi & Rafiee, 2014) and (Mustefa, 2014) investigated the impact of supply chain management practices on performance. The studies mainly focus on the impact of supply chain practices on competitive advantage and organizational performance. The finding showed that the higher level of supply chain practices i.e. strategic supplier partnership, customer relationship, level, and quality of information sharing can lead to enhanced competitive advantage and improved organizational performance and competitive advantage.

The other study conducted by (Addis, 2015) has investigated the impact of supply chain practices on the performance of pharmacies in governmental health facilities in Addis Abeba on performances of the pharmaceutical industries, the study only focuses on the upper tier of the supply chain and information sharing with suppliers. Her findings showed that JIT, Holding safety stock, few suppliers, close partnership, and level of information quality improve quality, product or service innovation, time to market and reduce price, operational costs and time to market, most of which are related to the operational performance of the organization.

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

2.7. Identified Literature Gap

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

In General, as have seen from the above literature to assess the impact of supply chain management on organization performers there is no single measurement (dimension). Despite the increase of empirical research in the last few years important differences in research design undermine comparability lack of consensus about and definition and dimension of the SCM construct use of different units of analysis and different approaches to performance measurement.

Finally, from the 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.

2.8. Conceptual Framework

In the conceptual framework, the independent variables determinants of SCM which are believed to have an impact on the dependent variables SCM effectiveness of the M&LMEs were considered. The previous empirical studies conducted by (Ibrahim & Hamid, 2012), (Karimi & Rafiee, 2014), (Li, et al., 2006), (Mustefa, 2014), (Mutuerandu, 2014), (Suhong, Li, *et al*., 2004), (Yohannes, 2014), has shown that the higher level of supply chain practices implementation can lead to the enhanced operational performance of the organization.

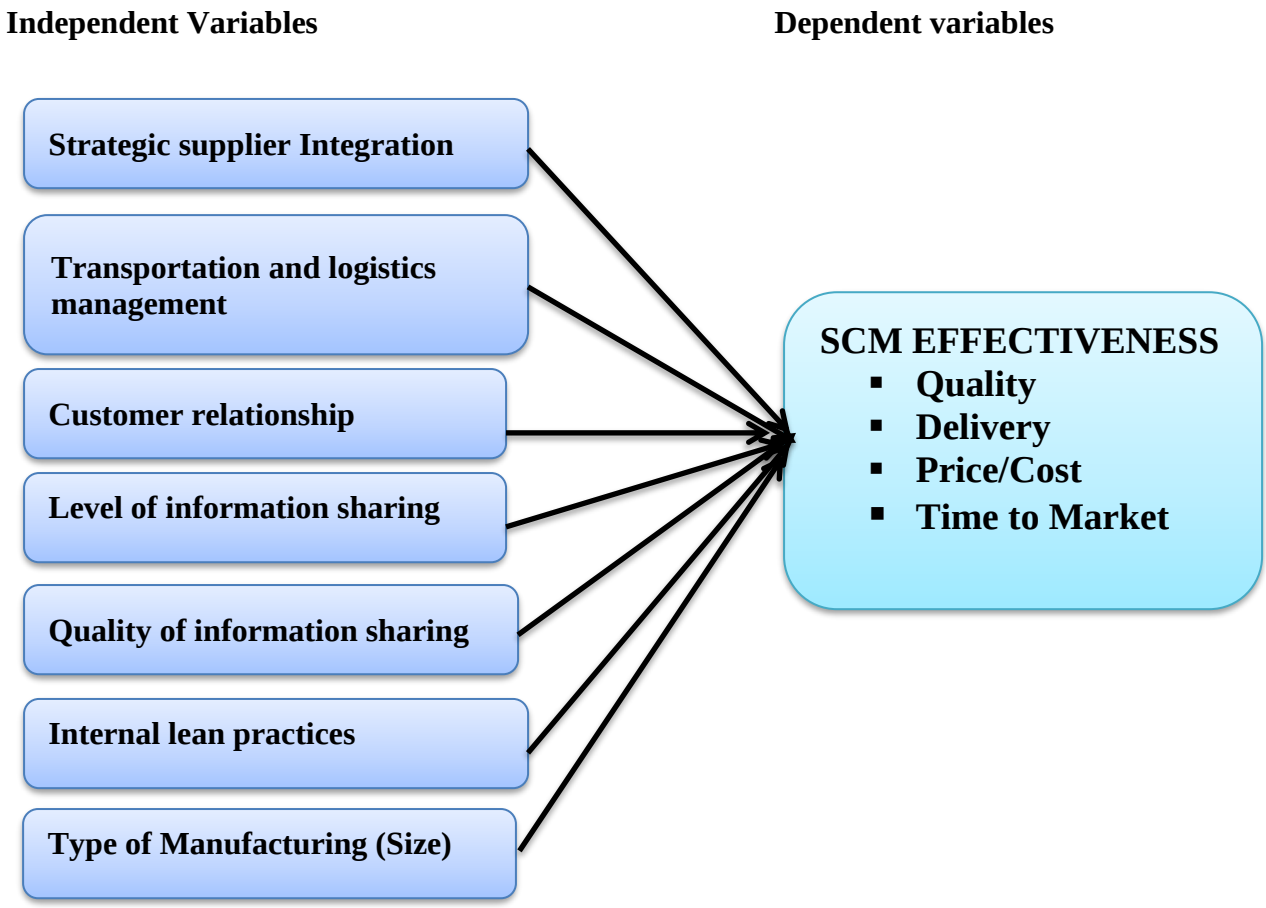

Figure.1. Conceptual framework of the study
Source: The Conceptual Framework of the study, developedby the researcher.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Description of Study Area

Proclamation No.416/2004 Provided Dire Dawa the legal status that enables it to become a chartered city, the residents of the Dire Dawa Administration have, therefore, the legal foundation that enables to exercise self-administration, determine the organizational structures and operations of the city in conformity with democratic principles, good governance and contemporary trends of growth and development.

Geographical Location of Dire Dawa Administration is located in the eastern part of Ethiopia. The City Administration bordered by Shinile Zone of Ethiopian Somali National Regional State on the Northwest, Northeast and by the Eastern Hararghie Region of Oromia National Region State on the South, Southeast, and East. According to DDASA 2013(CSA, 2011), the total population estimated to be 450,000 of which 67.9% reside in urban area and the rest 32.1% lives in rural areas. Dire Dawa Administration has an estimated land area of 128,802 hectares.

This administration is still a commercial and industrial center in the country. Since, it found at a strategic location and relatively better transportation, network, additionally; its nearness location to Djibouti and relatively well-developed infrastructure. It has traded as the main economic sector that contributes to the economy of the city.

3.2. Research Design

The research design is intended to provide an appropriate framework for a study. A very significant decision in research design process is the choice to be made regarding research approach since it determines how relevant information for a study will be obtained; however, the research design process involves many interrelated decisions. This study employed a mixed type of methods. The first part of the study consisted of a series of well-structured questionnaires (for managers, section heads, seniors, experts and technician of enterprises) and semi-structured interviews with key stakeholders (executives, general managers, and

administrators) in participating organizations. The other design used is an interview of employees to know how they feel about supply chain management at their workplace.

3.3. Sources of Data

The study employed both primary and secondary sources of data collection.

3.3.1. Primary Sources

The data used for this study were qualitative and quantitative data from the respondents. Primary data were collected by use of close ended questionnaires (self-administering questionnaires) and semi-structured interview questions designed by the researcher.

3.3.2. Secondary Sources

Desk review has been conducted to collect data from various secondary sources. This includes reports and project documents at each manufacturing sectors (more on medium and large level). Secondary data sources have been obtained from literatures regarding OSH, and the remaining data were from the companies' manuals, reports, and some management documents which were included under the desk review. Reputable journals, books, different articles, periodicals, proceedings, magazines, newsletters, newspapers, websites, and other sources were considered on the manufacturing sectors. The data also obtained from the existing working documents, manuals, procedures, reports, statistical data, policies, regulations, and standards were taken into account for the review. In general, for this research study, the desk review has been completed to this end, and it had been polished and modified upon manuals and documents obtained from the selected enterprises.

3.4. Research Instrument /Tools

The researcher used two major research instruments and these are questionnaire (close-ended questions) and semi-structured interview guide.

3.4.1. Questionnaire

A questionnaire is a data collection instrument used to gather data over a large sample or number of respondents Saunders, et al (2009), were developed this structured questionnaire

following recommended guidelines. In this research, the primary data were collected directly from the target participants by using of close-ended (a self-completion) questionnaires only. According to Bryman and Bell, (2003) the self-completion questionnaire is very familiar method of business research, and the research instrument has to be especially easy to follow and its questions have to be particularly easy to answer. Meanwhile, whether to ask a question in an open or closed format is one of the most significant considerations for many researchers. Closed questions have some advantages: it is easy to process answers; it enhances the comparability of answers, and makes them easier to show the relationship between variables. It is better than open question for this research.

3.4.2. Interview

An interview guide is a set of questions that the researcher asks during the interview (McNamara, 2009). The researcher developed in this study a semi-structured interview guide was used for the medium and large manufacturing enterprises to measure to what extent SCM practiced in M&LMEs and help Managements to stimulate them into a detailed discussion of the determinants of supply chain management effectiveness in medium and large Manufacturing Enterprises. The objective of this interview was to solicit ideas that were not covered by close-ended (self-completion) questionnaires and for triangulation.

3.5. Target Population

All the items under consideration in any field of inquiry constitute a population. Sekeran, (2001) defined a population as "the entire group of people, events, or thing of interest that the researcher wishes to investigate". The total of 16 large and 79 medium Manufacturing Enterprises located at Dire Dawa Administration. From those large and medium Manufacturing Enterprises target population, for the study, the researcher by using purposive Random sampling technique selected 7 large and 16 medium Manufacturing Enterprises. Conducting a research taking the population in to consideration becomes too difficult in terms of money, time and manageability issue.

3.6. Sampling Techniques and Sample Size

In order to gather relevant data, the study employed proportional stratified random sampling and purposive sampling technique. In all cases, sample size was determined by considering financial, time and resource constraints. In first step the researcher classified into two separate strata namely large and medium Manufacturing Companies.

In the second step, researcher selected the respondent's from each stratum, by using simple random sampling technique. Stratified random sampling method employed in the study to get information from different sizes of the large and medium Manufacturing Companies. This technique was preferred because it assists in minimizing bias when dealing with the population.

In third step, to determine the sample size and representative of the target population, the study was used statistical instrument formula. The following formula used for the calculation of the sample size since it was relevant to studies where a probability sampling method is used (Watson, 2001).The sample size of study computed as follows.

$$n = \frac{\left(\frac{P[1-P]}{\frac{A^2}{Z^2} + \frac{P[1-P]}{N}} \right)}{R}$$

Where, n = sample size required = 372

N = number of population = 4,498

P = estimated variance in the population = 50%

A = margin of error = 5%

Z = confidence level = 1.96 for 95% confidence

R = estimated response rate = 96%

The proportional stratified sampling for each stratum were determined by n/N = 372/4,498= 0.0827 which means that 8.27% of each clusters as calculated in the table.

Table 3.1 proportional stratified sample

Sample	Population	8.27 %Sample size
LARGE MANUFACTURING COMPANIES		
PIONEER CEMENT FACTORY	341	28
DIAMOND STEEL FACTORY	108	9
NATIONAL CEMENT FACTORY	1457	121
EAST AFRICA BOTTLING	138	11
DIREDAWA FOOD COMPLEX	425	35
SHEMU SOAP AND DETERGENT FACTORY	397	33
AQUA UNO BOTTLED WATER FACTORY	150	12
Total 16/7	**3,016**	**249**
MEDIUM MANUFACTURING COMPANIES		
JEMAL MOHAMMED BLOKET	59	5
ABERA HERPASA DIARY	42	4
CHINA GENERAL METAL AND ALUMINIUM WORKS	77	6
MILINIK ALEM WOOD WORK	64	5
KASAHUN AND ZEWDNESH INJERA	109	9
MEKEDES INJERA	175	14
BELAYNESH HAILE GRAVEL PRODUCTS	190	16
TEKIE FURNITURE	65	5
ANTENEH AND WORKENEH GRAVEL AND BLOKET	64	5
TEKALEGNE TSEGAW GRAVEL AND BLOKET	45	4
KEROMOTO	40	3
LALI TRADING	67	6
BERA COFFEE PROCESSING	272	23
ROYAL FOAM MATRESS & PLASTIC PRODUC	62	5
KONNEL INDUSTRIAL	99	8
FIRI BOTTLED WATER FACTORY	52	5
Total 79/ 16	**1,482**	**123**
Grand Total	**4,498**	**372**

Source: TI&IB in DDA (2020)

Out of the sample frame of 4,498 employees from 7 Large and 16 Medium Manufacturing Companies, a sample of 372 were selected based on the percentage method, representing 8.27% of the population from each stratum to constitute a sample. The study was about determinants of supply chain management effectiveness in medium and large manufacturing enterprises, key informant of interview respondents of the study was those managers and senior experts, who are well acquainted regarding the issue of the study. As a result both 372 employees and 10 top managers and 10 senior experts of these companies were taken as a respondent was manageable enough for this study.

3.7. Data Analysis Methods

This study used both quantitative and qualitative methods. Descriptive statistics tools such as frequency and percentage were used to present the collected data and to point out special features. Chi-square test was employed to test whether there is statistically significant association/ dependency between determinants of supply chain management and SCM effectiveness in medium and large manufacturing enterprises. Binary Logistic Regression model was also fitted to see the significance of SCM dimensions such as (sector, strategic supplier partnership, Transportation and logistics management, customer relationship, level of information sharing, quality of information sharing and internal lean practices), whereas, the SCM effectiveness (Quality, Delivery, Price/Cost and Time to Market). The information that was obtained through interview was reported through narrative descriptions to supplement the information gathered through questionnaire. Analysis was conducted using the Statistical package for Social Science (SPSS) version 23.

3.7.1. General form of Binary Logistic Regression

Binary logistic regression is regression analysis where the dependent variable is binary. It only contains data coded as 1 or 0. Like other regression models binary logistic regression is also a predictive analysis. The aim of binary logistic regression is to find the model, which describes the relationship between characteristic of interest (dependent variable) and set of independent variables. Before showing how logistic regression general model looks like, let us define odds. Odds of an event are the ratio of the probability that an event will occur to the probability that it will not occur. If the probability of presence of the characteristic of interest is p, the probability of absence of the characteristic of interest is 1-p. Then the corresponding odd is a value given by this formula: $\frac{p_i}{1-p_i}$

Since logistic regression calculates the probability of an event occurring over the probability of an event not occurring, the influence of independent variables is usually explained in terms of odds. With logistic regression the mean of dependent variable p in terms of dependent variable x is given by the equation $p=\alpha + \beta x$. This is not a good model, as values of $\alpha + \beta x$ does not fall between 0 and 1. Logistic regression gives a solution to this problem by

transforming the odds using the natural logarithm. With logistic regression we model the natural log odds as a linear function of the independent variable:

$$logit(y) = ln(odds) = ln(\frac{p}{1-p}) = \alpha + \beta x \qquad (1)$$

Where p is the probability of interested outcome and x is the independent variable. The parameters of logistic regression are α and β. This is the simple logistic model.

From equation (1) we can derive an equation for the prediction of the probability as

$$p = \frac{e^{\alpha+\beta x}}{1+e^{\alpha+\beta x}} = \frac{1}{1+e^{-(\alpha+\beta x)}} \qquad (2)$$

Assuming that we have multiple predictors we may construct a general logistic model as

$$logit(y) = ln(\frac{p}{1-p}) = \alpha+\beta_1 x_1 + \cdots + \beta_k x_k \qquad (3)$$

From equation (3) we can derive an equation for the prediction of the probability as

$$\log it(p_i) = \ln\left[\frac{p_i}{1-p_i}\right] = X_i'\beta = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki}$$

Where:

$$p_i = Prob(y_i = 1 | X_i) = \frac{e^{X_i'\beta}}{1 + e^{X_i'\beta}} = \frac{\exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki})}{1 + \exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki})},$$ is the response probability or probability of success or Y=1.

$\frac{p_i}{1-p_i}$ is the probability of success to failure or the odds of success.

β_0 is the constant of the equation

β_i 's are the coefficients of the independent variables X's. However, in binary logistic regression, the odd ratio e^{β} is interpreted.

3.7.2 Logistic Curve

When the dependent variable is binary and independent variable is numerical, logistic model fits a logistic curve to the relationship between x and y. Logistic curve is a common "S" shape (sigmoid curve).

A simple logistic function is defined by the following formula

$$y = \frac{e^x}{1+e^x}.$$

This equation can be extended to the form

$$y = \frac{e^{\alpha+\beta x}}{1+e^{\alpha+\beta x}} = \frac{1}{1+e^{-(\alpha+\beta x)}}$$

3.7.3 Assumptions of Binary Logistic Regression

Unlike general linear models, binary logistic regression does not have many key assumptions; particularly it does not require a linear relationship between the dependent and independent variables, normality of the error distribution, homoscedasticity of the errors and measurement level of the independent variables.

http://www.statisticssolutions.com/assumptions-of-logistic-regression
However logistic regression still requires other assumptions.

1. Binary logistic regression requires the dependent variables to be binary.
2. Since binary logistic regression assumes that that P(Y=1) is the probability of event occurring, it requires that the dependent variable is coded accordingly.
3. Model should be fitted correctly. It means that all meaningful variables should be included. Also, it should not be over fitted with meaningless variables included.
4. Binary logistic regression requires each observation to be independent. Also, it should have little or no multicollinearity, which means that independent variables are not linear functions of each other.
5. Binary logistic regression requires linearity of the relationship between independent variables and log odds. Meanwhile, it does not require a linear relationship between dependent and independent variables.
6. Binary logistic regression requires quite large sample sizes. Studies with small sample sizes overestimate the effect measure. Also the more independent variables are included in the model; the larger sample size is required.

3.7.4 Maximum Likelihood Estimation

Although logistic regression model looks like simple linear regression model, the underlying distribution is binomial, and α and β parameters cannot be estimated in the same way as for simple linear regression. The coefficients are usually estimated by the Maximum Likelihood Model (Park, Hyeoun-Ae, April 2013). The likelihood is a probability to get observed values of the dependent variable given the observed values of independent variables. The likelihood varies from 0 to 1 like any other probabilities.

We can write

$$P(Y=y_i) = P_i^{1-y_i}(1-P_i)^{y_i}$$

Where P_i is the probability of the i-th observation, y_i is the value of random variable Y that takes value 0 or 1. Assuming that our **n** observations are independent the likelihood of the data is equal to

$$L=\prod_{i=1}^{n} P_i^{1-y_i}(1-P_i)^{y_i}$$

Maximum Likelihood method will provide values for α and β which maximize L function.

3.7.5 Evaluation of Binary Logistic Regression Model

There are several ways for estimating logistic regression. Firstly, the overall model should be evaluated. Secondly, the significance of every explanatory variable needs to be assessed. Thirdly, the predictive accuracy needs to be evaluated.

I. Overall model evaluation

a) **Likelihood ratio test**

Due to overall model evaluation we can see how strong the relationship between all independent variables and dependent variable is. If logistic regression with k independent variables demonstrates an improvement over the model without independent variables (null model), then it provides a better fit to data (Park, Hyeoun-Ae, April 2013). This is performed using the likelihood ratio test, which compares the likelihood of the data under the full model with the likelihood of the data under the model without independent variables. The overall fit

of the model with k coefficients can be accessed via likelihood ratio test which tests the null hypothesis

$H0$:$\beta1$=$\beta2$=...=βk -2 log likelihood of the null method is compared with 2 log likelihood of the given model. Likelihood of null method is the likelihood of obtaining the observation if explanatory variables have no impact on the outcome. Likelihood of the given model is likelihood of obtaining the observation if all explanatory variables are included in the model. The difference of these 2 indicates a goodness of fit index G, χ^2 statistic with k degrees of freedom. It measures how well independent variables influence on the dependent variable.
G=χ^2= (-2 log likelihood of null model) - (-2 log likelihood of the given model). If the p-value for the overall model fit statistic is less than 0,005, then decline $H0$ with the conclusion that at least one of the independent variables has impact on the outcome or dependent variable.

b) Chi-square Goodness of Fit Tests

Chi-square goodness of fit test is a non-parametric test that is used to find out how the observed value of a given event is significantly different from the expected value. The hypothesis for Chi-square goodness of fit test is as follows.

Null hypothesis: In Chi-square goodness of fit test, the null hypothesis assumes that there is no significant difference between the observed and expected value.

Alternative hypothesis: In Chi-square goodness of fit test, the alternative hypothesis assumes that there is significant difference between the observed and expected value. If the p-value is less than significance level, the null hypothesis is rejected.

In linear regression residuals are defined as yi-$\hat{y}i$ where yi is the observed value of the variable for i-th subject, and $\hat{y}i$ is the predicted value for i-th subject. For logistic regression, where yi is 1 or 0, the corresponding prediction from the model is as

$$\hat{y}_i = \frac{exp(\alpha+\beta_1 x_{i1}+\cdots+\beta_k x_{ik})}{1+exp(\alpha+\beta_1 x_{i1}+\cdots+\beta_k x_{ik})}$$

Chi-square test is based on residuals yi-$\hat{y}i$. A standardized residual is defined as

$$r_i = \frac{y_i - \hat{y}_i}{\sqrt{\hat{y}_i(1-\hat{y}_i)}},$$

And χ^2 statistic can be formed

$$\chi^2 = \sum_{i=1}^{n} r_i^2$$

This statistic follows χ^2 distribution with n-(k+1) degrees of freedom.

c) Omnibus Test

The **Omnibus Tests of Model Coefficients** is used to check that the new model (with explanatory variables included) is an improvement over the baseline model. It uses chi-square tests to see if there is a significant difference between the Log-likelihoods (specifically the -2LLs) of the baseline model and the new model.

d) Hosmer-Lemeshow test

Hosmer-Lemeshow test also measures how good the model is. The test evaluates whether observed event rates match expected event rates in subgroups of the model population. Hosmer-Lemeshow test is implemented by dividing the predicted probabilities into ten equal groups, according to their values (deciles)

The hypotheses is as follows

$H0$: Actual and predicted event rates are similar across 10 deciles.

$H1$: They are not the same.

The value of the test statistics is

$$\chi^2 = \sum_{g=1}^{10} \frac{(O_g - E_g)^2}{E_g}$$

Where Og are the observed events, and Eg are the expected events for the g-th ineffective

deciles group. The test statistic asymptotically follows a χ^2 distribution with 8 (number of groups-2) degrees of freedom. Small values with large p-value closer to 1 means a good fit to the data. Large values with $p < 0.05$ means a poor fit to the data.

II. Statistical significance of individual regression coefficients

After evaluating the overall model, the next step is to assess the significance of every independent variable. The coefficient of i^{th} explanatory variable indicates the change in the predicted log odds for one unit change in the i^{th} explanatory variable, when all other explanatory variables remain unchanged.

a) Likelihood ratio test

As we mentioned above, the likelihood ratio test is used to evaluate the overall fit model. The test is also used to evaluate statistical significance of individual predictors. The likelihood ratio test for particular parameter compares the likelihood of obtaining the data when the parameter is 0 (L0) with the likelihood (L1) of obtaining the data evaluated at the MLE of the parameter.

The test statistic is calculated as

$$G=-2ln\frac{L_0}{L_1}=-2(lnL_0 - lnL_1)$$

This statistics is compared with χ^2 distribution with 1 degree of freedom.

b) Wald statistic

The Wald statistic is used to test the significance of individual coefficients in a given model (Bewick et al., 2005). The statistic is the ratio of the square of the regression coefficient to the square of standard error of the coefficient. The calculation is as follows

$$W_j=(\frac{coefficient}{SEcoefficient})^2$$

Each Wald statistic is compared with a χ^2 distribution with 1 degree of freedom. The calculation of Wald statistic is easy. However, the reliability of the test is questionable, particularly for small samples. For data that produces large estimates of coefficient, the standard error is often inflated, which in turn results in a lower Wald statistic. Consequently, explanatory variable may be incorrectly assumed as insignificant in the model.

3.8 Validity and reliability test of instrument

3.8.1 Validity Test

Prior to main study data collection, piloting was made. The aim of the pilot test was to solve ambiguity (clarity, language, and translation and structure problems) and to check validity, reliability and feasibility of the instruments. Two experts were selected and given the English versions of the adapted supply chain performance to check the validity of the questionnaire. The selection of the experts was based on their knowledge on the areas of supply chain management performance and the relation of their work with the research topic. The experts were recommend wordings and language on the items and incorporated accordingly.

3.8.2 Reliability Tests

Item-total correlation was computed for each sub-scale of sector (medium & large manufacturing), strategic supplier integration, transportation and logistics management, customer relationship, level of information sharing, quality of information sharing, internal lean practice and supply chain management effectiveness sub-scales. Based on the criterion of Cronbach's alpha > 0.9 Excellent, alpha > 0.8 Good, alpha > 0.7 Acceptable, alpha > 0.6 Questionable, alpha > 0.5 Poor, and alpha< 0.5 Unacceptable (George and Mallery 2003) the items are accepted or rejected. After the pilot testing, minor wordings were made to the adapted items in order that they fit the purpose of the study. Internal consistency reliability of the instrument was determined for the total as well as for the sub-scales using Cronbach's alpha. The computed Cronbach's alpha coefficients were between 0 and 1 for specific sub-scales of Sector (medium & large manufacturing), strategic supplier integration, transportation and logistics management, customer relationship, level of information sharing, quality of information sharing, internal lean practice and supply chain management effectiveness. After

the data collection, reliability analysis was done and the findings for each of the variables are presented in Table 3.2 below.

Table 3.2: Reliability of Statistics

Variables	Number of Items	Cronbach's Alpha
Sector (medium & large manufacturing)	2	.869
Strategic supplier partnership	4	.805
Transportation and logistics management	4	.801
Customer relationship	5	.846
Level of information sharing	7	.810
Quality of information sharing	4	.815
Internal lean practices	5	.847
SCM effectiveness	14	.878

Source: Survey Result (2019)

Table 3.3: Overall Reliability of Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.856	.783	8

Source: Survey Result (2020)

The Cronbach's Alpha coefficient of the study was 0.856. George and Mallery (2003), states that at least a value of 0.7 is recommendable and therefore the instrument was accepted as highly reliable.

3.9 Factor Analysis

Factor analysis refers to the statistical tool that examines the weight or the possible effect of un-observed variables. Factor analysis also helps in is carried out on the variables to determine the adequacy of the sample used (Kadane, 2011). Factor analysis was to run by using principle component analysis according to items in each domain across and components extracted by way of varimax rotation. Kaiser-Meyer- Olkin (KMO) is measure of sampling adequacy also examined to validate factor analysis, between the ranges of 0 to 1, with 0.6 as the minimum level.

Table 3.4 Kaiser-Meyer- Olkin (KMO)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.689
Bartlett's Test of Sphericity	Approx. Chi-Square	2125.233
	df	21
	Sig.	.000

Source: Survey Result (2020)

The results of the Barlett's test were significant for all variables and KMO is the above recommended value of 0.6 for all variables meaning that it indicates sampling adequacy.

3.10 Ethical Considerations

According to Cooper and Schindler, (2001), there are four ethical issues that need to be addressed in the process of undertaking a research: That are protection from harm, informed consent, right to privacy, and honesty with professional colleagues. Therefore, the participants in this study was selected with full consent and informed to respond for questionnaires with confidence and understanding the purpose of the thesis; and the researcher was assure that as to keep the information confidential and the data is used only for intended purpose.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1. Response Rate

Questioners were randomly distributed to 123 and 249 in medium and large manufacturing enterprise employees respectively. However, 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.

Table 4.1: Response rate

Participants	Medium Manufacturing		Large Manufacturing		Total Participants	
	Frequency	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Responded	**98**	**80**	**184**	**74**	**282**	**76**
Non responded	**25**	**20**	**65**	**26**	**90**	**24**
Total	**123**	**100**	**249**	**100**	**372**	**100**

Source: Survey2019/20

Table 4.1 above, shows that out of the 372 questionnaires administered, 282 were returned fully completed, giving a response rate of 76%. Out of this sample, 25 and 65 from medium and large manufacturing enterprises respectively total of 90 questionnaires were not returned giving a response rate of 24%. Overall, 282 responses were received, giving a response rate of 76 %. Even though the predicted response rate was 96%, that the 76% response rate considered fair. Dillman, (2007) suggests that the response rate for a personal delivery approach varies considerably from the lower of 28 % to the highest of 50 %. So, the response rate is enough to carry out the analysis.

4.2. Demographic Profile of Respondents

Under this section, the researcher analysed the respondent's profile, which includes gender, age, and educational level of respondents who were involved in this study. This determines the accuracy and representatives of information drawn from the sample to the population. Findings regarding their gender, age, educational level, Experience of Working, Designation, and Departments are presented in table 4.2.

Table: 4.2. Gender, Age, Level of Education, Working Experience, Designation, and Departments of the Respondents

Demographic Profile	Category	Respondents	
		F	%
Gender	Female	122	43.3
	Male	160	56.7
Total		**282**	**100**
Age (Distribution)	< 25 years	50	17.7
	26 – 35 years	120	42.6
	36 – 45 years	98	34.8
	46 -55 years	14	5.0
	> 56years	0	0
Total		**282**	**100**
Level of Education	High school	59	20.9
	TVET	91	32.3
	Diploma	85	30.1
	First Degree and above	47	16.7
Total		**282**	**100**
Working Experience	< = 5 years	85	30.1
	6 – 10 years	129	45.7
	11 – 16 years	68	24.1
	17 years and above	0	0
Total		**282**	**100**
Designation	Junior/Expert	107	37.9
	Expert	21	7.4
	Section/Senior	48	17.0
	Section Head	36	12.8
	Department manager	70	24.8
Total		**282**	**100**
Department	Production	88	31.2
	General Service	73	25.9
	Marketing	44	15.6
	Planning	31	11.0
	Finance	46	16.3
Total		**282**	**100**

Source: Field survey, 2019/20

From the above table the demographic profile of the respondents; the study includes women participation at 43.3% taken as gender sensitive; the age range of major respondents and work experience fall b/n 25-45 years and 5- 16 years that shows maturity and experience of the respondents; the level of education of the respondents ranges majorly TVET and degree means can cope-up with changes; the designation and the departments shows that the respondents taken from where supply chain expected to be practiced. In general the above table show how the study reasonably considered the supply chain actors with in the enterprises at most.

4.3 Descriptive Statistics of Variables

A Likert scale is a summated rating scale used for measuring attitudes. Rensis Likert developed the method in (1932). Likert attitudinal scales are a useful technique, since it is possible to make a research tool that is very attractive to participants, and they can, therefore, become much more likely to be completed, improving response rates and generalization reliability.

In this section, various statistical data analysis tools such as mean and standard deviation, are used to analyze the collected data. The summary of descriptive statistics of all variables that are evaluated based on a 5-point Likert scale ("1" being "strongly disagreed" to "5" being "strongly agreed"). For easier interpretation of the results of the study, the researcher refers to the interpretation of scores 1.00-1.80= worst, 1.80-2.60= low, 2.61-3.40= enough, 3.41- 4.20= high, and 4.21-5.00= very high (Sugiyono, 2008; Munizu, 2013; Bahri *et al.*, 2012). The results for measures of central tendency and dispersion were obtained from the sample of respondents.

In this case, the mean of each item together with their respective dimension overall mean/average mean was calculated to conclude the overall determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

4.3.1 Strategic Supplier Partnership

To assess the supplier relationship, the selected employees were requested to respond to four related questions to assess the strategic partnership of medium and large manufacturing enterprises with the suppliers. Table 4.3 shows the responses of each question asked as strategic supplier relationships.

Table 4.3 Descriptive statistics on Strategic supplier partnership

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
Your company considers quality as number one criterion in selecting suppliers.	98	3.11	1.413	184	3.55	1.244
Your company regularly solves problems jointly with your suppliers	98	3.47	1.123	184	3.52	1.138
Your company has been helping your suppliers to improve their product quality.	98	3.67	1.449	184	3.75	1.294
Your company includes your key suppliers in your planning and goal setting activities.	98	3.69	1.304	184	3.79	1.340

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

Table 4.3, above shows Strategic supplier partnership mean and a standard deviation score of the data concerning the two groups, that is, medium and large manufacturing enterprises respectively.

A comparison on items of companies considers quality as a number one criterion in selecting suppliers at a mean of 3.11 & 3.55 and a standard deviation of 1.413 & 1.244 for medium and large manufacturing enterprises respectively. A comparison on items of companies regularly solves problems jointly with your suppliers at a mean of 3.47 & 3.52 and a standard deviation of 1.123 & 1.138 for medium and large manufacturing enterprises respectively. The finding of this survey supported by the empirical finding of Suhong et al., (2006) it is the long term relationship between its supplier and the organization.

The purpose of strategic supplier partnership is to leverage the strategic and operational capabilities of the individual participating organization in achieving significant on-going benefit. Empirical studies on SCM revealed that Strategic supplier partnerships enable the organizations to work more effectively with a few important suppliers who are willing to share responsibility for the success of mutual objective. According to Balsmeier PW, Voisin

W, 1996 strategically aligned organizations can work closely together and eliminate wasteful time and effort.

As on Table 4.3, a comparison on items of companies has been helping your suppliers to improve their product quality at a mean of 3.67 & 3.75 and a standard deviation of 1.449 & 1.294 for medium and large manufacturing enterprises respectively. A comparison on items of companies' includes your key suppliers in your planning and goal setting activities at a mean of 3.69 & 3.79 and a standard deviation of 1.304 & 1.340 for medium and large manufacturing enterprises respectively. As we have discussed above, it is the management of the long-term relationship between the company and its supplier to achieve the long term organizational benefits.

These findings are supported by previous studies some of which are discussed here. To maintain this relationship for long time participation of suppliers in the designing process of the product and services could be cost-efficient (Tan, et al, 2002). Supplier's relationship management emphasizes direct and long-term relationships and encourages mutual planning, efforts to resolve the problem, eliminate useless time, (Sheridan et al, 1998), improve quality performance and it is among the critical factors to guide supply chain management (Sandikiglu & zehir, 2010).

4.3.2 Transportation and Logistics Management

According to the Council of Supply Chain Management Professionals (CSCMP) (2011 cited in Clement K. Odoom 2012), Logistics management is a supply chain function that plans, implements, and controls the efficient, flow and storage of goods, services to meet customers' requirements. Its activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfilment, logistics network design, inventory management, supply/demand planning, and management of third-party logistics services providers.

Table 4.4 Descriptive statistics on Transportation and logistics management

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
Your company used to monitor and track energy consumption	98	3.28	1.504	184	3.54	1.401
Your company have a program and /or procedures to reduce the use of energy	98	3.69	1.304	184	3.79	1.340
Your company has procedures and/or a program in place to ensure bribes or other means of obtaining advantages are not offered or accepted (avoiding conflict of interest)	98	3.49	1.203	184	3.58	1.310
Your company have procedures and/or a program in place to prevent corruption, extortion, or embezzlement	98	3.27	1.320	184	3.57	1.316

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

Table 4.4, above shows Transportation and logistics management mean and a standard deviation score of the data concerning the two groups, that is, medium and large manufacturing enterprises. A comparison of items of companies' used to monitor and track energy consumption at a mean of 3.28 & 3.54 and a standard deviation of 1.504 &, 1.401 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. Lai and Cheng (2003) discuss the importance of a supply chain focus on the part of transport logistics service providers as they function to link suppliers, manufacturers, sellers, and customers throughout the supply chain. They argue that transport logistics service providers must focus on supply chain performance in addition to organizational performance.

A comparison on items of companies' has a program and /or procedures to reduce the use of energy at a mean of 3.69 & 3.79 and a standard deviation of 1.304 & 1.340 for medium and large manufacturing enterprises. A comparison on items of companies' has procedures and/or a program in place to ensure bribes or other means of obtaining advantages are not offered or accepted (avoiding conflict of interest) at a mean of 3.49 & 3.58 and a standard deviation of 1.203 & 1.31 for medium and large manufacturing enterprises. A comparison on items of companies has procedures and/or a program in place to prevent corruption, extortion, or embezzlement at a mean of 3.27 & 3.57 and a standard deviation of 1.402 & 1.311 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. It is an integrating task that coordinates all logistics activities, as well as integrating these activities with marketing, operation management, finance, and information technology (Clement K. Odoom 2012) Logistics management has direct impacts on marketing performance which, in turn, impacts financial performance (Kenneth W. Green Jr, 2008).

4.3.3 Customer relationship

On medium and large manufacturing enterprises' relationships with the customer, the respondent was asked five questions. The questions are selected to assess the company's involvement in customer need, company's feedback collection from customers, new products and services development based on the customers need and its speedy fulfilments of the customer orders, and on the provision of products information as well as the offering of technical assistance & training to users.

Table 4.5 Descriptive statistics on Customer Relationship

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
Your company frequently interact with customers to set reliability, responsiveness, and others	98	3.04	.919	184	3.22	1.024
Your company frequently measure and evaluate customer satisfaction.	98	3.51	1.077	184	3.61	1.118
Your company frequently determines future customer expectations.	98	3.12	.966	184	3.08	.929
Your company facilitates customers' ability to seek assistance from you.	98	3.48	1.124	184	3.60	1.182
Your company periodically evaluates the importance of your relationship with your customers.	98	3.60	.982	184	3.78	1.048

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

As indicated in Table 4.5, shows Customer relationship mean and a standard deviation score of the data concerning the two groups, that is, medium and large manufacturing enterprises respectively. A comparison on items of companies frequently interacts with customers to set reliability, responsiveness, and others at a mean of 3.04 & 3.22 and a standard deviation of 0.919 & 1.024 for medium and large manufacturing enterprises. A comparison of items of companies' frequently measure and evaluate customer satisfaction at a mean of 3.51 & 3.61 and a standard deviation of 1.077 & 1.118 for medium and large manufacturing enterprises. A comparison on items of companies frequently determines future customer expectations at a

mean of 3.12 & 3.08 and a standard deviation of 0.966 & 0.929 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. 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. The growth of mass customization and personalized service is leading to an era in which relationship management with customers is becoming crucial for corporate survival. Good relationships with supply chain members, including customers, are needed for the successful implementation of SCM programs.

A comparison on items of companies facilitates customer ability to seek assistance from us, at a mean of 3.48 & 3.60 and a standard deviation of 1.224 & 1.182 for medium and large manufacturing enterprises respectively. A comparison on items of companies periodically evaluates the importance of your relationship with your customer at a mean of 3.60 & 3.78 and a standard deviation of 0.982 & 1.048 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. Close customer relationship allows an organization to differentiate its product from competitors, sustain customer loyalty, and dramatically extend the value it provides to its customers (Karimi & Rafiee, 2014). For this research purpose, customer relationship is conceptualized from the literature review and practicability in Ethiopia as the way of building long term relationships with customers through creating customer loyalty, reducing defect products, improving customer services, reducing price/cost, and managing customer complaints.

4.3.4 Level of Information Sharing

The level of information sharing refers what kind of information sharing system the company deploy and to the extent to which critical and proprietary information is communicated to its supply chain partner. Shared information can vary from strategic to tactical in nature and information about logistics activities to the general market and customer information. To verify medium and large manufacturing enterprise's level of information sharing with the

trading partners, seven questions are provided to the respondents and their answers are summarized on the following table.

Table: 4.6 Descriptive statistics on Level of information sharing

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
The company informs trading partners in advance of changing needs.	98	3.38	1.223	184	3.81	1.229
Your company's trading partners share proprietary information with Your company.	98	3.17	1.140	184	3.30	1.114
Your company's trading partners keep your fully informed about issues that affect Your company's business	98	4.14	1.227	184	4.16	1.244
Your company's trading partners share business knowledge of core business processes with Your company's.	98	3.47	1.123	184	3.92	1.138
Your company's and Your company's trading partners exchange information that helps establishment of business planning.	98	3.67	1.449	184	4.05	1.294
Exchange of information with Your company's partners (formal or informally) is frequent	98	3.69	1.304	184	3.89	1.340
Information exchange between Your companies' trading partners and Your company's is timely.	98	3.28	1.504	184	3.84	1.401

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

As indicated in Table 4.6, shows Level of information sharing mean and a standard deviation score of the data concerning the two groups, that is, medium and large manufacturing enterprises respectively. A comparison on items of the company informs trading partners in advance of changing needs at a mean of 3.38 & 3.81 and a standard deviation of 1.223 & 1.229 for medium and large manufacturing enterprises. A comparison of items of your company's trading partners shares proprietary information with your company at a mean of 3.17& 3.30 and a standard deviation of 1.140 & 1.114 for medium and large manufacturing enterprises. A comparison on items of your company's trading partners keeps you're fully informed about issues that affect your company's business at a mean of 4.14 & 4.16 and a standard deviation of 1.227 & 1.244 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. According to Stein and Sweat, as cited in (Karim and Rafiee, 2014), supply chain partners who exchange information regularly can work as a single entity. Together, they can understand the needs of the end customer better and hence can respond to market change quicker. In this study, information sharing in the supply chain is conceptualized as the extent of sharing business knowledge formally or informally with supply chain partners. Also, it is

associated with the amount of information shared among supply chain partners in the downstream and upstream side of the supply chain and also the information intensity.

A comparison of items of your company's trading partners share business knowledge of core business processes with your company's at a mean of 3.47 & 3.92 and a standard deviation of 1.123 & 1.138 for medium and large manufacturing enterprises. A comparison of items of your companies and your company's trading partners exchange information that helps establishment of business planning at a mean of 3.67 & 4.05 and a standard deviation of 1.449 & 1.294 for medium and large manufacturing enterprises. A comparison of items of Exchange of information with your company's partners (formal or informally) is frequent at a mean of 3.69 & 3.89 and a standard deviation of 1.304 & 1.340 for medium and large manufacturing enterprises respectively. A comparison of items of Information exchange between Your Company's trading partners and your company is timely at a mean of 3.28 & 3.84 and a standard deviation of 1.504 & 1.401 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. 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 the raw material into a product or service and delivers it to the customer are activities that are done in the supply chain. Overall planning of supply and demand, raw material procurement, production planning, inventory control, warehousing, distribution of products, and management of information is activities in the supply chain. Supply chain partners who exchange information regularly can work as a single entity. Together, they can understand the needs of the end customer better and hence can respond to market change quicker. Moreover, someone considers the effective use of relevant and timely information by all functional elements within the supply chain as a key competitive and distinguishing factor.

4.3.5 Quality of Information Sharing

Ensuring the quality of the shared information becomes a critical aspect of effective SCM in any organization. To assess the quality of information sharing in medium and large

manufacturing enterprises, four variables were used and the results are presented on the following table.

Table 4.7 Descriptive statistics on Quality of information sharing

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
Information exchange between Your company's' trading partners and Your company's is accurate.	98	3.69	1.304	184	3.89	1.340
Information exchange between Your companies' trading partners and Your company's is complete.	98	3.49	1.203	184	3.78	1.310
Information exchange between Your company's trading partners and Your company's is adequate	98	3.27	1.320	184	3.57	1.316
Information exchange between Your companies' trading partners and Your company's use is reliable.	98	3.04	.919	184	3.22	1.024

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

Table 4.7, above shows Quality of information sharing mean and a standard deviation score of the data concerning the two groups, that is, medium and large manufacturing enterprises respectively. A comparison of items of Information exchange between your company's' trading partners and your company is accurate at a mean of 3.69 & 3.89 and a standard deviation of 1.304 & 1.340 for medium and large manufacturing enterprises respectively. A comparison of items of Information exchange between your companies' trading partners and your company is complete at a mean of 3.49 & 3.78 and a standard deviation of 1.203 & 1.310 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. According to Li, (2005) quality of information sharing is the exchange of information within the supply chain is accurate, timely, complete, adequate, and credible to make the entire supply chain more competitive and resourceful. And it is characterized as the importance of the critical and proprietary information shared among the supply chain partner. Given these predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM. Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and distortion (Li et.al, 2006). Therefore, for the study, information quality is conceptualized as accuracy, timeliness, adequacy, information exchanged reliability, and completeness.

A comparison of items of Information exchange between your companies' trading partners and your company is adequate at a mean of 3.27 & 3.57 and a standard deviation of 1.320 &

1.316 for medium and large manufacturing enterprises. A comparison of items of Information exchange between your companies' trading partners and your company's use is reliable at a mean of 3.04 & 3.22 and a standard deviation of 0.919 & 1.024 for medium and large manufacturing enterprises.

Literature is replete with example of the dysfunctional effects of inaccurate/delayed information, as information moves along the supply chain. Divergent interests and opportunistic behaviour of supply chain partners, and informational asymmetries across supply chain affect the quality of information. It has been suggested that organizations will deliberately distort information that can potentially reach not only their competitors but also their suppliers and customers. It appears that there is a built-in reluctance within organizations to give away more than minimal information since information disclosure is perceived as a loss of power.

Given these predispositions, ensuring the quality of the shared information becomes a critical aspect of effective SCM. Organizations need to view their information as a strategic asset and ensure that it flows with minimum delay and distortion (Karimi & Rafiee, 2014)

4.3.6 Internal Lean Practice

The lean practice is associated with the continuous pursuit of improving the processes, philosophy of eliminating all non-value-adding activities and reducing waste within an organization. Therefore, to find out the lean practice of medium and large manufacturing enterprises, five questions were asked for its employees and the findings are summarized as follows:

Table 4.8 Descriptive statistics on Internal Lean Practice

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
your organization strives to reduce time wastage in operation	98	3.51	1.077	184	3.91	1.118
Your organization has continuous quality improvement programs.	98	3.12	.966	184	3.78	1.129
Your organization produces only what has been ordered by customers (pull production system).	98	3.48	1.124	184	3.80	1.182
Your organization pushes suppliers for shorter lead times.	98	3.60	.982	184	3.88	1.048
Your organization streamlines ordering recovering and other paper work from its suppliers.	98	3.38	1.223	184	3.81	1.229

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

As indicated in the above Table 4.8, shows Internal lean practice mean and a standard deviation score of the data concerning the two groups, that is, medium and large manufacturing enterprises respectively. A comparison on items of your organization strives to reduce time wastage in operation at a mean of 3.51 & 3.91 and a standard deviation of 1.077 & 1.118 for medium and large manufacturing enterprises. A comparison of items of your organization has continuous quality improvement programs at a mean of 3.12 & 3.78 and a standard deviation of 0.966 & 1.129 for medium and large manufacturing enterprises. A comparison of items of your organization produces only what has been ordered by customers (pull production system) at a mean of 3.48 & 3.80 and a standard deviation of 1.124 & 1.182 for medium and large manufacturing enterprises. Internal lean practices refer to consume fewer system resources uses with the same speed mass production and offers greater variety to customers. In another way James and Jones (2003) internal lean practices as Lean production associated with the continuous pursuit of improving the processes, philosophy of eliminating all non-value-adding activities, and reducing waste within an organization.

A comparison on items of your organization pushes suppliers for shorter lead times at a mean of 3.60 & 3.88 and a standard deviation of 0.982 & 1.048 for medium and large manufacturing enterprises. A comparison on items of your organization streamlines ordering recovering and other paperwork from its suppliers at a mean of 3.38 & 3.81 and a standard deviation of 1.223 & 1.229 for medium and large manufacturing enterprises. These findings are supported by previous studies some of which are discussed here. Production of lean and timely is a production system that aims 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 setup time, continuous improvement, and just in time. (Mustefa, 2014) One of the fundamental ideas in internal lean practices is removed surplus (Hassanzadeh & Jafarian, 2010). The most famous of internal lean practices can be mentioned in timely and lean production.

4.3.7 Aggregate Descriptive Statistical Analysis

As it was revealed in the methodology part, the designed method is a descriptive statistical analysis to analyze the five components of the conceptual framework developed for this study.

The analyses were on: Strategic supplier partnership, Transportation and logistics management, Customer relationship, Level of information sharing, quality of information sharing, and internal lean practice. The listed items are the most critical parts of the conceptual framework and basic research variables of this paper. Therefore, the discussion of these conceptual framework components will answer the basic research questions and meets the stated objectives of this study. For the analysis of all these variables, mean and standard deviation is used. Particularly mean value of the respondents has considered as an important indicator to the extent of the company's practices on each item. To conclude, the overall performance of the M&LME practices on each variable, group mean was calculated and used. The mean and group mean statistical values approaching 2.00 and less indicates the poor performance, 3.00, average/moderate while 4.00 and 5.00 indicate higher and very high/excellent performance of the enterprises on that particular item and variable respectively.

Table 4.9 Aggregate Descriptive Statistical Analysis

Items	Medium Manufacturing			Large Manufacturing		
	N	M	STD	N	M	STD
Strategic supplier partnership	98	3.49	.824	184	4.01	.877
Transportation and logistics management	98	3.43	.829	184	3.77	.933
Customer relationship	98	3.35	.552	184	3.60	.589
Level of information sharing	98	3.54	.780	184	3.85	.765
Quality of information sharing	98	3.37	.951	184	3.61	.954
Internal lean practice	98	3.42	.644	184	3.72	.654

Source: Field survey, 2020 ***M*** = Mean, ***STD***= Standard Deviation ***N***= Population

In the table 4.9, above, Strategic supplier partnership, 4 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of 3.49 & 4.01 and a standard deviation of 0.824 & 0.877 for medium and large manufacturing enterprises.

These findings are supported by previous studies some of which are discussed here. Strategic supplier partnerships; 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 & Rangan, 1995). In general, close bonded relationships with suppliers make partners are more willing to share risks, increasing the functional capability and be able to maintain the relationship over a longer time (Landros & Moncza, 1989). Therefore,

strategically managed long-term relationship with the supplier has a positive impact on a firm's supplier performance (Cooper & Ellram, 1993).

Table 4.9 above demonstrate; Transportation and logistics management, 4 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of 3.43 & 3.77 and a standard deviation of 0.829 & 0.933 for medium and large manufacturing enterprises.

As in the table 4.9, above; Customer relationship, 5 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.35, 3.60) and a standard deviation of 0.552 & 0.589 for medium and large manufacturing enterprises. The group's mean value result implies that SCM practice from the perspective of customers' relationship of the enterprises is moderate. On the other hand, customers' delivery adherence requirement replies that the customers are more dependent on the full quantity and timely delivery of their requirements. So, this can adds pressure on the enterprises to meet their customers' requirements. But the current performance of the enterprises to meet this is moderate.

The table 4.9, above demonstrate; Level of information sharing, 7 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of 3.54 & 3.85 and a standard deviation of 0.780 & 0.765 for medium and large manufacturing enterprises.

The findings in table 4.9, above demonstrate; Quality of information sharing, 4 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of 3.37 & 3.61 and a standard deviation of 0.951 & 0.954 for medium and large manufacturing enterprises. The group's mean value result implies that SCM practice from the perspective of Quality of information sharing of the enterprises is moderate.

In SCM, information sharing is another important practice that should have to be given due attention to make the SC robust. Because, when there is distortion, inadequacy, and lack of accuracy in information flows within the SC partners, it will negatively affect the SC participants. The mean value of the respondents on adequacy and quality of information

sharing throughout the SC implies that there is information sharing among the SC partners but it is not sufficient and it lacks accuracy.

These findings are supported by previous studies some of which are discussed here. According to Lee and Whang, (2000), poor information sharing between partners in SC will lead to many serious problems such as high inventory level, high demand uncertainty, inaccurate forecasts, low resource utilization, and high production costs. Furthermore to the above theory, many studies have reported that information sharing can bring many benefits to both suppliers and buyers, such as inventory reduction, and reduced manufacturing costs (Yu et al, 2001; and Raghunatahan, 2003).

As in the table 4.9, above, Internal lean practice, 5 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of 3.42 & 3.72 and a standard deviation of 0.644 & 0.654 for medium and large manufacturing enterprises respectively. Based on the findings in Table 4.9, implying that the majority of respondents agreed to the fact that the company supply chain are moderately good. Based on the overall analysis of the enterprises' internal lean practice, the researcher concludes that it is moderate. However, this does not mean sufficient, because of the internal operations/lean practice criticality for creating integration or relationship with external participants or supply chain partners.

According to Lazarevic et al., (2007) internal operation is the most critical factor to measure an organization’s potential to go for external integration. These writers state that companies should be internally efficient and effective before embarking on external integration. Therefore, it implies that the enterprises have an assignment to improve their internal lean practice to create effective relationships with external partners.

4.3.8 Supply Chain Management Effectiveness

Table 4.10 Supply Chain Management Effectiveness

SCM Effectiveness		Medium Manufacturing			Large Manufacturing		
		N	No	Yes	N	No	Yes
We are able to offer prices as low or lower than our competitors	F	98	31	67	184	12	172
	%	100	31.6	68.4	100	6.5	93.5
Our capacity utilization is very good.	F	98	25	73	184	38	146
	%	100	25.5	74.5	100	20.7	79.3
Our Inventory turnover is high.	F	98	0	98	184	11	173
	%	100	0	100	100	6	94
We run operation with less merchandising cost.	F	98	24	74	184	110	74
	%	100	24.5	75.5	100	59.8	40.2
We offer competitive prices	F	98	10	88	184	102	82
	%	100	10.2	89.8	100	55.4	44.6
We are able compete based on quality.	F	98	87	11	184	85	99
	%	100	88.8	11.2	100	46.2	53.8
We offer products that are highly reliable	F	98	32	66	184	32	152
	%	100	32.7	67.3	100	17.4	82.6
We offer products that are very durable	F	98	71	27	184	71	113
	%	100	72.4	27.6	100	38.6	61.4
We offer high quality products to our customer	F	98	0	98	184	12	172
	%	100	0	100	100	6.5	93.5
We deliver the kind of products needed.	F	98	25	73	184	14	172
	%	100	25.5	74.5	100	7.6	92.4
We deliver customer order on time.	F	98	0	98	184	11	173
	%	100	0	100	100	6	94
We provide dependable delivery	F	98	24	74	184	134	50
	%	100	24.5	75.5	100	72.8	27.2
Time to solve customer complaints is short.	F	98	10	88	184	120	64
	%	100	10.2	89.8	100	65.2	34.8
Customer order processing time is short	F	98	87	11	184	96	88
	%	100	88.8	11.2	100	52.2	47.8
We deliver product to market quickly	F	98	32	66	184	8	176
	%	100	32.7	67.3	100	4.3	95.7
We have time-to-market lower than industry average	F	98	71	27	184	47	137
	%	100	72.4	27.6	100	25.5	74.5
On-time delivery directly to customers points of use	F	98	0	98	184	12	172
	%	100	0	100	100	6.5	93.5
On-time delivery directly to your firm's points of use	F	98	25	73	184	14	170
	%	100	25.5	74.5	100	7.6	92.4

Source: Field survey, 2020

SCM practices are in their respective firms besides, on the operational effectiveness' strategy respondents evaluated their choice using 1–Yes and 0-No, Based on the findings in Table 4.10 the majority of the respondents believe the enterprises have 0.71 (71%) a moderate practice of SCM.

These findings seek to support the fact that implementing SCM practices can deliver benefits regardless of the industry or sector. Heizer and Render, (2011), Proper SCM practice will bring a competitive advantage over the competitors' interims of price, quality, and time to

market, cost of production, etc. On the other hand, organizational performance is the overall achievement of the intended objective.

According to Koh (2007 as cited in Lang Ling Yap &Cheng Ling Tan) higher sales, higher accuracy in costs, and improved coordination between departments, improved coordination with suppliers, and improved coordination with customers can be a measure of organizational performance. Some other measures that are related to organizational financial performance may include return on investment, market share, and profit margin on sales, growth of return on investment, growth of sales, and growth of market share to measure organizational performance. Measures based on cost include cost minimization, sales maximization, profit maximization, inventory investment minimization, and return on investment maximization. Measures based on customer responsiveness include: fill rate maximization, product lateness minimization, customer response time minimization, and lead time minimization (Beamon, 1998, cited by Karimi & Rafiee, 2014).

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

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

These findings are supported by previous studies some of which are discussed here. Naslund and Williamson (2008) concluded that better customer service and reporting as universal SCM benefit. Venkateshwarlu and Akula (2013) conducted a study on iron and steel and cement and agriculture industries regarding the benefits derived from using SCM practices and concluded that there was no significant difference between the industries.

4.4 Interviews Report

An interview guide is a set of questions that the researcher asks during the interview and the research conducted an in-depth interview. To supplement the data collected through the questionnaire the researcher also conduct structured and a semi-structured interview with managers of Medium and Large Manufacturing enterprises. The objective of this interview was to solicit ideas that will not be covered by the questioner and for triangulation.

The findings from the semi-structured interview further elaborated that even though there is a contractual agreement between the strategic suppliers (E.g. Raw Material Suppliers) and the companies, it was not enforceable and side selling of the Raw Material was common for higher prices. The companies also usually share short term plans of material needs and rare joint planning of inventories due to the fear for their competitors as they share the same suppliers locally and abroad. Related to local suppliers' capacity development is very limited to providing technical expertise for quality control, financial and technical support to Raw Material Suppliers and advance payment to the factories. Local strategic suppliers are not able to satisfy the needs of the companies due to capacity limitations that can be expanded. There is a limited effort of establishing a partnership agreement and financing their production expansion instead of looking at foreign suppliers with limited hard currency reserves in the country.

Besides, the qualitative data collected via semi-structured interview questions indicate that over 95% of the transportation management is not supported by the transport management system(TMS) except only about 5% of the company-owned vehicles that use GPS to track the whereabouts of the vehicles. This hurts distribution management and customer order fulfilment.

E-mail communication is predominantly used by both M&LM enterprises as well as their upstream and downstream supply chain partners. ICT infrastructures like EDI, ERP, and advanced planning and scheduling software are used in supply chain management with significant differences between the two enterprises.

Dire Dawa National Cement SC uses company-specific advanced software equivalent to ERP, EDI, and Advanced Planning, Forecasting and scheduling software). It also automated its warehouses' operation to ensure easy coordination between the department warehouses and central warehouses. It also mainly uses advanced software in financial management. Supply chain management mainly relies on e-mail communication and MS-Office application. Using ICT in exchange for supply chain data between the Dire Dawa National Cement SC and distributors and retailers is limited to E-mail because these distribution channel partners cannot invest in advanced ICT infrastructure. The exchange of supply chain information with retailers is mainly through telephone and text messages. Distribution agents also use telephone and text messages as a means of exchanging data like daily inventory status.

Moreover, the data collected from the semi-structured interview the trust among the downstream supply chain partners appear to be limited. The manufacturers do not share their annual sales or demand forecast with their distribution channel partners. They simply set a target for each distributor and force them to meet those targets set. Neither the distributors nor the retailers do their sales/demand forecast and share with the companies. This indicates a low level of trust and collaboration and integration between the companies and the distribution channel members.

The qualitative data collected from semi-structured interview indicate less practice of managing inventory jointly with suppliers and customers, especially with retailers. The Dire Dawa National Cement SC better works with distribution agents by receiving their inventory levels on daily basis, no more no less. Collaboration with retail outlets in managing inventory is minimal. Generally, Collaborative Planning, Forecasting, and Replenishment (CPFR) approach with the upstream and downstream supply chain partners is a comprehensive collaborative strategy with the distribution channel partners and its practicality is minimal in the case supply chain management practices. In the case supply chain management practice, neither the distributor nor the retailer does a demand forecast to share with the manufacturer to come up with a shared single demand forecast for the products. Therefore, the practicality of collaborative forecasting, planning, and replenishment is minimal in the case supply chain management practices.

Vendor Managed Inventory (VMI) agreement between the company/distributors and the retailers does not exist. Vendor Managed Inventory (VMI) is a collaboration strategy between the supplier and the customer (the distributors or retailer) in managing and sharing information on sales and inventory levels. In a VMI agreement, the supplier is authorized and takes responsibility to have access for a real-time inventory level and making inventory replenishment decisions for their customers based on accurate and timely sales and inventory level information shared with the supplier.

In the case supply chain management practices, the customers do not share their demand or sales forecast ahead of time with the suppliers and the companies also do not replenish the finished product inventory level of their customers automatically without receiving orders from them. The manufacturers even do not fulfill the customer orders unless payment is made and hence there are incidents of being stock-outs at the retail stores due to the financial capacities of very few distributors, of course. Therefore, VMI is less implemented in case supply chain management practices.

Just-In-Time (JIT) delivery is impractical at all the stages of the case supply chains due to several reasons so that the companies in the chain hold inventories. Moreover, the inventory management tools like setting and implementing standard minimum and maximum inventory levels to held, reorder inventory levels, the economic order quantity for the replenishment of inventories, safety stocks for finished products is also minimal in not only in the companies but also in the distribution agents and retail outlets. The distributors and the retailers hold inventory for a period of 2 to 3 days consumption not even based on undertaking time-series demand analysis. Due to the ever-increasing demand of customers in the market, the manufacturers are also holding few or limited inventories. Generally, unable to set the aforementioned inventory management tools will ultimately result in holding overstock or understock and both are unhealthy.

The qualitative data collected using semi-structured interviews (as a support to the quantitative data collected) indicated that the distribution/transportation management cost and order fulfilments cost is very high since the plants are located in Dire Dawa City and the distributors are disbursed throughout the country. And yet, Dire Dawa National Cement SC

should deliver the products at the distributors' warehouse and their own central as well as regional warehouses.

The distributors also mobilize trucks every day for a door to door delivery at the retail outlets without receiving prior orders received. As a result, the trucks go back to the distributors' store or other sales points. Sourcing and inventory carrying costs were also considered high as most of the raw materials are imported and the lead time for import varies from 2-5 months especially owing to the shortage of foreign currency reserve in the country. During this period, the companies carry raw material inventories and spares for the maintenance of production machines to ensure uninterrupted production. This inventory carrying is also related to the cost of tied-up capital on the inventory. These indicate that cost of sourcing and inventory carrying are related and high. Production cost is high because the companies produce 24 hours a day without interruption and also use overtime labor force to fill the gap in demand fluctuation. The production machinery does not stop production for maintenance. The broken spare parts are removed and replaced by new once and this increases the cost of parts. Thus, the cost of production with less production interruption was considered high.

Key respondent's explained about organization strategy to create an efficient supply chain management system: The companies process the supplier's agreement for a given material and buying material from the manufacturers directly, it's not a good strategy, efficient supply chain management system by planning for one year (each year planning). The kind of system does your organization implement to control the occurrence of corruption on purchasing; We using a list price system by using preformats collection; once a year there is a training to fight for corruption on the purchasing area, internal audit checking the document, and rechecking the purchase process by collecting other Performa from different suppliers and compare the previous purchase material document and analyze the current price and evaluate them.

Do you have a supply chain management plan, if your answer is yes, then what are your strategic plans to achieve your supply chain management plan? Do you believe that the plan is efficient?

Yes, the corporation has a supply chain management plan, but it's not properly implemented. So it is not efficient. Yes, the corporation has a supply chain management plan, but it's not

well organized it's not supported by information technology. Yes, there is an SCM plan. SCM is not efficient due to the lack of proper implementation and communication. Yes, the corporation has a supply chain management plan. To fulfill the work program of the corporation there is an annual planning system but most of the time our works are on the spot, so we couldn't achieve our plan. There is no supply chain management plan in the corporation.

The important point about the supply chain management system discussed: Revise the supply chain management strategy needs continuously follow up, creating awareness for the importance SCM to its employees and management. Update the business process and usage of information technology supply chain management must be supported by information technology. One of the key respondents from medium manufacturing companies doesn't have a clear idea to suggest about supply chain management system for our companies because the organization is newly established and application of information technology system and sharing information between the concerned bodies or departments.

Key respondents explained the major challenges implementing efficient supply chain management system is as follows:-

- There is a lack of information sharing or reporting efficient supply chain management.
- Lack of availability supply and quality of materials.
- Lack of awareness of the importance of supply chain management.
- Lack of assigning employees in a proper position.
- Emphasis is not given to supply chain management.
- Lack of commitment to employees.
- Lack of skilled manpower.
- Lack of belongingness.
- Lack of transparency.
- Lack of work plan.
- Bulk purchase order (Unplanned purchasing system).

Most of the supply chain areas are not supported by information technology

4.5 Inferential Statistics for supply chain management effectiveness

4.5.1 Binary Logistic Regression with All Independent Variables Results

The objectives of this study are to identify the most important determinants factors of SCM, to find an appropriate discriminant function that helps in the supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration, and to know which determinants factors are the most statistically significant. Accordingly, a binary logistic regression analysis is carried out, according to (Cox, D.R. & E.J. Snell, 1989). The results of the study are summarized as follows:

In this thesis, the IBM SPSS software was used to conduct logistic regression. Let us see what happened when we used all 6 explanatory variables as predictors in our model. After processing binary logistic regression, statistical outputs will be generated. Based on the "Case Processing Summary" output it is visible that 282 cases used. It is explained by the fact, that no cases missing data.

Table: 4.11 Case Processing Summary

Un weighted Cases[a]		**N**	**Percent**
Selected Cases	Included in Analysis	282	100.0
	Missing Cases	0	.0
	Total	282	100.0
Unselected Cases		0	.0
Total		282	100.0

a. If weight is in effect, see classification table for the total number of cases

Source: Field survey, 2020

4.5.2 Classification Table

Table (4.11) presents the results of the logistic regression with the constant only included before any coefficients (i.e. those relating to sectors, strategic supplier partnership, Transportation and logistics management, customer relationship, level of information sharing, quality of information sharing, and internal lean practices) are entered into the equation. Based on the "Classification Table" output we assess the predictive accuracy of the model. IBM SPSS sets the cutoff value 0.5 as default. The result of calculating the sensitivity and

specificity for these values of cut off. The classification table, where the cut-off value is 0.5 is shown below.

Logistic regression compares this model with a model including all the predictors to determine whether the latter model is more appropriate. The table suggests that if we knew nothing about our variables and guessed that determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

Table: 4.12: Classification Table

Observed		Predicted		
		EFFECTIVENESS		Percentage Correct
		No	Yes	
EFFECTIVENESS	No	0	43	.0
	Yes	0	239	100.0
Overall Percentage				**84.8**

a. Constant is included in the model.

b. The cut value is 0.500

Source: Field survey, 2020

A classification table which indicates how well the model predicts cases to the one dependent variable categories displayed in Table 4.12. In the classification table, the overall percentage gives the information that 84.8% of cases were correctly predicted the determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

4.5.3 Variables in the Equation

Table (4.13) illustrates the variables in the equation, which is the constant term at the moment. It can be realized that the intercept-only model has ln (odds) = 1.715. If we exponentiation both sides of this expression we find that our predicted odds [Exp (B)] = 5.558. That is, the predicted odds of having the determinants of supply chain management effectiveness in medium and large manufacturing enterprises are 5.558. Since 239 of the sampled persons have SCM EFFECTIVE and 43 are not EFFECTIVE, our observed odds are 239/43 = 5.558. Wald statistic is computed and since it is107.221, the null hypothesis is rejected, indicating that the constant does make a significant contribution to the model.

Table: 4.13: Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	**Constant**	1.715	.166	107.221	1	.000	5.558

Source: Field survey, 2020

4.5.4 Variables not in the Equation

The variables not in the equation table tell us whether each IV (independent variable) improves the model, (Table 4.14). The answer is yes for variables, size, quality of information sharing, and internal lean practices are significant and if included would add to the predictive power of the model. The rest strategic supplier partnership, transportation and logistics management, customer relationship, and level of information sharing seem to be not important at this step, but the overall significance P-value of 0.001 assures that the logistic model will represent the data very much.

Table: 4.14: Variables not in the Equation

Variables	Score	df	Sig.
Sector	31.200	1	.000
Strategic Supplier Partnership	.008	1	.927
Transportation and Logistics Management	2.269	1	.132
Customer Relationship	5.522	1	.019
Level of Information Sharing	1.986	1	.159
Quality of information sharing	10.209	1	.001
Internal Lean Practices	12.596	1	.000
Overall Statistics	78.199	7	.000

Source: Field survey, 2020

4.5.5 Omnibus Tests of Model coefficients

The enter method of model fitting which involves the entering of all variables at the same step. Table (4.15) presents the model chi-square value of 82.855, with 6 degrees of freedom, and a probability value of p = 0.000. The results in Table 4.15 show the model chi-square and the significance levels for the test of the null hypothesis that all the coefficients are equal to zero.

Table: 4.15: Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step	82.855	7	.000
Block	82.855	7	.000
Model	82.855	7	.000

Source: Field survey, 2020

The table above shows the model which includes all predictors. Values shown in the Omnibus Tests of Model Coefficients are given in a Chi-Square of 82.855 which is significant at 0.05. This is a test of the null hypothesis that adding the predictors to the model has not significantly increased our ability to predict the use of SCM effectiveness made by our subjects. Since our omnibus test is significant at a 5% level of significance it can be concluded that adding the predictors to the model has significantly increased our ability to predict SCM effectiveness.

The model chi-square value which is the difference between the null model and the current (full) (chi-square values =82.855), the null hypothesis is rejected since the p-value (sig. value) is less than 0.05 (significance level), implying that the addition of the independent variables improved the predictive power of the model. The block and the step values are equal to the model values since all values were entered at the same time.

4.5.6 Model Summary

The likelihood ratio test is the most common assessment of the overall model fit in logistic regression, which is simply the chi-square difference between the null model (i.e., with the constant only) and the model containing the predictors. Model summary have values shown in Table 4.16 indicate how good the model fits the data. Cox & Snell R square and Nagelkerke R square are both methods of calculating the explained variation. For our model, the explained variation ranges from 0.255 to 0.443 depending on whether we reference Cox & Snell R square or Nagelkerke R square, respectively. Nagelkerke R square is the modification of Cox & Snell R square and is more preferable to use. Under Model Summary the value of the -2 Log-Likelihood statistics is 157.968a. This implies that the variables fitted in the model prediction power of the DV.

Table: 4.16: Model Summary

-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
157.968[a]	.255	.443

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Source: Field survey, 2020

Under the Model Summary above we see that the -2 Log-Likelihood statistics is 157.968a. This statistic measures how SCM the model predicts the use of the SCM effectiveness method, the smaller the statistic the better the model that at least one of the explanatory variables contributes to the prediction of the outcome. The Nagelkerke modification that does range from 0 to 1 is a more reliable measure of the relationship R2. Nagelkerke's R2 will normally be higher than the Cox and Snell measure and it is the most-reported of the R-squared estimates, as stated by (Nagelkerke, 1991).

Model summary have values shown in Table 4.16 indicate Cox and Snell's R2 attempts to imitate multiple R2 based on likelihood. In this study, Cox and Snell R2 indicate that 25.5% of the variation in the dependent variable the determinants of supply chain management effectiveness was explained by the explanatory variables. Nagelkerke R2 in the model summary table above is 0.443, which indicates that 44.3% of the variability in the dependent variable the determinants of supply chain management effectiveness was explained by the explanatory variables.

4.5.7 Hosmer and Lemeshow test

The next test that assesses the goodness of fit of a statistical model is the Hosmer-Lemeshow test. Hosmer and Lemeshow test constitute an alternative to model chi-square in which subjects are divided into 10 ordered groups of subjects and then compares the number actually in each group (observed) to the number predicted by the logistic regression model (predicted). The 10 ordered groups are created based on their estimated probability; those with an estimated probability below 0.1 form one group, and so on, up to those with probability 0.9 to 1.0. Each of these categories is further divided into two groups based on the observed outcome variable (success, failure). The expected frequencies for each of the cells are

obtained from the model. A probability (p) value is computed from the chi-square distribution with 8 degrees of freedom to test the fit of the logistic model. If the H-L goodness-of-fit test statistic is greater than 0.05, as we want for well-fitting models, we fail to reject the null hypothesis that there is no difference between observed and model-predicted values, implying that the model's estimates fit the data at an acceptable level. That is, well-fitting models show non-significance on the H-L goodness-of-fit test. This desirable outcome of non-significance indicates that the model prediction does not significantly differ from the observed. The H-L statistic assumes sampling adequacy, with a rule of thumb being enough cases so that 95% of cells (typically, 10 decile groups times 2 outcome categories = 20 cells) have an expected frequency > 5.

Table: 4.17: Contingency Table for Hosmer and Lemeshow test

	EFFECTIVENESS = No		EFFECTIVENESS = Yes		Total
	Observed	Expected	Observed	Expected	
1	19	20.445	9	7.555	28
2	8	8.418	20	19.582	28
3	9	4.545	19	23.455	28
4	1	3.267	27	24.733	28
5	1	2.357	27	25.643	28
6	3	1.804	25	26.196	28
7	2	1.167	26	26.833	28
8	0	.582	28	27.418	28
9	0	.266	26	25.734	26
10	0	.148	32	31.852	32

Source: Field survey, 2020

Table 4.17 shows that observed proportions of events are rather similar to the predicted probabilities of occurrence in 10 subgroups. Estimation terminated at iteration number 10 because maximum iterations have been reached. The final solution cannot be found. To decide whether the differences can be explained by chance only, we perform the Hosmer & Lemeshow chi-square test.

Based on Table 4.18 we can see that the p-value is 0.217, which is more than 0.05. This value indicates that we fail to reject the null hypothesis, which means that actual and predicted event rates are similar across 10 deciles.

Table: 4.18: Hosmer and Lemeshow test

Chi-square	df	Sig.
10.735	8	.217

Source: Field survey, 2020

Table (4.18) illustrates Hosmer-Lemeshow (H-L) test. The statistic under consideration has a significance of 0.217 which means that it is statistically significant and therefore leading to the fact that the model is quite a good fit.

4.5.8 Classification table

Based on the "Classification table" output we assess the predictive accuracy of the model. IBM SPSS sets cutoff value 0.5 as default. We also calculated the sensitivity and specificity for these values of cut off. The classification table 4.19, where the cut-off value is 0.5 is shown below.

Table: 4.19: Classification Table

Observed		Predicted		
		EFFECTIVENESS		Percentage Correct
		No	Yes	
EFFECTIVENESS	**No**	19	24	44.2
	Yes	8	231	96.7
Overall Percentage				**88.7**

a. The cut value is .500

Source: Field survey, 2020

After evaluating the statistical significance of individual coefficients, let us evaluate the predictive accuracy and discrimination of the model. 19 is the number of cases that were both predicted and observed as No. Whereas 24 is the number of cases that were observed as No but were predicted as Yes; 8 is the number of cases that were observed as Yes, but were predicted as No; 231 is the number of cases that were both predicted and observed as Yes. In the classification table, the overall percentage gives information that 88.7% of cases were correctly predicted.

Considering table (4.19), it can be realized that it is a classification table, including the constant term and the rest of the predictors. It reveals that 44.2% were not correctly classified for the determinants of supply chain management effectiveness in medium and large manufacturing enterprises while 96.7% correctly classified for the determinants of supply chain management effectiveness in medium and large manufacturing enterprises. And overall 88.7% of the cases were correctly classified. This is a considerable improvement from table 4.12 the 84.8% correct classification with the constant model, indicating that the model with predictors is a significantly better one.

4.5.9 Results of binary logistic regression analysis

After the overall model evaluation, we analyse how important each of the variables is.
The "Variables in the Equation" table shows the contribution of each independent variable to the model. Also, the output shows, if the explanatory variables are significant or not. This table is shown below.

Table: 4.20: Results of binary logistic regression analysis

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp (B)	
			Lower	Upper	Wald Chi-Square	df	Sig.		Lower	Upper
(Intercept)	3.804	1.7455	.383	7.225	4.750	1	.029	44.893	1.467	1373.774
SIZ	2.153	.4946	1.184	3.123	18.957	1	.000	8.615	3.268	22.711
SSP	1.679	.8028	.105	3.252	4.372	1	.037	5.358	1.111	25.845
TLM	**1.528**	**.8477**	**-.133**	**3.189**	**3.249**	**1**	**.071**	**4.609**	**.875**	**24.274**
CR	2.524	.9647	.633	4.415	6.845	1	.009	12.478	1.884	82.661
LIS	-1.845	.9174	-3.644	-.047	4.046	1	.044	.158	.026	.954
QIS	-2.158	.5983	-3.331	-.986	13.014	1	.000	.116	.036	.373
ILP	-3.073	.8570	-4.753	-1.394	12.860	1	.000	.046	.009	.248
(Scale)	1[a]									

Dependent Variable: EFFECTIVENESS
Model: (Intercept), SIZ, SSP, TLM, CR, LIS, QIS, ILP

a. Fixed at the displayed value

Source: Field survey, 2020

Size (SIZ), Strategic Supplier Partnership (SSP), Transportation and Logistics Management (TLM), Customer Relationship (CR), Level of Information Sharing (LIS), Quality of information sharing (QIS), and Internal Lean Practices (ILP) are the independent variables included in the binary logistic model.

Constant is the expected value of log-odds of the dependent variable when all of the predictor variables equal to zero. β (beta coefficients) are the values for the logistic regression equation for predicting the response variable from explanatory variables.

Beta coefficients show the amount of change expected in the log- odds when there is a one-unit change in the predictor variable holding all other predictors constant. For the independent variables that are not significant, the coefficients do not significantly differ from 0. Because these coefficients are in log-odds units, they are often difficult to interpret and converted into odd ratios. These values are shown in the “Exp (β)" column.

“S.E”-s are standard errors associated with the coefficients. The standard error is used to test whether the parameter is significantly different from 0 or not. Standard errors are also used in the calculation of the Wald statistic. Also, they can be used to form a confidence level for the parameter.

“Wald” tests the hypothesis that the constant equals 0. For our model, this hypothesis is rejected because the p-value, which is listed in the “Sig” column, is less than the critical p-value (0.05 or 0.01). Therefore, we can conclude that the constant is not 0.

“Df” is the degree of freedom for the Wald chi-square. There are given 1 degree of freedom for each predictor in the model.

“Exp (β)”-s are the exponentiations of the beta coefficients, which are the odds ratios of the predictors. The odds ratio represents that an outcome will occur given a particular property, compared to the odds of the outcome occurring in the absence of that property. As we mentioned above, the prediction equation is given in log odds. Taking ‘e’ to the power for both sides of the equation we can express the expression in odds.

“Hypothesis Test” Chi-square test is a statistical method for assessing the goodness of fit between a set of observed values and those expected theoretically. These results were presented in Table 4.20. The Chi-square statistics determine whether the observed values from the sample and expected values from the specified distribution are statistically different compared to the p-value (sig. value) to the significance level. Usually, a significance level (denoted as α or alpha) of 0.05 works well. A significance level of 0.05 indicates a 5% risk of

incorrectly rejecting the null hypothesis. Thus, P-value (sig.) ≤ α: The observed data are statistically different from the expected values (Reject H0). In other words, If the p-value is less than or equal to the significance level, reject the null hypothesis and conclude that there was a significant association between the determinants of SCM and the SCM effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

"Sig." is the p-value of the significance test of beta. Usually, the coefficients in which p-values are less than 0.05 are considered to be significant. Based on our output we can see that all of the explanatory variables are significant which supports the results found in this study except Transportation and Logistics Management which was not positively related to SCM effectiveness in medium and large manufacturing enterprises. The p-values of these coefficients are greater than 0.05.

4.5.10 Interpretation of the Model

The **β** (beta coefficients) is the values for the logistic regression equation for predicting the response variable from explanatory variables.
For our model the prediction equation is as follows

$$\log it(p_i) = \ln\left[\frac{p_i}{1-p_i}\right] \quad = \quad X_i'\beta \;=\; \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \ldots + \beta_k x_{ki}$$

Log (p/1-p) = $\beta_0 + \beta_1$ *SEC + β_2 * SSP + β_3* TLM + β_4 *CR + β_5* LIS + β_6* QIS + β_7* ILP

Log (p/1-p) = 3.804 + 2.153*SEC + 1.679* SSP + 1.528* TLM + 2.524*CR –1.845* LIS – 2.158 * QIS – 3.073* ILP

Size (SIZ), Strategic Supplier Partnership (SSP), Transportation and Logistics Management (TLM), Customer Relationship (CR), Level of Information Sharing (LIS), Quality of information sharing (QIS) and Internal Lean Practices (ILP).

The coefficient of Size (SIZ) was 1.207, this implies that exp (β) = exp (2.153) ≈ OR= 8.615. Thus, an increase in sector size leads to an increase of (8.615 - 1) x 100% = 761.5% in the odds of an increase in supply chain management effectiveness in manufacturing enterprises.

The coefficient of Strategic Supplier Partnership (SSP) was 1.679, this implies that exp (β) =exp (1.679) ≈ OR = 5.358. Thus, a unit increase in SSP leads to an increase of (5.358 - 1) x 100% = 435.8% in the odds of an increase in supply chain management effectiveness in medium and large manufacturing enterprises. Thus, a high value of SSP of SCM was associated with an increase in the supply chain management effectiveness in medium and large manufacturing enterprises.

The coefficient of Transportation and Logistics Management (TLM) was 1.528, this implies that exp (β) =exp (1.528) ≈ OR = 4.609. Thus, a unit increase in TLM leads to an increase of (4.609 - 1) x 100% = 306.9 % in the odds of an increase in supply chain management effectiveness in medium and large manufacturing enterprises. Thus, a high value of TLM of SCM was associated with an increase in the supply chain management effectiveness in medium and large manufacturing enterprises.

The coefficient of Customer Relationship (CR) was 2.524, this implies that exp (β) =exp (2.524) ≈ OR = 12.478. Thus, a unit increase in CR leads to an increase of (12.478 - 1) x 100% = 1147.8 % in the odds of an increase in supply chain management effectiveness in medium and large manufacturing enterprises. Thus, a high value of CR of SCM was associated with an increase in the supply chain management effectiveness in medium and large manufacturing enterprises.

The coefficient of Level of Information Sharing (LIS) was -1.845, this implies that exp (β) = exp (-1.845) ≈ OR = 0.158. Thus, a unit increase in LIS leads to a decrease of (0.158-1) x 100% = - 84.2% in the odds of an increase in supply chain management effectiveness in medium and large manufacturing enterprises. Thus, a high value of LIS of SCM was associated with a decrease in the supply chain management effectiveness in medium and large manufacturing enterprises.

The coefficient of Quality of information sharing (QIS) was -2.158, this implies that exp (β) =exp (-2.158) ≈ OR = 0.116. Thus, a unit increase in QIS leads to a decrease of (0.116 - 1) x 100% = -88.4% in the odds of an increase in supply chain management effectiveness in medium and large manufacturing enterprises. Thus, a high value of QIS of SCM was

associated with a decrease in the supply chain management effectiveness in medium and large manufacturing enterprises.

The coefficient of Internal Lean Practices (ILP) was - 3.073, this implies that exp (β) =exp (-3.073) ≈ OR = 0.046. Thus, a unit increase in ILP leads to a decrease of (0.046 - 1) x 100 % = -95.4% in the odds of an increase in supply chain management effectiveness in medium and large manufacturing enterprises. Thus, a high value of ILP of SCM was associated with a decrease in the supply chain management effectiveness in medium and large manufacturing enterprises.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of the Study

Based on the assessment to investigate the determinants of supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration the following points were summarized. Out of the 372 questionnaires administered, 282 were returned fully completed, giving a response rate of 76%. Respondent's profile, which includes the level of Gender, Age, Service Year, and Level of Education of respondents who were involved in this study, from the total 282 respondents, 56.7% (160) were male respondents who took a large share of the total respondents, the age group ranges' majority of the respondents 42.6% (120), are in the age range of 26-35, the majority 45.7% (129) of the respondents fall in between 6 – 10 years., level of education the largest group of the population comprises 32.3 % (91), TVET graduates of the total respondents.

To answer the research questions several statistical techniques were used. This included descriptive statistics namely, frequency distribution, mean and standard deviation.

The descriptive statistics result of the research findings showed that Strategic Supplier Partnership, 4 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.49, 4.01) and a standard deviation of (0.824, 0.877) medium and large manufacturing enterprises respectively.

The findings in table 4.9 demonstrate that Transportation and Logistics Management, 4 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.43, 3.77) and a standard deviation of (0.829, 0.933) medium and large manufacturing enterprises respectively;

Customer Relationship 5 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.35, 3.60) and a standard deviation of (0.552, 0.589) medium and large manufacturing enterprises respectively. The groups mean

value result implies that SCM practice from the perspective of customers' relationship of the M&LM enterprises is moderate;

Level of Information Sharing, 7 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.54, 3.85) and a standard deviation of (0.780, 0.765) medium and large manufacturing enterprises respectively;

Quality of Information Sharing, 4 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.37, 3.61) and a standard deviation of (0.951, 0.954) medium and large manufacturing enterprises respectively. The groups mean value result implies that SCM practice from the perspective of the level of information sharing and quality of information sharing of the M&LM enterprises is moderate;

The Internal Lean Practice, 5 questions were presented the aggregate mean and standard deviation score values have been calculated, at a mean of (3.42, 3.72) and a standard deviation of (0.644, 0.654) medium and large manufacturing enterprises respectively. Based on the findings in Table 4.9, implying most respondents agreed to the fact that the enterprises supply chain management is moderately good.

The Wald statistic above and the corresponding significance level test the significance of each of the covariate and dummy independents in the model. The ratio of the logistic coefficient *B* to its standard error S.E., squared, equals the Wald statistic. If the Wald statistic is significant (i.e., less than 0.05) then the parameter is significant in the model. Note that Exp (β) gives the odds ratios for each variable used to measure the association between the dependent variable and each predictor variable.

The Wald statistics and the significance level shows that the 7 independent variables namely the determinant of SCM (Sector, strategic supplier partnership, Transportation and logistics management, customer relationship, level of information sharing, quality of information sharing, and internal lean practices), were significant to the prediction of the odds of an increase in SCM effectiveness in medium and large manufacturing enterprises. This is because they had p-values values of less than 0.05 (sig. in Table 4.20).

Concluded that the determinants of SCM were positively related to SCM effectiveness in medium and large manufacturing enterprises which supports the results found in this study except for Transportation and Logistics Management which was not positively related to SCM effectiveness in medium and large manufacturing enterprises. The p-values of the coefficient are greater than 0.05.

5.2. Conclusion

Based on the results of the study obtained and a summary of findings the following conclusions are given. The factor analysis method has been applied in this research to identify the main factors which affect the supply chain management effectiveness in medium and large manufacturing enterprises in Dire Dawa Administration.

Through the study seven main determinants have been identified as Size, strategic supplier partnership, Transportation and logistics management, customer relationship, Level of information sharing, Quality of information sharing, and Internal lean practices), to improve the effectiveness of their supply chain. The use of proper planning tools and communication tools simplify processes and improve accuracy. Sharing information among supply chain partners using proper communication tools increase transparency and facilitate quick decision making to face dynamic situations.

The eventual conclusion of this study is that generally, the case M&LMEs orientation towards SCM is traditional that lacks substantial indicators of an integrated, efficient, and effective SCM. Based on the qualitative and quantitative analysis the investigator comes up with the conclusion that the case enterprise's orientation towards Transportation and Logistics Management (TLM) is poor and SCM practices have a direct impact on customers' service.

The primary reason mentioned for the impact on level of customer service is the internal operations that have a direct effect on the company's ability (potential) to embark on external integration. In other words, its effect is reflected in customers not getting what they need when they need it, long lead time, and poor complaints management, poor integration with suppliers, not having an effective flexible production system that could respond to the changing market, and customer's preference.

From SCM practices the enterprises have a great problem with training and IT practices. These two practices play a decisive role in creating effective and efficient SCM. Poor IT facilities lead to poor information sharing and poor information sharing practices make supply chain management ineffective. On the other hand, supply chain management needs an effective internal operation for creating integration with external partners.

For making internal operation effective, human resource is a critical factor, and to have skilled, committed, and capable employees and managers, to utilize resources effectively and efficiently training plays a significant role. But the M&LM enterprises' training practice to make both employees and managers competent is lowest out of the five SCM practices. Therefore, the M&LM enterprises' weakness regarding training and IT leads to poor/ weak integration both in internal and external partners.

The researcher concludes that the great challenges that prohibit effective SCM of in medium and large manufacturing enterprises like, supply and demand uncertainties and fluctuation of inventories due to distorted information are because of poor relationships between SC partners.

Finally, from the researcher general view there a no/or little knowledge of SCOR and supply chain management system, there has no given emphasis as some disciplines (TQM, Kaizen) implemented in the enterprises

5.3. Recommendations

Based on the findings the following suggestions were forwarded to improve the Supply Chain Management of medium and large manufacturing enterprises.

It is noticeably explained that internal integration is vital in increasing the potential of the company to get external integration. Medium and large manufacturing enterprises should be developing to integrate the internal operational units, to bring about flexible, responsive, and efficient production. This can be done first, by networking the functional units of the organization with appropriate IT and integrated information systems.

Therefore it could be recommended that communication tools such as Electronic Fund Transfer (EFT), Electronic Data Interchange (EDI), Intranet, Extranet, Value Added Network (VAN) and planning tools such as Material Requirement Planning (MRP), Manufacturing Resources Planning (MRP II), Enterprise Resource Planning (ERP), Data Warehouse (DW), Vendor Managed Inventory (VMI), Distribution Requirement Planning (DRP), Customer Service Management (CRM) must be utilized by organizations.

For sourcing, proper sourcing procedures should be formulated and supplier evaluation has to be performed. For the procurement function, the reliability of delivery has to be improved and standard procurement procedures must be used. For the quality function, the use of appropriate quality tools, quality assurance systems, and quality standards have to be practiced.

The human resource is the essential factor that performs all activities to make Supply Chain Management effective and efficient. In the current situation marketing competition, customer preferences, and everything is changing rapidly. Therefore, this change enforces companies to change their strategies and operations. Out of these changes having skilled, agile, and lean manpower is the one. So that, prepare a training program for their employees and managers to enable them to be competent, committed, responsive, finally which improves internal operation and customer service. This can be done through creating a relationship with training institutions, strengthen the internal human resource department, internal sourcing.

The current information technology practice of the M&LM enterprises is poor and affects effective communication and integration of data within the company. The M&LMEs should improve and invest in IT facilities to enhance information sharing both internally and externally. This can be done by hiring IT specialists or outsourcing.

More importantly, the M&LM enterprises should improve its relationship with suppliers from simply a buy-sale relationship to a modern supply chain relationship through establishing strategic or long term relationship, contract, and continuous information sharing to minimize supply uncertainty which resulted in demand and supply unmatched and dissatisfaction of customers of the M&LM enterprises. Because this could help enterprises to obtain the inputs at the right time and quantity from these suppliers and provide the required quantity by the

customers when they need it. So, this will minimize the dissatisfaction of customers due to a shortage of materials.

Another important issue that is recommended to the M&LM enterprises marketing department should work in improving the relationship with customers through a continuous information sharing, follow-up them and get feedback, monitoring customers' perceptions towards service and product of the company, improving its compliant management through conducting market research for better responsiveness.

Finally, in order manufacturing enterprises to survive, remain/become competitive in global market the adoption of SCOR model is a must. Because the model helps every manufacturing enterprise regardless of their size to follow their supply chain practices as well as the operational and organizational performances of the enterprises including green supply chain management which were not discuss in this study.

5.4. Suggestions for further investigations

As further research, this study can be expanded to other industries to identify factors that affect the effectiveness of those particular industries. Also as further research, the identified factors can be used to develop models for the supply chain effectiveness in the apparel industry.

Concerning scholarly work, the limitations of the case study create avenues for future research. The study could be replicated across several sectors while focusing on small and medium-sized enterprises. Also, assessing and quantifying the risks and their impact in a detailed case study would prove to be beneficial to the supply chain management.

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APPENDIXES
ANNEX I

DIRE DAWA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF MANAGEMENT

RESEARCH PROJECT QUESTIONNAIRE FOR FULFILLMENT OF MBA

Dear Respondents,

Thank you for participating in this study

The purpose of this survey is to identify the ***"DETERMINANTS OF SUPPLY CHAIN MANAGEMENT EFFECTIVENESS IN MEDIUM AND LARGE MANUFACTURING ENTERPRISES IN DIRE DAWA CITY ADMINISTRATION"***

Dear Participants, this study is purely for academic purpose and for partial fulfillment of the requirements for the Degree of Masters of Business Administration (MBA) in Dire Dawa University. All responses will be kept confidential and will not be traceable to individual respondent.

For the successful accomplishment of the research, your genuine response will have an important role and the responses will be used as a valuable and primary input for the study. For this reason, you are kindly requested to spare few minutes of your busy schedule and genuinely fill this questionnaire.

NOTE THAT:-

- No need of writing your **Name**
- Please mark your response with"**√**"
- If you need any information:- 0920468554

Thank you in advance for your cooperation!!

SECTION A. GENERAL INFORMATION

Please tick or circle the appropriate number

1	**AGE (Years)**				
	Less than/ = 25 years	26 – 35 years	36 – 45 years	46 -55 years	56yrs and above
	1	2	3	4	5

2	**SEX**	
	Female	Male
	0	1

3	Educational Background:				
	High School Complete	TVET Level 1-4	Diploma	First Degree	Masters and above
	1	2	3	4	5

4	**Work Experience**			
	Less than/= 5 years	6 - 10 years	11—16 years	17 and above
	1	2	3	4

5	**Please indicate your designation in the company:**

SECTIONII: SCM PRACTICES

Direction:

This section of questionnaire focuses on manufacturing practices implemented in the company. On the following scale, please tick (√) the appropriate number under the space provided that best represents your opinion.

The following questions are about how your enterprise has been implementing supply chain management practices. Please circle the appropriate number to indicate the extent to which you agree or disagree with each the following statement based on your experience working in this enterprise. The item scales are five-point Likert type scales with 1 = strongly disagree (SD), 2 = disagree (D), 3 = neutral (N), 4 = agree (A), 5 = strongly agree (SA)

No1	**Strategic supplier partnership**	**1**	**2**	**3**	**4**	**5**
1	Your company considers quality as number one criterion in selecting suppliers.					
2	Your company regularly solves problems jointly with your suppliers					
3	Your company has been helping your suppliers to improve their product quality.					
4	Your company includes your key suppliers in your planning and goal setting activities.					

No2	**Transportation and logistics management**	**1**	**2**	**3**	**4**	**5**
1	Your company used to monitor and track energy consumption					
2	Your company have a program and /or procedures to reduce the use of energy					
3	Your company has procedures and/or a program in place to ensure bribes or other means of obtaining advantages are not offered or accepted (avoiding conflict of interest)					
4	Your company have procedures and/or a program in place to prevent corruption, extortion, or embezzlement					

No3	Customer relationship	1	2	3	4	5
1	Your company frequently interact with customers to set reliability, responsiveness, and others					
2	Your company frequently measure and evaluate customer satisfaction.					
3	Your company frequently determines future customer expectations.					
4	Your company facilitates customers' ability to seek assistance from us.					
5	Your company periodically evaluates the importance of your relationship with your customers.					

No4	Level of information sharing	1	2	3	4	5
1	The company informs trading partners in advance of changing needs.					
2	Your company's trading partners share proprietary information with Your company.					
3	Your company's trading partners keep your fully informed about issues that affect Your company's business					
4	Your company's trading partners share business knowledge of core business processes with Your company's.					
5	Your company's and Your company's trading partners exchange information that helps establishment of business planning.					
6	Exchange of information with Your company's partners (formal or informally) is frequent					
7	Information exchange between Your company's trading partners and Your company's is timely.					

No5	Quality of information sharing	1	2	3	4	5
1	Information exchange between Your company's' trading partners and Your company's is accurate.					
2	Information exchange between Your companies' trading partners and Your company's is complete.					
3	Information exchange between Your company's trading partners and Your company's is adequate					
4	Information exchange between Your company's trading partners and Your company's use is reliable.					

No6	Internal lean practice	1	2	3	4	5
1	your organization strives to reduce time wastage in operation					
2	Your organization has continuous quality improvement programs.					
3	Your organization produces only what has been ordered by customers (pull production system).					
4	Your organization pushes suppliers for shorter lead times.					
5	Your organization streamlines ordering recovering and other paper work from its suppliers.					

Section III: Operational performance: On the following scale, please tick (√) the appropriate answer represents your opinion.

No1	**Price /cost**	**YES**	**NO**
1	Are you able to offer prices as low or lower than our competitors?		
2	Do Your company's capacity utilization is very good?		
3	Do Your company's Inventory turnover is high?		
4	Does Your company run operation with less merchandising cost?		
5	Does Your company offer competitive prices?		

Quality: an organization is capable of offering product quality and performance that creates higher value for customers.

No2	**Quality**	**YES**	**NO**
1	Does Your company are able compete based on quality?		
2	Does Your company offer products that are highly reliable?		
3	Does Your company offer products that are very durable?		
4	Does Your company offer high quality products to our customer?		

Delivery dependability: an organization is capable of providing on time the type and volume of product required by customer(s).

No	**Delivery Dependability**	**YES**	**NO**
1	Does Your company deliver the kind of products needed?		
2	Does Your company deliver customer order on time?		
3	Does Your company provide dependable delivery?		
4	Do Your company's time to solve customer complaints is short?		
5	Do Your company's customers order processing time is short?		

Time to market: an organization is capable of introducing new products faster than major competitors

No	**Time to market**	**YES**	**NO**
1	Does Your company deliver product to market quickly?		
2	Do Your company's time-to-market lower than industry average?		
3	Do Your company's on-time delivery directly to customer's points of use?		
4	Do Your company's On-time delivery directly to your firm's points of use?		

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"***DETERMINANTS OF SUPPLY CHAIN MANAGEMENT EFFECTIVENESS IN MEDIUM AND LARGE MANUFACTURING ENTERPRISES IN DIRE DAWA CITY ADMINISTRATION"***

Dear interviewee: The research is purely for academic purpose; thus any response given will be kept confidentiality and wouldn't be used for any other purpose. So, your timely, genuine and frank response to the interview is vital for the successfulness of the study. Accordingly, please take a few minute from your schedule and reply to the interview.

Student Name:-

Thank you for scarifying your precious time in advance

Interview Question

1. How does your organization strategy in order to create efficient supply chain management system?
2. What kind of system does your organization implement to control the occurrence of corruption on purchasing?
3. What are the major challenges implementing efficient supply chain management system?
4. Do you have supply chain management plan, if your answer is yes, then what are your strategic plans to achieve your supply chain management plan? Do you believe that the plan is efficient?
5. Is there is high level of free sharing of accurate information across members of supply chain?
6. Your company considers quality as number one criterion in selecting suppliers.
7. Is there any problem in the process of practicing supply chain management in your company? Yes or no?
8. If the answer for the above question is yes what are they?
9. What is your suggestion for your company's future regarding good supply chain management?

Thanks for your time

ANNEX II

Higher and Medium Manufacturing Enterprise In Diredawa City Administration

	DESCRIPTION	Year of Establishment e.c.	Working Capital	No.of Workers				
				Permanent		Temporary		
				Male	Female	Male	Female	Total
	Higher Manufacturing Enterprises							
1	PIONEER CEMENT FACTORY	2002		317	19	5	0	341
2	TURE CEMENT FACTORY	2002		139	20	0	0	159
3	FIRI FLOUR FACTORY	2005		15	2	3	0	20
4	AYAM STEEL FACTORY	2005		16	6	1	0	23
5	AYAN BOTTLED WATER FACTORY	2005		85	52	0	0	137
6	DIAMOND STEEL FACTORY	2006		41	6	50	11	108
7	LIBAN BOTTLED WATER FACTORY	1998		55	40	12	50	157
8	AQUA DIRE BOTTLED WATER AND SOFT DRINKS FACTORY			116	77	0	0	193
9	NATIONAL CEMENT FACTORY	2004		457	450	300	250	1457
10	RED STARS (TVS) VEHICLE ASSEMBLY	2004		45	46	0	0	91
11	NEW WAVE HESIAN CLOTH FACTORY	2005		151	100	0	0	251
12	DIREDAWA TEXTILE FACTORY	1937		100	100	150	100	450
13	EAST AFRICA BOTTLING	1965		100	38	0	0	138
14	DIREDAWA FOOD COMPLEX	1988		296	129	0	0	425
15	SHEMU SOAP AND DETERGENT FACTORY	2002		274	123	0	0	397
16	AQUA UNO BOTTLED WATER FACTORY	2008		100	50	0	0	150
	Medium manufacturing enterprises							
1	JEMAL MOHAMMED BLOKET	2000	6,000,000.00	37	0	22	0	59
2	ABERA HERPASA DIARY	1997	3,700,000.00	33	4	5	0	42
3	ASAYALEM BREAD BAKERY	2007	250,000.00	3	2	14	0	19
4	YIZUTA FOOD PRODUCTION	2004	2,500,000.00	1	1	3	0	5
5	GERUM FIREW WOOD AND METAL WORK	2008	2,000,000.00	8	0	2	0	10
6	MENKER ASCHENAKI METAL AND ALUMINIUM WORK	2003	3,200,000.00	21	1	5	0	27
7	Z FURNITURE	2000	1,500,000.00	0	8	10	8	26

8	CHINA GENERAL METAL AND ALUMINIUM WORKS	2005	6,000,000.00	66	4	5	2	77
9	TEDI FURNITURE	1997	4,000,000.00	4	1	8	2	15
10	MILINIK ALEM WOOD WORK	1997	2,500,000.00	20	10	20	14	64
11	SAMI GENERAL METAL WORKS	2001	1,500,000.00	7	0	3	0	10
12	REDWAN BERGICHO WOOD WORKS	2003	3,500,000.00	24	11	15	3	53
13	KASAHUN AND ZEWDNESH INJERA	2006	2,800,000.00	14	32	34	29	109
14	MEKEDES INJERA	2006	3,000,000.00	74	53	16	32	175
15	BELAYNESH HAILE GRAVEL PRODUCTS	2006	1,830,000.00	83	64	12	31	190
16	TEKIE FURNITURE		6,813,794.00	51	14	0	0	65
17	WAZ WOOD AND METAL WORKS	2000	2,040,000.00	11	5	4	0	20
18	MAHTED FURNITURE	1998	2,000,000.00	3	13		8	24
19	SELAM BREAD	2004	4,000,000.00	9	2	5	0	16
20	ANTENEH AND WORKENEH GRAVEL AND BLOKET	2004	1,560,000.00	20	10	20	14	64
21	TEKALEGNE TSEGAW GRAVEL AND BLOKET	2004	1,500,000.00	6	0	36	3	45
22	ETHIO FASHION GARMENT	2002	2,100,000.00	3	2	2	0	7
23	YENEGE FIRE GARMENT	1996	2,000,000.00	3	1	2	0	6
24	BERHAN GARMENT	1980	1,800,000.00	11	1	5	0	17
25	NIB GARMENT	1996	1,600,000.00	9	11	1	2	23
26	WONDWOSEN KEBEDE GENERAL METAL WORKS	1994	2,200,000.00	15	0	7	0	22
27	ABDELA BLOKET AND TERAZO PRODUCT	2004	2,500,000.00	4	2	7	0	13
28	MM STEEL AND ALUMINIUM FACTORY	1992	7,000,000.00	3	1	5	0	9
29	EZER WOOD AND ALUMINIUM FACTORY	2001	2,000,000.00	11	1	4	0	16
30	MUKTAR FURNITURE	1993	1,500,000.00	7	1	3	0	11
31	MUSTEFA FURNITURE	2002	2,500,000.00	11	1	4	0	16

32	E-MALEK GENERAL CEREALS	2009	1,800,000.00	3	7	2	1	13
33	AYAN FOOD COMPLEX	1993	7,500,000.00	14	1	10	0	25
34	HARUN FLOUR FACTORY	2004	8,500,000.00	5	2	0	0	7
35	UMI FLOUR FACTORY	2009	7,800,000.00	6	2	2	8	18
36	AHMED KEDIR FLOUR AND MACARONI FACTORY	1992	1,390,842.00	4	0	12	2	18
37	ELSABETH BRICS PRODUCTS	2003	1,700,000.00	6	5	10	2	23
38	NEGEDE GENERAL METAL	1993	1,500,000.00	6	2	0	0	8
39	NEGEDE CRASHER		1,500,000.00	3	1	0	0	4
40	PAWLO ROGOA TORNO	1980	8,000,000.00	2	14	0	2	18
41	AYAM STEEL FACTORY	2005	43,806,320.89	16	6	1	0	23
42	BEREKET FLOUR FACTORY	1992	12,000,000.00	11	1	0	0	12
43	MOPLACO PLASTIC FACTORY	1993	5,000,000.00	20	13	1	0	34
44	KEROMOTO	2005	13,000,000.00	7	18	3	12	40
45	HAILEMARIAM MATEBE FURNITURE	1954	2,000,000.00					0
46	ALFOZ COFFEE PROCESSING	1996	15,000,000.00	2	4	0	0	6
47	ABADIR PRINTING	1993	2,000,000.00					0
48	KHALEF PRINTING	1996	2,500,000.00					0
49	MAWI COFFEE PROCESSING	1989	4,191,310.00					0
50	BERWAKO STEEL FACTORY	2000	10,146,182.00	8	2		0	10
51	MIRAJ SULTAN FLOUR FACTORY	2005	13,000,000.00	16	10	0	0	26
52	NUR FLOUR FACTORY	2003	8,700,000.00	11	2	0	0	13
53	DUNI FIBER GLASS FACTORY	2000	4,000,000.00	14	3	0	0	17
54	A.M METAL CRAFT	2005	5,000,000.00	28	9	0	0	37
55	ANA STEEL FACTORY	2001	5,000,000.00	12	2	0	0	14

56	SHEKIB MARBEL FACTORY	2007	1,600,000.00	9	2	0	0	11
57	BROGLIA METAL CRAFT	1993	3,000,000.00	9	1	6	0	16
58	HABTAMU TORNO	1983	4,000,000.00	12	1	0	0	13
59	DIRE PRINTING	1980	8,155,000.00	13	28	0	0	41
60	BERHAN GARMENT	1980	2,100,000.00	3	2	10	0	15
61	FAM GRAVEL PRODUCTION	1999	1,000,000.00	11	0	0	0	11
62	TEKALEGNE GRAVEL PRODUCTION	2000	500,000.00	15	0	0	0	15
63	AYNAGE COFFEE PROCESSING	1998	8,000,000.00	8	20	0	0	28
64	SEKINA FLOUR FACTORY	2009	9,000,000.00	10	1	0	0	11
65	R.M. FURNITURE	2002	1,600,000.00	10	2	0	0	12
66	MUSTEFA JEMALFURNITURE	1985	1,600,000.00	5	0	0	0	5
67	MAN FURNITURE	1992	1,800,000.00	5	0	0	0	5
68	HAGRE BREAD	1998	1,600,000.00	7	1	0	0	8
69	BERKET BREAD	1996	5,400,000.00	11	1	0	0	12
70	DAWIT GRAVEL PRODUCTION	1999	1,800,000.00	29	0	0	0	29
71	DIRE PLASTIC FACTORY	1990	12,000,000.00	10	0	0	0	10
72	MIYONA SPONNJE FACTORY	2005	11,000,000.00	0	11	0	0	11
73	HARAR FLOUR FACTORY	2002	12,000,000.00	13	2	8	0	23
74	LALI TRADING	2000	1,900,000.00	9	8	0	50	67
75	BERA COFFEE PROCESSING	2003	19,750,000.00	10	12	40	210	272
76	ROYAL FOAM MATRESS & PLASTIC PRODUC	2009	1,500,000.00	42	18	2	0	62
77	MIYA MACARONNI FACTORY	2009	18,000,000.00	9	0	14	2	25
78	KONNEL INDUSTRIAL	2000	19,005,000.00	30	21	48	0	99
79	FIRI BOTTLED WATER FACTORY	2011	15,000,000.00	14	1	22	15	52