

***DETERMINANTS OF SUPPLY CHAIN MANAGEMENT
PERFORMANCE: A STUDY ON ETHIOPIAN COMMODITY
EXCHANGE (ECX) JIMMA DISTRICT***

**THE THESIS SUBMITTED TO DEPARTMENT OF MANAGEMENT
JIMMA UNIVERSITY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS TO THE AWARD OF THE DEGREE OF MASTER OF
LOGISTICS AND TRANSPORTATION MANAGEMENT (MLTM)**

**BY
TEMAM JEMAL**



**DEPARTMENT OF MANAGEMENT
COLLEGE OF BUSINESS AND ECONOMICS
JIMMA UNIVERSITY**

JIMMA, ETHIOPIA

JULY, 2020

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UNDER THE SUPERVISION OF

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DEPARTMENT OF MANAGEMENT

COLLEGE OF BUSINESS AND ECONOMICS

JIMMA UNIVERSITY

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Abstract

In the current competitive scenario supply chain management assumes a significant importance and calls for serious research attention, as companies are challenged with finding ways to meet ever-rising customer expectations at a manageable cost. To do so, businesses must search out which parts of their supply-chain process are not competitive, understand which customer needs are not being met, establish improvement goals, and rapidly implement necessary improvements. The main objective of this study was to examine the determinants of supply chain management performance in Ethiopian commodity exchange Jimma district. Information sharing, supplier buyer relationships, environmental factors and human metrics were the selected factors to determine the supply chain performance. The study used descriptive survey design together explanatory design with representative sample of 107 respondents from the targeted population using both non-probability of purpose sampling and probability sampling of simple random sampling. Both primary and secondary data were collected using questionnaire and interview. The collected data was analyzed using both descriptive statistics (frequency, mean and standard deviation) and inferential statistics (correlation and liner regression). The main findings of the study show that, the supply chain management performance is determined by the information sharing, supplier buyer relationships, environmental factors and human metrics. However, the degree in which they determine the supply chain management performance of the organization is not the same, for instance the information sharing was moderately correlated with supply chain management performance, whereas there was weak positive correlation between environmental factors, human metrics and information sharing respectively. This implies that all of the factors can determine the performance of supply chain management to some extent. Therefore, it can recommended that due attention should be given to these factors in planning or design supply chain performance management.

Key words; *Buyer-Supplier Relation, Environmental Factors, Human Metrics, Information Sharing, and Supply Chain Performance*

DECLARATION

I, Temam Jemal, the undersigned, declare that this thesis is my own original work and has not been presented in any other University. All sources of materials used for this thesis have been duly acknowledged.

Declared by Name: **Temam Jemal Eda'o**

Signature: _____ Date: ***July, 2020***

CERTIFICATION

I, the undersigned, certify that I have read and hereby recommend for acceptance by Jimma University, business and economics college, logistics and transportation management, a dissertation titled; “Determinants of Supply Chain Management Performance: Case Study of Jimma EXC” in partial fulfillment for the degree of Masters of Logistics And Transportation Management (MLTM) in Transport and Logistics Management offered by the Jimma University.

Mesfin Mekonnen (PhD. Scholar)

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JIMMA UNIVERSITY

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MBA PROGRAM

Board of Thesis Examination

Approval Sheet

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Table of content

Contents	Page
<i>Abstract</i>	i
DECLARATION _____	ii
CERTIFICATION	iii
Approval Sheet	iv
Acknowledgement	v
Table of content	vi
List of table	viii
List of Figure.....	ix
<i>List of abbreviation and acronyms</i>	x
CHAPTER ONE.....	1
1. Introduction	1
1.2. Statement of the problem.....	4
1.3. Basic Research Questions.....	6
1.4. Objective of the Study	6
1.4.1 General objective	6
1.4.2. Specific Objective	6
1.6. Scope of the study.....	8
1.7 Limitation of the Study.....	8
1.8 Organization of the study	8
2. Review of Related Literature.....	9
CHAPTER FOUR	33
4. ANALYSIS, INTERPRETATION AND PRESENTATION	33
4.1 Introduction	Error! Bookmark not defined.
4.2. ANALYSIS AND INTERPRETATION OF DATA	35
TABLE: 4.2. SUPPLIER -BUYER RELATIONSANALYSIS	35
Table: 4.4 Human metrics analysis.....	39
TABLE 4.5 INFORMATION SHARING ANALYSIS	41
Table 4.6.The supply chain management performance	43
4.4. Comparison of Supply Chain Integration Dimensions Descriptive Mean Score	44

4.6. Assumption Tests	46
4.6.1 Normality Test	46
4.6.2 Linearity Test	47
4.6.3 Multi co linearity Tests	48
4.7. Multiple Regression Analysis.....	49
Table 4.10: Model Summary	50
Table 4.11: ANOVA Results.....	51
Table 4.12: Multiple Regression Coefficients Result.....	52
4.8. Analysis of the Interview.....	53
CHAPTER FIVE.....	56
5. Major Finding, Conclusion and Recommendation.....	56
5.1 Major Finding	56
5.2 Conclusion.....	59
5.3 Recommendations	60
References	60
Appendixes	64

List of table

Table 3.1 Reliability Statistics.....	30
Table 4.1: Socio-Demographic Characteristics Of Respondents.....	32
Table: 4.2 Supplier -Buyer Relations analysis.....	34
Table: 4.3 Environment Factors Analysis.....	36
Table: 4.4 Human Metrics Analysis	39
Table 4.5: Information Sharing Analysis	41
Table 4.6. The Supply Chain Management Performance.....	Error! Bookmark not defined.
Table 4.7. Summarizes the Mean score and standard deviation results of the four SCMP	44
Table 4.8 : Co linearity Statistics.....	48
Table 4.9 : Model Summary	50
Table 4.10 : ANOVAs Results	51
Table 4.11: Multiple Regression Coefficients Result.....	52

List of Figure

Figure 2.1 conceptual frame work	27
Figure1: The regression model assumption of normality in the study	46
Figure 2: The regression model assumption of linearity in the study	47

List of abbreviation and acronyms

BSC:	Balanced scored cards
ABC:	Activity Based costing
EVA:	Economic value added
SCM:	Supply chain management
EXC:	Ethiopian commodity exchange
SCP:	Supply chain performance
PM:	Performance measurement
ERP:	Enterprises resources planning
SAFEX:	South Africa future exchange
CBOT:	Chicago board of trade
LME:	London metal exchange
SCP:	Supply chain performance
SC:	Supply chain
MSCP:	Measuring supply chain performance
SBR:	Supplier buyer relation
IS:	Information sharing
EF:	Environmental Factor
HM:	Human Matrix
POS:	Point of sale
JIT:	Just in time
VMI:	vendor managed inventory
SPC:	Statistical process control
VIF:	variance inflation facto

CHAPTER ONE

1. Introduction

1.1. Back ground of the study

In this era of technology and communication, organizations are using effectual techniques to boost up their business strategies. Among this supply chain management (SCM) approach is progressively recognized by many organizations as a strategy to attain their business goals today (Chi net al., 2010). It has become one of the new ways for manufacturing paradigms for organizational sustainability and competitiveness (Gunasekaran, 2004).

Supply Chain Management (SCM) is the philosophy of management that involves the management and integration of a set of selected key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders through the collaborative efforts of supply chain members (Ho et al., 2004). It involves all activities from purchasing of raw material to work in process procedures till finished products that are used by the end consumers (Cooper, 1990).SCM's main goal is reducing cost, customer satisfaction and profit maximization through supplier to customers or consumers (Vokurka and Lummus 2000). Enhancing supply chain performance is a critical approach for achieving competitive advantages for companies

Recently, many firms have realized the potential of SCM in their day to day operations. However, there are many firms which do not have enough insight for development of effective performance measures and metrics needed to achieve a fully integrated SCM. The reason is that they do not have the access to a balanced approach and a clear distribution between the metrics at strategic, tactical, and operational levels (Bhagwat and Sharma, 2007). And, what can't be measured can't be improved. Even though SCM is very pertinent subject today, yet there is no effective tool available to measure supply chain efficiency of any manufacturing organization. Supply chain measurement is more like a qualitative statement unlike productivity or quality measurement, where the parameter can be measured objectively and expressed in a unit or in any ratio. Measuring supply chain performance (SCP) can assist in better understanding of the SC and improving its overall performance (Chen and Paul raj, 2004).

In context of commodity exchange is a market in which multiple buyers and sellers trade commodity-linked contracts on the basis of rules and procedures laid down by the exchange. In developed countries, it acts as a platform for trade in futures contracts, or standardized contracts for future delivery. Whereas, in developing world acts in a broader range of ways to stimulate trade in the commodity sector (UNCTAD, 2009). Despite market liberalization in the early 1990s, the persistence of high transaction costs and contract risk have resulted in limited arbitrage and weak investments by private traders, leading to limited market volumes, weak responsiveness to price signals and high price volatility, all of which have a negative impact on smallholder producer livelihoods. The initiative to establish the Ethiopian Commodity Exchange was based on a simple concept. If markets function in such a way as to reward quality, reduce transaction costs of market participation thus increasing returns to market activity, enable quick capital turnaround thus increasing market volumes, and reduce risk of market participation, then markets would be serve the needs of buyers and sellers and contribute to the well-being of all who participate in the market economy (ECX, 2006). Thus, it is anticipated that ECX would be reward quality to producers; reduce transaction costs of market participation thus increasing returns to market activity; enable quick capital turnaround thus increasing market volumes, and reduce risk related to counterparty default and prices, thus increasing market participation; increase information and transparency for all market actors, thus empowering smallholders and other disadvantaged actors. (Dawit Alemu, 2010).

In Ethiopia, an attempt was made by Tolera (2014); Firdesa (2015) to see the determinants of the supply chain performance in different organizational setting. However, their focuses were on the quality, feasibility as well as the effectiveness of the organization but this study intends to focus on the determinants of supply chain performance of the commodity exchange organizations with the selected factors such as buyer-supplier relations, environmental factors, human metrics, and information sharing by taking Ethiopian commodity exchange Jimma district as a case study.

1.2. Statement of the problem

In the current competitive scenario supply chain management assumes a significant importance and calls for serious research attention, as companies are challenged with finding ways to meet ever-rising customer expectations at a manageable cost. To do so, businesses must search out which parts of their supply-chain process are not competitive, understand which customer needs are not being met, establish improvement goals, and rapidly implement necessary improvements (Chan and Lee, 2005). Researchers have also used it to describe strategic, inter organizational issues (Cox, 2000;Harland et al.2000), to discuss an alternative organizational form to vertical integration (Thorellietal, 1995), to identify and describe the relationship a company develops with its suppliers (Anderson etal., 2005), and to address the purchasing and supply perspective (Morgan et al.,2002).

The driver behind Supply Chain Management is to remove inefficiencies, excess costs and excess inventories from the supply pipeline which extends from the customer back through his suppliers and through his suppliers' suppliers and so on back. By having the program driven by the customer, it is hoped that inventories, caused by uncertainties and slow response, will be significantly eliminated. While there are sales incentives to major suppliers with the carrot of category management or similar programs, the success of supply chain management rests with logistics (Evans and Collier, 2009). A successful SCM is able to minimize inventory carrying cost and entire SCM cost as well (Chan and Lee, 2005).

Beam (1999) also mentions some features present in effective performance measurement systems and these include the following: inclusiveness (measurement of all pertinent aspects), universality (allows for comparison under various operating conditions), measurability (data required are measurable), and consistency (measures consistent with organization goals). The various parameters like supplier-buyer relations, external supply chain, environmental factors, human metrics, information sharing and performance measurement approaches are taken in a single study in the context of Indian manufacturing organizations.

The key to an organization's success in our current business world lies in building and sustaining competitive advantage (Evans and Collier, 2009).Customer needs drive strong competitive advantage which is achieved through alignment of the organization's resources with its business opportunities (Slack et al., 2007).Even though in most exchanges trades take place in electronic trading, Ethiopia Commodity Exchange (ECX) has started its operation with the introduction of floor based trading with spot contracts that are traded for immediate payment and delivery. The

basic purpose of a supply chain is to coordinate the flow of materials, services and information (Evans and Collier, 2009).

From local perspective, an empirical study conducted by Asmare (2002) on the role of supply chain in Adama town showed that as supply chain is very important in transporting goods and services from a given area to another and thereby to enhance the performance of the organization. Wolde(2003) also conducted a study on the effects of supply chain management on organization in Addis Ababa Kality sub city on textile and found that supply chain management has effects and put its own pressure on the companies over all transfusion of goods.

The supply chain management performance of Ethiopian commodity exchange in Jimma has been under research. Some aspects of the SCM have done on this organization. Hence, there is knowledge gap on how well is the performance of supply chain management and its effect on performance in jimma ECX. As far as the knowledge of the researcher concerned, there are few studies conducted on the determinants of Supply Chain Management performance from perspectives of Supplier Buyer Relation, Environmental Factors, Human Metrics and information sharing. Therefore, the researcher conducts research on determinants of supply chain management performance of jimma ECX.

Though an attempt was made by Tolera (2014); Firdesa (2015); Asmare (2002); Wolde (2003) in the area of the importance supply chain management for improving organization performance and effectiveness, and according to literature search by the researcher the current study area few studies are conducted on the determinants of supply chain management performance particularly in the area of commodity exchange organizations. Therefore, this study aimed to fill this gap by investigating the determinants of supply chain management performance of the commodity exchange organizations with the selected factors such as buyer-supplier relations, environmental factors, human metrics, and information sharing by taking Ethiopian commodity exchange Jimma district as a learning organization.

1.3. Basic Research Questions

To achieve the desired objective the following basic research questions were raised as a leading question.

1. What are supply chain management activities of Ethiopian commodity exchange Jimma district?
2. What are the factors that determine the supply chain management performance of in Ethiopian commodity exchange Jimma district?
3. How the buyer-supplier relations, environmental factors, human metrics, and information sharing) determine the supply chain management performance?

1.4. Objective of the Study

1.4.1 General objective

The main objective of this study was to examine the determinants of supply chain management performance Ethiopian commodity exchange Jimma district.

1.4.2. Specific Objective

This study has the following specific objectives that are related with the basic research questions

1. To find out the supply chain management activities performed by Ethiopian commodity exchange Jimma district.
2. To identify the determinants factors of supply chain performance in Ethiopian commodity exchange Jimma district.
3. To examine how buyer-supplier relations, environmental factors, human metrics, and information sharing) determine the supply chain management performance.

1.5. Significance of the study

The study expected to contribute to the knowledge of supply chain performance management, as there is little considerable field of knowledge and little broad body of literature about determinants of supply chain performance from local perspective particularly in the selected case area. Therefore, the study would have different significance to a various group such as the case Organization, upcoming researchers, policy makers, any interested readers, and for the researcher himself. The forwarded recommendations may help the case organization to improve efficiencies regarding information sharing, human factors, environmental factors and supplier-buyers linkage.

The findings of the study serve as a plat form for those who may want to carry out further and in-depth research on related issues. Also, for any interested readers of this findings may help in giving clear understanding of what is going on in the area of study subject i.e. on determinants of supply chain management performance. In addition, the findings may serve as guide line for policy makers and it would help the researcher as a partial fulfillment of the requirements to the award of the degree of master of logistics and transportation management.

1.6. Scope of the study

This study would be cover conceptual and empirical findings of the existing that examine the determinants of supply chain management performance. Though the study title sites the determinants supply chain performance management in Ethiopian commodity exchange, it's was conducted focusing on the determinant factors such as buyer-supplier relations, environmental factors, human metrics, and information sharing in Ethiopian commodity exchange Jimma district only. Methodologically the study adopted descriptive and explanatory research design and both primary and secondary data were collected using questionnaire, interview and document analysis.

1.7 Limitation of the Study

Given that would be time consuming and impractical to do a national survey, the geographic boundary for questionnaire-based survey was limited to Jimma district commodity exchange only. This hampers the generalizability of the study. Further researcher was used the purposive sampling technique to target the respondents, the sample may not be representative of the target population regardless of the chosen sampling method and during filling the questionnaire, there were hesitations from the respondents. Inevitably, the survey findings cannot be not be generalized across other group of population.

1.8 Organization of the study

This thesis consists of five chapters. The first chapter contains background, statement of the problem, objectives, research questions, significance and limitations of the study. The second chapter consists of literature review, the third chapter consists of methodology of the study, the fourth chapter consists of research findings and the fifth chapter consists of conclusion and recommendations.

CHAPTER TWO

2. Review of Related Literature

Introduction this chapter attempts to review the theoretical, empirical review of related literature and conceptual frame work of the study that is linked to the research problem obtained in the previous chapter

2.1. The concept of supply chain

The term supply chain according to Monezka et al, (2002) encompasses all activities associated with the flow and transformation of goods from the raw materials stage, through to end users, as well as the associated information flows. Materials and information flows both up and down the supply chain. The supply chain includes all activities of converting materials through the input stage, conversion phase and outputs. The cycle is often repeated several times in the journey from the initial producer to the ultimate customer as on organization's finished good is another's input. The structural entity of the supply chain is concerned with activities such as make, transform, move and store. Primary supply chains are those that ultimately provide the goods or services to the customer (Monezka et al, 2002).

What supply chain management is about is the linkage of the immediate seller/buyer relationship into a longer series of events. A company's suppliers have their own suppliers, and often our direct customers are not the ultimate consumers. Supply chain management sees the various buyers and sellers as part of a continuum, and recognizes the benefit to be derived from attempting to take a strategic view of the chain. Supply Chain Management is concerned with the coordinated flow of materials and services from origins through suppliers into and through the organization and onto the ultimate consumer in such a way as to maximize value added and minimize cost. Associated flows of information and funds are also included. This can be visualized through the flow of goods (Bialy, et al 2005). According to Monezka et al (2002) Supply chain management is the integration of activities through improved supply chain relationships to achieve a competitive advantage. Supply chain management is the process of planning, implementing and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible.

Aziotopoulos (2004) view supply chain management as a cross-functional approach to managing the movement of raw materials into an organization and the movement of finished goods out of the organization toward the end-consumer. As corporations strive to focus on core competencies and become more flexible, they have reduced their ownership of raw materials sources and distribution channels. These functions are increasingly being out sourced to other corporations that can perform the activities better or more cost effectively. The effect has been to increase the number of companies involved in satisfying consumer demand, while reducing management control of daily logistics operations. Less control and more supply chain partners led to the creation of supply chain management concepts.

Hadfield and Nicholas (2002) defined supply chain management as the management of the entire value added chain, from the supplier to manufacturer right through to the retailer and the final customer. It is the oversight of materials, information and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. Supply chain management involves coordinating and coordinating and integrating these flows both within and among companies. It is said that the ultimate goal of any effective supply chain Management system is to reduce inventory. According to chartered supply chain management, professionals (CSCMP).Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement.

Bialy and Farmer (2000) posited that the partnership approach to supplier is part of the concept of supply chain management. This approach is broader than the simple relationship between the suppliers and buyers of separate organizations. It deals with the total concept of managing materials in a positive way, all aspects from the suppliers and subcontractors through purchasing, stock control and distribution to the final customer. It is concerned with achieving the lowest cost in the whole manufacturing and supply process by identifying and balancing the relationship between the separate links in the supply chain and ensuring that the whole chain operates at the lowest total cost and the maximum efficiency. There is a link between the buyer's organization and the supplier as this is a vital element in ensuring continuity of supply.

According to Vickery et al (2003), supply chain management is the combination of art and science that goes into improving the way a company finds the raw components it needs to make a product or service and deliver it to customers. Supply chain management activities include;

Planning, sourcing of supplies, pricing, delivery and payment processes with suppliers. This is the manufacturing step. Schedule the activities necessary for production, testing, packaging the preparation for delivery. As the most metric intensive portion of the supply chain, measure quality levels, production output and worker productivity. Other activities include coordinating the receipt of orders from customers, develop a network of warehouses, and pick carries to get products to customers (Vickery et al, 2003).

To conclude, supply chain as “a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from source to customer” (Meltzer, 2001). SCM as having three core elements: value creation; integration of key business processes; and collaboration (Ho et al, 2002). SCM as a “strategic level concept”; Logistics is an important component of SCM (Stank, 2005). A supply chain (SC) is a network of organizations to perform a variety of processes and activities to generate value in the form of products and services to end consumers (Christopher, 1992). Alternatively, a supply chain is a network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the end customer (Christopher, 1998).

2.2 Supply chain management (SCM)

Hakanson (2009) defines supply chain as all inter-linked resources and activities needed to create and deliver products and services to customers. The author also defines supply chain management as management of the process of supply and demand, sourcing raw materials and parts, manufacturing and assembly, distribution across all channels, and delivery to the customer. Therefore, SCM is an integrated function with full responsibility on linking business functions and process, with and through companies, managing the dynamic of financial, material and information flows, between the different stages of supply chain. SCM is one of business strategy increasingly being used in the business world today and has become the focus of academic as well as corporate attention in recent years (Ballot, Gilbert and Mukherjee, 2000). There are many articles published in various disciplines to try to define the SCM and discuss future directions and the corresponding empirical research methodology (Cooper, et al., 1997; Lambert and

Cooper, 2000; Larson and Rogers, 1998). SCM practices as a multi-dimensional construct that encompasses upstream and downstream sides of supply chain (Li et al, 2006)

2.3 Evolution of SCM

Evolution of Commodity Exchange in the world, Japan is the world's first organized futures market, the Osaka Rice Exchange, 1730. China 6,000 years ago rice trading has been reported & in ancient Greece, on capacity of olive oil presses (UNCTAD, 2009). Exchanges in the Americas: Chicago Board of Trade (CBOT), founded in 1848, largest futures exchange in the world. Historically, organized trading in the mid-19thc with corn contracts & a bit later, cotton contracts in New York Exchanges in Europe, the London Metal Exchange (LME), only independent major commodity exchange, in 1877 at industrial revolution. Exchanges in Asia and Oceania, also Japan in 1730.

Exchanges in Africa, the South African Futures Exchange (SAFEX) was established in 1988 and ECX, 2007 advanced stage (UNCTAD, 2009) Current trend of Commodity Exchange in the world. liberalization & the withdrawal of government support of agricultural trade recent years creation & growth in developing countries Asia; the 3 Chinese created in early 1990s, & the 3 Indian, founded in 2002/3, all now among the world's largest Latin American, growing rapidly, after financial crises Eastern Europe and the former Soviet Union continue to develop in parallel booming mineral, metal and energy sectors. In Africa, least successfully to date, recent of activity at a national, regional & pan-African level.

In Ethiopia at current, the presence of high transaction costs, related to the lack of sufficient market coordination between buyers and sellers, the lack of market information, the lack of trust among market actors, the lack of contract enforcement, and the lack of grades and standards, implies that buyers and sellers operate within narrow market channels, that is, only those channels for which they can obtain information and in which they have a few trusted trading partners.

2.4. Quality Vs Supply Chain Management (SCM)

Quality management is the system which leads to long term benefits by continuous improvements in processes through using different quality techniques. Due to globalization

Companies adopted those suppliers and partners who provide them good quality of raw material for final product. When the practices of SCM and quality management are integrated and communicated then it leads to continuous improvement and gain 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 leads to effective supply chain and increases the value of products and systems

2.5. Sourcing vs. 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 cost are lowest companies outsource from those countries. Sourcing also decreases Lead time to deliver material and inventory goods. For the effective supply chain firstly decided work with single or multiple suppliers, delegating or parallel sourcing. For outsourcing need assessment, negotiation and relationship management is very important. Through outsourcing companies can gain sustainable competitive advantage over competitors because they can access new technologies, skills, flexibility, speed and innovation in production systems that access world class capabilities. 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.

2.6 PERFORMANCE MEASUREMENT APPROACHES

Performance Measurement (PM) is the process of quantifying the effectiveness and efficiency of actions. Supply Chain Performance (SCP) refers to the overall supply chain's activities in meeting end-customer requirements, including product availability, timely delivery, and all the required inventory and capacity in the supply chain to deliver that performance in a responsive manner. SCP crosses company boundaries since it includes basic materials, components, subassemblies and finished products, and distribution through various channels to the end customer. It also crosses traditional functional organization lines such as procurement, manufacturing, distribution, marketing & sales, and research & development. In the Indian

Context, there have been many attempts to measure the performance at the organizational level, but very few attempts have been made to measure the performance at inter-organizational level (Marwah, etal, 2014).

New organizations have to deal with various kinds of performance pressures and suitable approaches are needed (Gunasekaran et al., 2005). The study is also the direct justification for the need of a new performance measurement. Supporting the idea of new performance measurement system, few other approaches have been proposed. There is an integrated approach for measuring supply chain performance, combining economic value added (EVA), the balanced scorecard (BSC) and activity based costing (ABC), clearly emphasizing the need of overhead handling and a balanced approach (Yao and Liu, 2006). Other approaches focuses on ERP-based supply chain performance and proposes an integrated method, total related cost measurement, to evaluate supply chain performance of a three-echelon, ERP-based supply chain system (Marwah, etal,2014).

Many researchers have proposed new performance measures and metrics considering the changes in markets and enterprise environments. However, there are some confusion surrounding those measures and metrics regarding their importance and specific areas of application in SCM systems. The use of new emerging metrics defined in five categories has been suggested: external, consumer, value-based competition, network performance, and intellectual capital (Basu, 2001). A study based on a survey of 22 firms SC systems concluded that SC partners do not share a common vision of or reacts to the same set of metrics (Spekman et al., 1998). Recently, many research papers that deal with performance measurement in a SC context (Van Hoek, 1998) have appeared in the literature. However, most of them are prescriptive and not based on historical facts and their analysis and changing market and operations environments or well-grounded empirical analysis.

2.7. Determinants of Supply Chain Management performance

In this paper, the researcher adopted a conceptual model by linking the relationships with supplier buyer relations, environmental factors, human metrics and information sharing are determinants SCM performance in a single study in the context of Jimma town ECX.

2.7.1 Supplier Buyer Relations (SBR)

In supply chain management strategies, supplier relationship activities play an important role (Wisner, 2003). Long-term relationships refer to intention that the arrangement is not going to be temporary (Chen and Paul raj, 2004). With suppliers and buyers is very much needed. It should be revolved around trust, loyalty, positive sum game (a win-win relationship), cross-functional teams, achieving common goals and collaboration (Marwah, etal, 2014).

2.7.2 Information Sharing (IS)

Information sharing is defined as the access to private data between business partners thus enabling them to monitor the progress of products and orders as they pass through various processes or stages in the supply chain (Simatupang and Sridhar an, 2002). The elements of information sharing comprises of consistent data acquisition, processing, storage, presentation, retrieval, and broadcasting of demand and forecast data, inventory status and location, order status, cost-related data, and performance status. Advances in information communication technology have greatly facilitated the uptake of supply chain management concept by many organizations.

ICT is the backbone of collaborative endeavors in supply chain without which connectivity and sharing of information will be near impossible. Information shared with ICT systems creates competitive value by substituting for inventory, shortening order fulfillment cycle, speeding up new product design and coordinating supply chain management activities (Marwah, etal, 2014)

2.7.3 Environmental Factors (EF)

The effects of globalization, technology and the growing need for environmental responsibility and sustainability is forcing organizations and individuals to make changes in the way they work. The ministry of corporate affairs and the industry chamber, Confederation of Indian Industry (CII) had reported in their study about the Corporate Social Responsibility (CSR) in which the private sector plays a key role in nurturing inclusive growth.

2.7.4 Human Metrics (HM)

There is a heavy influence of behavioral issues while establishing and implementing the key PMs and metrics. Cultural and political factors also play a significant role in determining the right

PMs and metrics. Organizations share values in terms of tremendous trust, commitment and collaboration. Also, organizational capability and top management supports are essential for an effective SCM (Mello and Stank, 2005). It is suggested that human factor is significantly affecting the SCM effectiveness (Tony and Kelvin, 2007) and is a critical factor in achieving strategic and operational objectives and changes in the supply chain(Marwah,etal,2014).

It is found that firms lacking in the appropriate cultural elements such as shared assumptions, values and artifacts are tend to fail when implementing SCM initiatives (Mello and Stank, 2005). Moreover, the need for organizational commitment and governance for supply chain success is also reported (Fawcett, Ogden, Magnan and Cooper, 2006). The findings indicated that the following four types of managerial support are needed to achieve best SC success: top management support, broad-based functional support, channels support and infrastructural/governance support. Few more research works (Robinson and Malhotra, 2005; Wouters, 2009) clearly support the need for a performance measurement system taking the holistic picture, including the human side and organizational issues.

2.8 On-Time Delivery Vs Supply Chain Management (SCM)

Time delivery is another factor influences on supply chain efficiency. Contacting ability of the retailers to responds is important, if they respond quickly then 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.ID assign the unique number to every item, store the product information and work electronically.

2.9 Relationship between determinants and Supply Chain Performance

2.9.1. Relationship between Buyer-Supplier Relationship and Supply Chain Performance

Buyer supplier relationships (BSR) are connections or agreements involving firms deciding to work together and share information between them and establish a form of trust that will see

They have a better advantage in the market over their competitors. These relationships are part of supply chain management strategies of a firm. Supply chain management covers business processes done starting from the supplier to the end user departments. The relationships therefore serve as a means of enabling better service, product provision and information availability between firms and to the end users (Global Supply Chain Forum 2008). This was evident with the Romanian Small and Medium Sized Enterprises which realized that having a onetime supplier attracted more losses especially due to receipt of poor quality goods. The enterprises then sought to have mutually beneficial relationships with its suppliers as a way of minimizing problems during procurement (Plaias and Muresan, 2007).

2.9.2 Relationship between information sharing and Supply Chain Performance

Information sharing in a supply chain context refers to the extent to which crucial and/or proprietary information is available to members of the supply chain. Shared information can be tactical i.e. purchasing, operations scheduling, logistics or strategic i.e. long-term corporate objectives, marketing and customer information. Prior research on the importance of formal and informal information sharing between trading partners has shown that effective information sharing enhances visibility and reduces uncertainty. It allows firms to access data across their supply chains, allowing them to collaborate in activities such as sales, production, and logistics.

The extent to which information is shared can create opportunities for firms to work collaboratively to remove supply chain inefficiencies, and thus has a significant direct impact on the relationship between buyer and the supplier (Hsu et al. 2008). This sharing strengthens the bond among the supply chain members, enables every member to be fully aware of any business undertaking and then ensures that any new knowledge is acted upon on time (Zhou and Benton 2007 and Patnayakuni et al. 2006). However, studies do not show conclusively the relationship between information sharing and positive changes within the supply chain partners. Besides this

many studies have explored how information technology can be used to enable better information sharing by firms, others (Hsu et al. 2008) have even looked at what information sharing entails and what can make it work between firms. Little has focused on how information sharing can impact on the performance of a firm's supply chain. It is in this aspect of lack of comprehensive information on this area that the study sought to unearth the actual role of Information sharing on supply chain performance with reference to Kenya Power and GDC Companies.

2.9.3. Relationship between environmental factors and Supply Chain Performance

In recent years, environmental issues have severely affected human being daily life and practicing green practices has been seen as one of the approach to mitigate these problems. Green supply chain management (GSCM) is the contemporary approach in this era that should be started to be embraced by every industry as the performance of firm will improve drastically after the implementation of this practice (Friso and Kai 2014). In Minhaj et al. (2016) study, the environmental performance, economic performance, social performance and operational performance are proved to be improved due to the implementation of green practices. Several studies have been carried out to prove the performance improvement after adopting GSCM (Taticchi et al. 2013).

As mentioned by Chavez et al. (2015), to attract potential consumers and customers that concern about the importance of green practices and environmental friendly products and services, many corporations across the globe has started to adopt these environmental friendly practices to have a competitive edge in their markets. Being greener than their competitors might bring the meaning of having more customers to gain higher profit and the development of their corporations can be reached sooner than other similar companies in the same market. Furthermore, by implementing GSCM, corporations not only manage to attract more potential customer's sources but fulfilling the government regulations that requiring each corporation to achieve a standard of environmental protection approaches to ensure the environmental issues are not compromised by the authority while rapid development is ongoing. Organizations which cooperation with the authority might tend to obtain more opportunities in business aspect and survival chances when facing challenge (Vijayvargy et al. 2017).

2.9.4. Relationship between Human metrics and Supply Chain Performance

It is an established fact that many companies have not succeeded in maximizing their supply chain's potential because they have often failed to develop the performance measures and metrics needed to fully integrate their supply chain to maximize effectiveness and efficiency(Gunasekaran 2004, p. 265).The contribution of human behavior in performance measurement is mostly neglected. SCM managers are a critical factor in achieving strategic and operational objectives and changes in the supply chain (van Hoek 1998, p.187). It is found that firms lacking in appropriate cultural elements such as shared assumptions, values and artifacts tend to fail when implementing SCM initiatives (Mello 2005, p. 542). On top of that, the organizational commitment and governance for supply chain success are being studied (Fawcett 2007, p. 22).The findings indicated that four types of managerial support are needed to achieve the highest levels of supply chain success: top management support, broad based functional support, channels support and infrastructural/governance support.

Few more research works (Robinson 2005, p. 315) and Wouters 2009, p. 64–78) clearly support the need for a performance measurement system taking the holistic picture, including the human side and organizational issues. Research has identified a variety of collaboration enablers including the following: aligned objectives, a shared customer-oriented vision, technological connectivity, relationship trust, supplier development, and process redesign and integration (Burke 2005). The centrality of human resources is usually accounted for by the fact that nowadays organizations are facing such challenges as a need to increase productivity, expand into global markets, develop new technologies, respond to changes in the highly volatile marketplace, increase revenue and decrease costs, develop skilled and flexible workforce, and introduce changes (Burke 2005), which, of course, emphasizes the significance of human resources and capabilities. The present study involves behavioral determinants of SCM viz. Continuity, communication, power and trust and related variables are chosen from the existing body of literature.

2.10 Supplier Management

According to Kannan et al. (2012) there are three dimensions that underlie supplier management: effective supplier selection, meaningful assessment mechanisms of supplier performance, and innovative supplier development strategies. Carr et al. (2014) and Wagner (2010) extend from the three dimensions by adding identification and pre-selection of the suppliers. Another perspective taken into supplier management is the strategic perspective that is more abstract compared to the previous ones. The strategic perspective emphasizes the creation of long-term agreements and

strategic relationships as well as the integration of purchasing, manufacturing, and technology into the product value chain (Monczka et al., 2013).

Also, Van Weele (2005) views supplier management from the strategic point of view. He states that the main element of supplier management is strategy. When constructing the framework, firstly, it is important that the strategic aspect is taken into consideration because supplier management strategy should be aligned with the needs of the business (Hadfield, 2010). Traditionally purchasing functions have had very distant outlook on suppliers. The main focus has been on selecting the cheapest supplier (Iloranta et al., 2008). However, nowadays the conceptions have changed towards understanding the strategic aspect related to suppliers and the need to develop some plans and guidelines for managing them (Iloranta et al., 2008). Many companies have thousands of purchased commodities and suppliers, and not all of them should or could be managed in the same way. Therefore, creating strategies for segments that contain the suppliers of similar commodities seems rational. The biggest benefit of segmentation is that it helps companies allocate better their scarce resources (Iloranta et al., 2008).

Originally the purchasing portfolio model used for segmentation was developed by Peter Kraljic (1983). The segmentation is based on two criteria: strategic impact to the business and level of supply risk. Strategic impact can refer to high purchasing volume but also to effect on the core business. If the strategic impact is high, the supplier has a major impact on revenue, customers, and reputation of the company (Hadfield, 2006).

Supply risk refers to the risk of failure delivery by the suppliers. Risky suppliers are suppliers who are not 100 sure that they can deliver commodities according to the specifications and requirements for quantity and delivery timeframe. A challenging market situation may be caused by long timeframes for obtaining a commodity, high costs, or some difficulties with switching a supplier (Hadfield, 2006). The determinant of the degree of risk a supplier poses is availability (van Weele, 2005). For example advertising agencies that have some unique competencies can be regarded as bottleneck suppliers (Hadfield, 2006). Therefore, an effort should be made to find some new sources of supply to improve availability of needed goods or services (Monczka, 2005).

2.11 Key categories the Supply Chain Management

While the value chain and marketing approaches propose generic ideas and capabilities, proponents of the supply chain approach go a step further and identify specific activities, backed by detailed processes that can improve a firm's competitive advantage and success. Supply chain management encompasses end-to-end management of a product or service (Hakanson, 2013). All parts and products within the supply chain have to be delivered to factories, distributors, and customers. The choice of the transport mode (air, sea, or land) affects all other areas of supply chain management, such as warehousing, production, packaging, planning, location (of suppliers, manufacturing, and customers), inventory control, and information management (Coyle, et al, 2010). Therefore factors such as transit time, reliability, accessibility, security, impact on inventory, product degradation or obsolescence, trace-ability, and so on are important. Once the carrier is selected, computer models are used to optimize routing. The overall effectiveness of the shipping function is a major way to reduce costs (Council of Logistics Management, 2012). 21

More recently, managing the reverse flow of products has become an important ability. Reverse Logistics is the management of the reverse flow of products. This includes customer dissatisfaction with the product or at the end of the product life cycle, when the product is returned for recycling. Reverse logistics is driven by losses from customer dissatisfaction or the cost and challenges of recycling (Tibben-Lembke, 2010). All manufacturing or supply of services starts with a forecast of demand. The problem is that forecast errors can result in lost business (if forecast is low) or high inventories (if forecast is too high). Forecast errors lead to

The "bullwhip" effect and can cause excessive inventories, poor customer service, lost revenues, misguided capacity plans, and missed production schedules (Lee, et al, 2000).

Furthermore suppliers often push products to market, but more recently the retailers are interested in stocking only what the consumer will buy. The solution to the "bullwhip" effect is supply chain collaboration – an activity requiring two or more companies to share responsibility of exchanging common planning, management, execution, and performance measurement information (Anthony, 2013). Such a collaborative relationship transforms how information is shared between companies and drives change to the underlying business processes. Typically, the process is to get data from Point of Sales (POS) systems, which is sent back to the manufacturer, who arranges for quick replenishment. Consequently, production volumes and sales to retailers are based on sell-through information (Poirier, 2012).

The sell-through data are used to replenish products at a retailer through a process called continuous replenishment. Hence, if a firm has the ability to understand real-time market demand and respond quickly it is possible to manufacture only what sells in the market. This continuous replenishment process or the synchronized supply chain faces various barriers including lack of scalability (Barret and Oliveira, 2011). With accurate dynamic forecasts made from customer demand and promotions, the correct raw material inventory can be stocked. Furthermore, purchasing becomes a strategic function – hence strategic sourcing is initiated to reorganize the company’s supply base for materials and services in order to reduce external expenditures and internal processing costs (Ban field, 2013).

Aggressive companies have partnered with suppliers to reduce the number of suppliers by 40 % to 85% (Ban field, 2010). This supplier reduction program also reduces internal processing costs as larger orders go to fewer suppliers. In addition, aggressive companies review their supplier’s cost structure and technical capabilities in order to select the best supplier. They also set up internal supply management teams to manage the supply process (Riggs and Robbins, 2012). These initiatives result in higher volumes with better prices and quality from the short-listed suppliers. Costs can be reduced through industry collaboration and bidding via the supply chain. Normally, bidders attempt to position themselves as a low cost or differentiated (value added) supplier. There was a strong emphasis on asset management via lower inventories and warehouse space. Companies recognize that product inventories are expensive to hold. Therefore many

Companies implemented Just-In-Time (JIT) deliveries of parts, a methodology initially implemented by Toyota Motor Company (Shingo, 2014). Some companies have been more aggressive and have implemented vendor-managed inventory (VMI).

For example Apple Computer Inc. has set up a partnering deal with suppliers. A supplier keeps inventory in the warehouse on consignment and moves it to the factory on demand – only then is it considered sold. Moreover, inventory occupies warehouse space, which is costly – therefore there is a drive to reduce multiple warehouses. Hence, regional distribution centers, instead of a warehouse, have become popular (Blakeley, 2010).

For example, Philips has reduced its warehouses for consumer products from 22 to 4 in Europe. The re-distribution centers are typically located within or near major markets. This can often result in longer delivery cycles, but can be compensated with supply chain programs like continuous replenishment. The next step is to manage inventory by a centralized information system (Christopher, 2013). Japanese companies led by automobile industry have implemented lean

manufacturing techniques such as Kanban which is a system that emphasizes manufacturing in small lots with minimum inventory build-up in the production process. For example, Kanban manufacturing and Just in Time (JIT) delivery of parts This results in lower inventories, better deliveries, and lower costs (Liker and Wu, 2010). Another activity to lower costs is outsourcing of manufacturing and manufacturing closer to the customers and large markets. The reason for this is that in every industry customers are expecting greater customization of products and services to meet their individual needs.

2.12 Supply Chain Management Problems

The supply chain management must address the following problems such as; poor distribution network configurations (number and location of suppliers, production facilities, distribution centers, warehouses and customers), poor distribution strategy, lack of information needed to integrate systems and processes through the supply chain to share valuable information, including demand signals.

According to Bialy and Farmer, (2012), one of the most important aspects for the buyer of assuring supplies is the maintenance of good supplier relationships. Good supplier relationships can be a major asset to the buyer not only in assuring supplies but also in maintaining quality levels and good prices. Good supplier relations have always been an important factor in the maintenance of supplies. This change has been brought by the increasing use made by buyers of techniques such as quality assurance, zero defect policies, statistical process control (SPC) and Just-in-Time (JIT), all of which place additional responsibilities on to suppliers who will only be willing to accept them if they see some long-term benefit for themselves in the relationship.

So in return for accepting these additional responsibilities it has become common to offer the supplier a long – term prospect of business in what is referred to as a partnership relationship with both parties offering and accepting complementary responsibilities and helping to solve problems to their mutual benefit. The partnership approach clearly influences the nature of the relationship between buyer and sellers. Choosing the right supplier is frequently the key to obtaining quality, performance and price. One of the most important aspects of the supplier selection process for important contracts is the plant visit known as the vendor audit or capability survey. It is most important that such surveys for the determination of supplier capability are conducted objectively (Bialy et al, 2011).

According to Monezka et al (2013) , when inventory moves so fast that firms essentially hold zero inventory on hand, they are following a system know as the lean supply chain – a combination of Just-in-Time purchasing, Just-in-Time transportation and just –in-time production. All three elements combined to create a supply chain that minimizes inventory investment and eliminate waste.

John Shook (2014) defines lean as a philosophy that seeks to shorten the time between the customer order and he shipment to the customer by eliminating waste. Womack and Jones (2013), in their book *Lean Thinking*, argue that all activities associated with lean attempt to achieve three objectives: flow, pull and striving for excellence. Flow means that inventory moves through the supply chain. Those in charge of materials at the plant their key metric is to have inventory available for production schedule and a secondary focus of not having too much or too little inventory. Those in charge of inbound and outbound yard at the plant should be managing all the inbound trailers, having high asset utilization and velocity in the shipping yard, and high productivity in the work place.

Practitioners of lean supply chain focus on eliminating physical waste (in the form of inventory) and process waste (unnecessary steps in a value chain or time during which assets or goods are unnecessarily idle). Lean supply chain focuses on driving waste out of the entire value chain for a product. To have a truly lean supply chain firms have to go outside their four walls. They have to reach their suppliers because there are going to be constraints present at but their suppliers and customers (Nussle and Morgan 2011). Implementing a Just-in-time (JIT) purchasing system is the first major element of a lean supply chain. A JIT purchasing system means receiving frequent receipts of materials from suppliers to meet immediate requirement.

A JIT purchasing system is an operating philosophy that does not tolerate high inventory levels, less than perfect quality, or other inefficiency and waste between buyer and seller. It is a continuous supply chin improvement process that requires cooperation, coordination and information sharing to eliminate inventory throughout the supply chain (Monezka et al 2015).

JIT – in Time transportation, another key element of a lean supply chain refers to the efficient movement of goods between the buyer and seller. This involves frequent deliveries of smaller quantities directly to the point of use at the purchaser. A lean transportation network relies on company – owned or contracted vehicle that pick up and deliver according to a regular and repeatable schedule in a closed loop. JIT transportation systems feature certain innovations that

can further eliminate supply chain waste. This includes specialized transportation vehicles that allow easy loading and unloading of smaller quantities. The second innovation includes the extensive use of returnable plastic or steel containers. As drivers pickup materials from suppliers they leave empty containers that were used in earlier deliveries (Moneszka et al, 2013).

2.13. Measures and Tools to Manage and Improve Supply Chain Management

Any supply chain activity or system can be managed better or improved. To this end there are metrics and tools to help achieve this goal. Tyndall et al. (2015) have proposed looking at three facets: total cost approach, enterprise wide demand/supply matching, and a dashboard of select metrics (consisting of operational costs, time to response, margins, and customer service).

Another more comprehensive approach is called SCOR, or Supply Chain Operational Reference (Supply Chain Council, 2012). This consists of a series of 18 metrics that measure customers/quality, time, costs, and asset utilization. With these metrics a firm can measure and strive to keep improving supply chain performance by getting a better score (Supply Chain Council, 2001). Firms are advised to use competitive benchmarking to review their performance in each category against the industry leaders, and then endeavor to emulate their success. Some proponents recommend other tools such as process mapping, and reengineering to review current supply chain processes and improve them based on customer needs (Poirier, 2013).

2.14. Empirical Review

Factor affecting supply chain management performance has reviewed in different angles. therefore , almost of all they were limited to the major gaps of reviewed articles & research are failure to make organization general conclusion, considering the enterprise as a takeover to others, lacking focus on supply chain management relationship with SCMS and operational performance. According to Ellen (2014), the fundamental factors to establish successful commodity exchange includes having an efficient and robust trading platform and viable regulation and enforcement. A comparative study by UNCTAD (2012) on commodity exchanges also stress the wide range of development impacts exchanges may have on developing countries in terms of price discovery, risk management, development of commodity markets and finance, market internationalization and use of IT services stressing on price discovery. Lau et al. (2001) studied the social/organizational perspective to identify the factors that affect investors' adoption of online trading. They identified that the decision to use the online trading system is influenced by the perceived usefulness, relative advantage, perceived ease of use, and compatibility.

It is Ethiopia's latest attempt to enhance the performance of agricultural markets. Conceived as a meeting point for buyers and sellers of grains (sesame, haricot beans, maize, and wheat) and coffee, ECX seeks to organize efficient and transparent market operations and thus contribute in solving the country's longstanding problem. Gabre-Madhin and Gog gin (2014) argue that a commodity exchange in Ethiopia holds the potential to remedy some of the above-mentioned market inefficiencies and produce a more integrated the ECX market. Gabre-Madhin and Gog gin (2005) further argue that the introduction of an exchange is justified from a bottom-up

Perspective: both farmers and traders have a demand for a better-organized domestic and regional market, and for improved agro- processing.

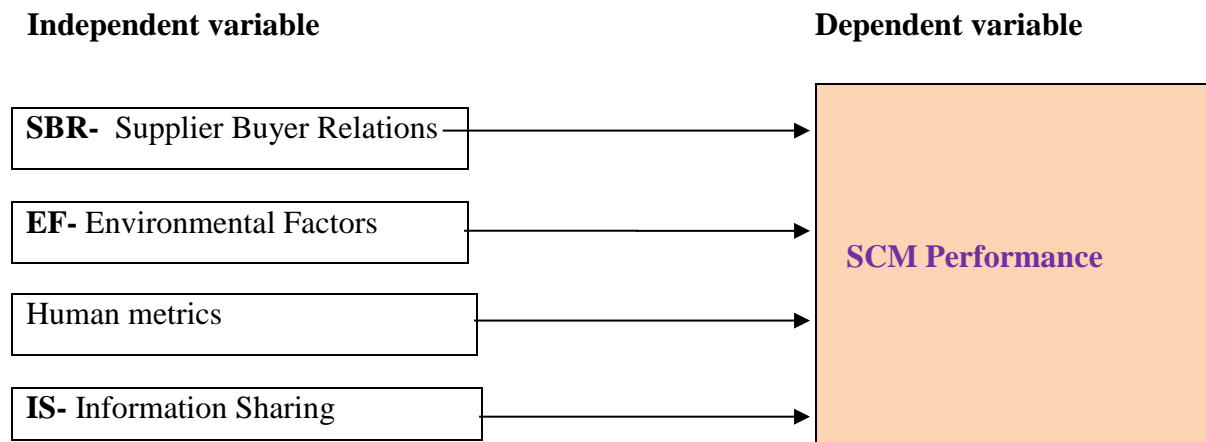
In addition, a commodity exchange can potentially produce a more efficient and integrated agricultural market by providing actors with better information about market prices, quality controls and product standards as well as a legal framework to reduce the risk of default. However, the success of a commodity exchange depends critically on the economic order and the linking of institutions such as market information systems, quality certification, regulatory frameworks and legislation, arbitration mechanisms, and producer and trade associations.

2.15. Summary of Empirical Review and Research Gap

This chapter has present relevant literature on the determinant of supply chain management performance in different angles. Factor affecting supply chain management performance has reviewed in different angles. Therefore, almost of all they were limited to the major gaps of reviewed articles and research are; failure to make organization general conclusion, considering the lacking focus on supply chain relationship with SCMS and operational performance .In general, what to understand from theoretical and empirical part study. This research would be fills those gap by investigation the determinant of supply chain management performance in case of Jimma ECX.

2.16. Conceptual Framework

Supply chain management performance is affected by many variables in organizations. These factors are interrelated and depend on each other. SCM Performance is dependent variable and SBR, EF, and IS are independent variables. Among many variables affecting/influencing supply chain management performance, the researcher selected those depicted on diagram because the jimma ECX has high interaction with buyers, suppliers. So, conducting research on this variable is important. Since, the organization has interaction with its environment from day to day. Studying this variable is very important to increase the SCMP of an organization. The human metrics and information sharing are also very important to determine SCMP. Therefore, the researcher selected the aforementioned variables.



Source: Researcher Conceptual Model adopted from literature review

Figure 2.1 Conceptual frame works

CHAPTER THREE

3. RESEARCH METHODOLOGY

In this chapter, the research design and data collecting methods are presented followed by a justification of each chosen method that is most suitable for this research. Thereafter, the different data analyzing methods are presented and justified in order to analyze the collected empirical data in the next chapter. This is then followed by a discussion regarding quality criteria of validity and reliability.

3.1. Research Design

As the purpose of this study is to examine the determinants of supply chain management performance, descriptive survey design was used. Since the study was descriptive this type of case study would be used to describe an intervention or phenomenon and the real-life context in which it occurred (Yin, 2003). It facilitates the understanding of something. The case would often looked at in depth, its contexts scrutinized, its ordinary activities detailed, and because it was help the researcher pursue the external interest more over case study research design is chosen because it will be possible for the researcher among other things, to keep attention on a specific group of people within a specific context in the study area. To “catch” an existing, unique, complex and very interesting single case; and as Yin (2004) noted, a case study was focus on a contemporary issue.

3.2 Sources and types of data

The data required to conduct this study was from both primary and secondary sources .These data we recollected from the targeted respondents. These data helps to provide information that can help to better understand the concept, identify the gap, and serve as a foundation in formulating appropriate research design.

3.3. Sampling Design

3.3.1 Target population

The target populations of this study were Ethiopian commodity exchange Jimma district employee, managers and partners (supplier agent and exporter agent) of the organization. Accordingly, the total numbers of the targeted population was 147, out of these 22 of them are from supplier agent, 11 of them were from the exporter agent, and the rest 114 are from the employee of Jimma EXC.

3.3.2 Sampling Technique and Sample size

Both non-probability and probability sampling techniques was used. In the case of non-probability sampling, purposive sampling technique was used to target the sample respondents from the administration office, each work process coordinators. The samples respondents, includes, head and vice head, coordinator / head of different work process in organization. With regard to probability sampling, simple random sampling method was applied to select sample respondents from the lists of those workers in different work process. The aim of using this method is that it helps to minimize sampling bias and provide equal chance for all population as well as it allows simply draw samples from the lists.

The researcher applies Yamane (1976) sample size determination formula to find the sample size of respondents.

$$n = \frac{N}{1+N(e)^2}$$

n= sample size need to choose

N= total population size of the study

e = error level which is 95% of confidence level

By using this sample size formula from the target population of 147 employees in the sample of the respondents 107 sample size respondents were selected.

Since the avoidance of the impartiality is necessary with purposive sampling to conduct with the purpose of the thesis.

During the covid-19 it is difficult to gate all population so to find out the validity of the respondent

3.4 Methods of Data Collection

3.4.1 Questionnaire

In an attempt to collect data, questionnaires were prepared for the employee of EXC jimma district and used as main source of data gathering instrument. The items were prepared in accordance with the designed objectives and basic questions to be answered in the study concerning the determinants of supply chain performance management at Ethiopian commodity exchange Jimma branch .The first part of the questionnaire was about the respondents which comprised of role of the respondent, departments, sex, age, responsibilities and experience to be answered by the respondents from the given options. Items in the two reflect major determinants which were used to rate different variables items that determine supply chain performance management. These were presented in seven tables with five possible factors presented to be rated by the respondents from strongly disagree to strongly agree

3.4.2 Interview

In addition to the questionnaire, interview was conducted with key officials of the exchanges. The aim of the interviews were to investigated and acquired a clear understanding about determinants of supply chain performance management as general at Ethiopian commodity exchange Jimma branch . The researcher in accordance with the objectives of the study and the basic questions rose in the statement of the problem.

3.5 Methods of Administration/ Quality Criteria

3.5. 1.Content validity

The idea of validity to questionnaire refers to the steps taken by the researcher to ensure clarity, wording and ordering of the questions. Thus, to ensure the validity of the questionnaire, it would be necessary to ask sample of the employee and leaders of the organization questions which would be written precisely and clearly. Moreover, words used in the questionnaire should have specific and clear meanings to all respondents so that they would be give similar responses to the items given. To achieve these purposes, a questionnaire would be tried out.

Content validity of the questionnaire was achieved by submitting the questionnaire to my advisors, who is an expert in the area. To examine and evaluate the content of the questionnaire before the final version distributed among the participants and a pretest was made with selected respondents. In addition, the questionnaire’s reliability, especially its internal consistency was checked through the pilot study. Internal consistency is a measure of reliability of items of a questionnaire which would be intended to measure the same construct. The researcher checked all the items in the pilot test and maintained those questions can serve the purposes, and discarded.

3.5.2 Construct validity

One measure of validity as described by Burney and White (2007). This was achieved by correct referencing, recording interview guides and saving original transcripts.

3.5.3 Reliability test

Golafshani (2003) defines reliability as the extent to which results of a study are consistent over time and there is an accurate representation of the total population under study. According to Tokeetal, (2012), the aim of reliability analysis is to find the extent to which a effect procedure produced the same result if the process is repeated over and over again under the same conditions. The most common technique used in the literature to assess the scales reliability and stability is use of the CronbachAlpha Statistics. Cronbach Alpha should be above 0.70 to produce a reliable scale and any scale with Cronbach Alpha less than this standard should be eliminated Sekaran (2005).

Table 3.1. Reliability statistics

Cronbach Alpha **No of items**

Cronbach Alpha	No of items
.874	45

Source: Own survey result, 2020

The Cronbach's Alpha coefficient of the study was 0.874. George and Mallery (2003), states that at least a value of 0.7 is recommendable and therefore the instrument was accepted as highly reliable

3.6. Methods of Data Analysis

In order to achieve the purpose of this study, both the descriptive and inferential analysis were used. Descriptive analysis was applied to describe the data and examine relationships between variables. The inferential analysis was used to examine causal relationships of different variables. Among descriptive statistical tools frequency, percentage, mean and standard deviation were used. From the inferential statistics correlation and multiple regressions were used. In the case of qualitative data textual explanation techniques was used. The collected was entered into a computer and was processed using the Statistical Package for Social Sciences (SPSS) version 21 was used for data analysis.

3.7. Ethical Consideration

The study was ethically cleared from Jimma University College of business and economics department of management. Since the researcher used the data from employees and officials which was collected through questionnaire, permission was obtained from the respondents. To maintain the confidentiality of the information provided by the respondents, the respondents was instructed not to write their names on the questionnaire and assured of that the responses was used only for academic purpose and kept confidential. Brief description of the central objectives or purpose of the study and the potential benefit of the research outcome to respondents and selected officials was clearly given in the introductory part of the questionnaire so as to motivate them and participate in the study and provide pertinent information about the organization under study. Finally, respondents were included in the study based on their free will.

CHAPTER FOUR

4. ANALYSIS, INTERPRETATION AND PRESENTATION

4.1 Introduction

This section is expected to analysis, interpreted and presents the data that would be obtained from quantitative and qualitative data. The researcher was designed 30 questions for the 107 of the sample size of the study, and all distributed questionnaire were returned back. The interview was also carried out between the Jimma ECX officials to cross checked the quantitative data obtained through questionnaire. Finally, the data obtained from the respondents were analyzed concurrently in which the result from both data were analyzed and interpreted parallel, and intermingle that described the result.

Table 4.1: Socio-Demographic Information of the Respondents

No		Characteristics	Frequency (n=107)	Percentage (%)
1	Sex of respondents	Male	72	67.3
		Female	35	32.7
		Total	107	100
2	Age of respondents	20-30	23	21.5
		31-45	72	67.3
		46-55	11	10.3
		Above 56	1	0.9
		Total	107	100
3	Educational Level of respondents	None educated	-	
		Write and read	-	
		Primary level	-	
		Secondary school	5	4.7
		Certificate	8	7.5
		Diploma	37	34.6
		Degree	55	51.4
		Postgraduate	2	1.9
		Total	107	100
4	Service year	1-3 Years	10	9.3
		4-5years	12	11.2
		6-8years	36	33.6
		Above 9 years	49	45.8
		Total	107	100
5	Marital status of respondent	Married	87	81.3
		Single	18	16.8
		Divorced	1	0.9
		Windowed	1	0.9
		Total	107	100

Sources : Questionnaire survey, 2020

Regarding the socio demographic features of the respondents, 67.3% of the respondents were male, and the rest 32.7 of them were female. As shown here in above the table the majority of the respondents, 67.3% were aged between 31-45years and followed by 21.5 %aged interval of 20-30years, 10.3 %were aged between 46-55Years, and 0.9% of the respondents are aged above 56 years respectively.

This shows that the majority of respondents are found between ages of 20 to 45 years and the remaining were included in the age interval of 46 to 56 and above. Accordingly the exchange said to be composed with the mixture of youth and moderately old aged employees in which they are considers as active work force and ready to act when comfortable situation is set for, as they are in youthful age.

The educational levels of the respondents are presented bachelor holders are larger in number 51.4 % followed by diploma holders 34.6% , while certificate graduates were 7.5%,secondary school 4.7% whereas, masters holder are the least from the respondent which constitutes 1.9% only. As it has been shown herewith, all the exchange's employees were educated and this indicated that the respondents have hand a vital contribution for the validity and reliability of the responses they have given for the questionnaires.

Besides the level of education is considered as it is important for this dynamic Exchange's the qualified and educated person has thought to increase intrinsic motivation and behaviors, and individual acts in responsiveness and the greater possibility that the exchange would be successfully to accomplish it objective, hence the researcher realized that as the exchange is a dynamic, and composed of intellectual workforce who has been contributes a lot for its forward success.

Service year is one of the organizational variables which measure the length of the service year of employees in certain organizations. As it is illustrated in table above the majority of the respondents worked at the organization for nine years and above, comprising 45.8 % of the total respondents and 33.6 % had been stayed with organization for 6 to 8 years, whereas only 33.6% were worked in ECX Jimma Branch for 4to 5 years. Among the respondent 11.2% were worked with the exchange's not more than 1 to 3years which constitute very few numbers of the respondents.

As the result showed that most of the responded has stayed with the exchange and has long lasting working experience and supposed that this has greater contribution and made the study fruitful as they had good understanding about the study areas and the subject matters as well.

With regards to the marital status of the respondents, as depicted in the table above, majority of The respondents are married comprising 81.3%, in the same manner 16.8% of the respondents Single, 0.9 of them were divorced, and 0.9 widowed respectively.

Finally, the relation of the analysis of the demographic characteristics of the participants are clearly indicated that, how all most all respondent of this organization is mature enough to perform the organizational activities.

4.2. ANALYSIS AND INTERPRETATION OF DATA

TABLE: 4.2. Supplier -buyer relations analysis

1. Supplier Buyer Relation	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	mean	SD
We consider quality as our number one criterion in selecting suppliers	8(18.7%)	58(54%)	23(15.3%)	16(10.7%)	2(1.3%)	2.22	.92
We regularly solve problems jointly with our suppliers	15(16.7%)	61(59.3%)	21(14%)	12(8%)	3(2%)	2.19	.88
We have helped our suppliers to improve their product quality	21(14%)	50(55.3%)	17(18%)	15(10%)	4(2.7%)	2.32	.93
We have continuous improvement programs that includes our key suppliers	10(13.3%)	55(58.7%)	23(15.3%)	16(10.7%)	3(2%)	2.29	.90
We include our key suppliers in our planning of gk8oal setting activities	17(11.3%)	17(6%)	9(6%)	60(55.3%)	4(16%)	3.53	1.22
We actively involve our key suppliers in new product development process	19(12.7%)	51(49.3%)	17(24.7%)	19(12.7%)	1(0.7%)	2.39	.89
<i>Group mean</i>						1.99	0.82

Sources: Questionnaire survey, 2020

As it can be seen on the table 4.1 that stated about the suppliers buyers relation factors analysis , majority (73%) of the participants said that disagree , and (15%) of them are neutral , and the rest (12%) of them replied that agree . This revealed that, the organization did not consider as criterion numbers in selecting the suppliers.

As it can also show on the same table , participants were asked about how they regularly solve the problems with jointly with suppliers ,majority (76%) of them replied disagree , and (14%) of the participants were remain neutral , and the rest minority (10%) of them said agree , and this revealed that the organization is not working with suppliers to solve problems of the organization .

Regarding ,how the organization helped the suppliers to improve their products quality , majority (69%) of them replied that disagree , and (18%) of them were being remain neutral , and the rest minority (13%) of the participants were agree about the organization to help the suppliers to improve their quality , and this portrayed that organization is not stand in position to help suppliers to improve their product quality .

Furthermore, participants were also asked about continuous improvement programs, and majority (72%) of them were disagree, and the rest (15%) were being neutral, and (13%) of them were agree about the asked questions. Therefore, this revealed that the organization has problems in continuous improvement programs that included key suppliers.

In addition, participants were also asked about planning and goals setting of the organization, majority (74%) of them said that agree, and (9%) of the participants were neutral, and the rest (17%) of the participants were disagree. This portrayed that Jimma ECX includes their suppliers in their goals and setting planning , which is strong side of the this organization.

Finally, majority (62%) of the respondents replied disagree, and the rest (25%) of them are being neutral, and the rest (13%) were agree about the asked questions. Therefore, this conveys that suppliers were not involving in a new product development process

A successful strategic alliance and integrated relationship with suppliers and buyers is very much needed. It should be revolved around trust, loyalty, positive sum game (a win-win relationship), cross-functional teams, achieving common goals and collaboration (Chandra and Kumar 2000,

p.46). Generally the supplier buyer relationship scored an average mean of (M=1.99 and SD=0.82) and the result showed the disagreement of the employee towards the constructs. But in supply chain management strategies, supplier relationship activities play an important role (Wisner 2003, p.19).

Through close relationship supply chain partners are willing to share risks and reward, and maintain the relationship on long term basis (Cooper and Ell ram 1993, p.17). A long-term perspective between the buyer and supplier increase the intensity of firm-supplier integration (Toni and Nassimbeni 1999, p.21). Therefore the organizations should focus on this construct for further improvement.

Table: 4.3 ENVIRONMENT FACTORS ANALYSIS

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
Globalization has helped in our organization performance	19(12.7%)	55(52%)	13(22%)	15(10%)	5(3.3%)	2.39	0.95
We are affected by the infrastructure facilities provided by the government	14(9.4%)	55(52%)	15(23.3%)	18(12%)	5(3.3%)	2.48	0.94
Customers requirements regarding product features area difficult to forecast	15(10%)	64(58%)	10(20%)	16(10.7%)	2(1.3%)	2.35	0.85
The properties of materials from suppliers can vary greatly within the same batch .	17(11.3%)	54(51.3%)	19(26%)	15(10%)	2(1.3%)	2.39	0.87
Suppliers product quality is unpredictable .	3(2%)	14(9.3%)	12(21.3%)	61(56%)	17(11.3%)	2.35	0.87
Suppliers delivery time can easily go wrong	19(12.7%)	53(50.7%)	17(24.7%)	14(9.3%)	4(2.7%)	2.39	0.92
Technology is changing significantly in our organization	20(13.3%)	54(51.3%)	15(23.3%)	13(8.7%)	5(3.3%)	2.37	0.94
<i>Group mean</i>						2.4	0.9

Sources : Questionnaire survey, 2020

As it can also be seen on table 4.2 concerning the environmental factors , participants were also asked about how globalization helped the organization performance , majority (65%) of the asked respondents said disagree, (22%) of them were remain neutral , and the rest (13%) participants were agree, . This indicated that the organization is not effectively use globalization in order to improve the performance of this organization.

Concerning the infrastructure facilities provided by the government, majority (62%) of the participants replied that disagree,(23%) of them were being neutral, and about (15%) of them were agree. Therefore, this confirms that the organization is not affected by infrastructure facilities provided by government. Progressively participants were also asked about customers 'requirements, majority (68%) of them replied that disagree, (20%) of them were being neutral, and (12%) k2of the respondents were replied agree .So, this indicated that it is not difficult to forecast the customers' requirements that concern product features.

Next, regarding the properties of materials, majority (63%) of the participants replied disagree, (26%) of them were being neutral, and the rest minority (11%) of them said agree. This portrayed that the organization is not affected by the varieties of products that come from the same batch.

Regarding the suppliers product quality unpredictable, majority (67%) of the participants was agree,(21%) were remaining neutral, and (12%) disagree. This revealed that supplier's product quality is unpredictable in this organization.

Concerning the delivery time can easily go wrong, majority (63%) of the participants said disagree, and (25%) of the respondents were remain neutral, and the rest (12%) were replied agree. This revealed that the supplier delivery time were not easily goes wrong.

Finally, majority (65%) of the participants replied that disagree, (23%) of the asked participants were replied neutral, and the rest minority (12%) replied agree. Therefore, this portrayed that technology is not changing the significantly in the organization

Environmental factor is another core dimension of supply chain management performance. The depict table 4.2 Environmental factor the scored an average mean of ($M=2.4$ and $SD=0.9$) and the result showed the disagreement of the employee towards the constructs. Pin points the mean value of each item related to environmental factor with its aggregate average.

The environmental factor constructs scored a value less than the average and this clearly indicated that the effects of globalization, technology and the growing need for environmental responsibility and sustainability is forcing organizations and individuals to make changes in the way of the organizations towards environmental factors.

Table: 4.4 Human metrics analysis

3. human metrics	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
Our organization is powerful enough to ask our supply chain partner to re-adjust their product	13(8.7%)	59(54.7%)	21 (27.3%)	12(8%)	2(1.3%)	2.39	0.81
We and our supply chain know the strength and weakness of each other very well	19(12.7%)	64(51.3%)	12(28%)	10(6.7%)	2(1.3%)	2.33	0.83
Our organization is powerful enough to ask our supply chain partner to re-adjust price strategy	15(10%)	59(54.7%)	16(24%)	16(10.7%)	1(0.7%)	2.37	0.83
Our organization can provide training support to our supply chain partner	13(8.7%)	62(56.7%)	16 (24%)	15(10%)	1(0.7%)	2.37	0.81
We willingly share all information that might help your supplier make better decisions	12(8%)	65(58.7%)	21(27.3%)	8(5.3%)	1(0.7%)	2.32	0.73
Our supply chain partner perceives that our organization is perfectly honest and tk2ruthful.	15(10%)	67(60%)	12(21.3%)	12(8%)	1(0.7%)	2.29	0.78
<i>Group mean</i>						2.4	0.8

Sources : Questionnaire survey, 2020

As table 4.3 portrayed that majority (64%) of the participants replied that disagree, (27%) of them replied neutral, and the rest, (9%) of the respondents said that agree. So, this revealed that the organization is not powerful enough to ask supply chain partners to re adjust their products.

Participants were also asked about how the organization and supply chain know the strength and weakness of each other , majority (64%) of the participants were disagree,(28%) of them were being neutral and about (8%) of the participants were agree .This show that , the organization and supply chain partners not know their strength and weakness very well in the organization .

In addition, on the questions about re adjusted prices strategy, majority (65%) disagree, (24%) being neutral and the rest (11%) of them said agree. Therefore, this indicated that, the organization is weak to ask the supply chain partners to re adjust prices strategy.

As table 4.3 also indicated that (65%) of the respondents were replied that disagree on the training support given by the organization to supply chain partners, (24%) of the participants replied that neutral, and (11%) of them were agree on it. This revealed that Jimma ECX organization is not providing training to support the supply chain partners.

Regarding the willing share of the information, majority (67%) of the participants were replied disagree, (27%) were neutral,(6%) of the respondents were said agree... So, this portrayed that the organizations willing share of information to help decision is weak.

Finally, participants were asked about honesty and truthfulness of the organization, majority (70%) of them replied that disagree,(21%) of the respondents were remain neutral, and minority (9%) of the m were said agree. Therefore, this indicated that the supply chain partners doesn't perceived that the organization is perfectly honest and truthful , rather they perceived as the organization is imperfectly acting in handling the daily actions of the supply chain partner.

Table 4.3 depicts the average mean value with regard to the human metrics and the dimension scored an average value of (M=2.4. and SD=0.8) and the figures pointed out the disagreement of the respondents towards the dimension. This conditions significantly affecting the SCM effectiveness (Tony and Kelvin 2007, p.19) and SCM managers are a critical factor in achieving strategic and operational objectives and changes in the supply chain (Hoek et al. 2002, p.24).

In addition, leadership management factors contribute to the effective business relationships of SCM. The result scored a low score for leadership management construct and The leadership management encompasses compatible culture/values, respects confidentiality, accepts responsibility, demonstrates positive management skills, positive attitude, makes decisions quickly, demonstrates ability to evolve, behaves professionally, engages in ethical practices, provides an atmosphere of continuous improvement and regularly reviews performance and capabilities (Meier et al. 2004, p.33).

TABLE 4.5 INFORMATION SHARING ANALYSIS

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD
4. Information Sharing							
Our organization is powerful enough to ask our supply chain partner to re-adjust their product	13(8.7%)	59(54.7%)	21 (27.3%)	12(8%)	2(1.3%)	2.39	0.81
We and our supply chain know the strength and weakness of each other very well	19(12.7%)	64(51.3%)	12(28%)	10(6.7%)	2(1.3%)	2.33	0.83
Our organization is powerful enough to ask our supply chain partner to re-adjust price strategy	15(10%)	59(54.7%)	16(24%)	16(10.7%)	1(0.7%)	2.37	0.83
Our organization can provide training support to our supply chain partner	13(8.7%)	62(56.7%)	16 (24%)	15(10%)	1(0.7%)	2.37	0.81
We willingly share all information that might help your supplier make better decisions	12(8%)	65(58.7%)	21(27.3%)	8(5.3%)	1(0.7%)	2.32	0.73
Our supply chain partner perceives that our organization is perfectly honest and truthful.	15(10%)	67(60%)	12(21.3%)	12(8%)	1(0.7%)	2.29	0.78
<i>Group mean</i>						1.9	0.9

Sources: Questionnaire survey, 2020

As table 4.4 also revealed that ,participants were also asked about information sharing factors , among the questions under this factor ,respondents were asked about how trade partners share information with them , majority (86%) of the participants replied that disagree, (7%) of them were being neutral, and also (7%) were said agree, This implies that trading partners were not share information with the organization.

As it can also be seen on the table 4.4.4 majority (85%) of the participants were said disagree and about (11%) of them were being neutral, and the rest (4%) of the participants were agree upon it. This portrayed that partners are not being well informed about factors affect the business of the organization.

Regarding how partners share business knowledge, majority(83%) of the participants were replied that disagree , (13%) of them were being neutral , and the rest (4%) of them were agree about

share business knowledge. Therefore, this portrayed that partners were not share business knowledge with organization.

Regarding the exchange information established in business planning, majority (83%) of the participants were replied disagree, (13%) of the participants were remain neutral, and the rest minority (4%) of the participants were agree. Therefore, there is no exchange of information established in business planning of this organization.

Concerning how partners are being informed each other, majority (85%) of the participants was disagree, (10%) were being neutral, and (5%) were agreed. This confirms that, trading partners were not keep informed about changes that may affect the others partners.

Finally, under the sharing information participants were asked about information exchange between supply chain partners and the organization, majority (85%) of the participants were replied that disagree, (12%) of them were being neutral, and the rest minority (3%) of the respondents said that agree. Therefore, this revealed that information is not exchange between supply chain partners and the organization

Information sharing is another element of supply chain management performance. Table 4.4 depicts the average mean value with regard to the information sharing and the dimension scored an average value of ($M=1.9$ and $SD=0.9$). It seems surprising that, the respondents are under complain due to the absence of informing trading partners in advance of changing needs and sharing proprietary information. Respondents also show their disagreements on existence of informing about issues that affect the business and sharing of business knowledge of core business processes by trading partners.

The above result clearly shows that there is a problem of information sharing in Jimma Ethiopian Commodity Exchange organizations. But recent technological developments in information systems and technologies have the potential to facilitate the coordination among different functions, allowing the virtual integration of the entire supply chain. Therefore the organization should be practiced information technology and systems for reducing the time-lag between measuring the performance and applying them for any corrective actions. Low information transparency within the network, e.g. in inventory levels or planned customer

demand, is a major weak point. It is generally agreed that a lack of information may be a 'killer criteria' in a customer oriented, competitive market (Simatupang and Sridharan 2002, p.39).

4.3 .Descriptive Statistics of the dependent variable

Table 4.6.The supply chain management performance

Descriptive Statistics			
VARIABLE	N	Mean	Std. Deviation
Ability to respond to and accommodate the periods of poor organizational performance such as in put and out put	107	3.23	.965
Ability to respond to and accommodate the periods of poor supplier performance is clear and on time	107	3.15	.977
Ability to respond to and accommodate new products, new markets or new competitors are fear	107	3.06	1.016
Total cost of distribution, including transportation and handling cost are easy and manageable	107	2.98	1.000
Total cost of overall organization , including labor, products and re-work cost effectively	107	2.60	.938
Cost associated with held inventory is implemented properly	107	1.81	.475
Sales are visible and fair	107	1.71	.485
Customer response is given on time	107	1.59	.521
Valid N (list wise)	107	2.5	0.79

Source: own Survey results, 2020

As table .4.6 indicated that ability to respond to and accommodate the periods of poor organizations is high mean 3.23 and .965 standard deviation, which is show poor implementation and has impacts on the supply chain management performance. Regarding the ability to respond to accommodate the periods of poor suppliers performance , there is 3.15 mean with .977 , which is still high and the ability to respond accommodate periods of poor suppliers performances is influence the supply chain management performance . The cost associated with held inventory is 1.81 mean with 0.475 standard deviation which is low and doesn't have effects on the supply chain management performance

4.4. Comparison of Supply Chain Integration Dimensions Descriptive Mean Score

In order to compare the respondents supply chain management performance, descriptive statistics of mean and standard deviation was used. The mean indicates to what extent the sample group averagely agrees or disagrees with the different statements of supply chain management performance used in this study, where as the standard deviation describes how the responses are diverse from the mean for a given performance items. The higher the mean, the more the respondents agree with the statement while the lower the mean the more the respondents disagree with the statement.

In this section, Dimensions SCM performance results from the respondents was compared using the grand mean and standard deviation to show supply chain management performance for Jimma branch ECX. In summary the mean and standard deviation of each determinants SCM performance are presented (see table 4.7).

Table 4.7. Summarizes the Mean score and standard deviation results of the four SCM performances.

Variables	N	Mean	Std. Deviation
	Statistic	statistic	Statistic
Supplier Buyer Relation	107	1.99	0.82
Environmental Factors	107	2.5	0.9
Human Metrics	107	2.4	0.8
Information Sharing	107	1.9	0.9
Group Mean		2.1725	0.855

Source: Own Survey result, 2020

As described in the table 4.6. ,the determinants of supply chain management performance with the highest mean score is with Environmental Factors a mean value of 2.5 followed by Human Metrics 2.4, Supplier Buyer Relation 1.99 and finally Information Sharing 1.9 respectively ,which indicate that the respondents show disagreement to the questions raised during the survey. On the other

hand, all determinants (IV) are below 3 standard deviation is scored. That means the respondents hold similar opinions and disagree in relation to these statements and variables.

In general, according to the grand mean of each determinant (Environmental Factors, Human Metrics, Supplier Buyer Relation and Information) of SCMP, it indicates that the organization is not properly applying or using them.

4. 5. Determinants of supply chain management performance and different factors

Based on the results of the correlation analysis in table 4.8. below, the relationship between Overall factors (suppliers buyer, environment, human metrics, information sharing) and supply chain management performance

The relationship between information sharing, Environmental Factors and Human Metrics supply chain management performance was moderately correlated with $r= 0. 484, 0.367$ and 0.352 respectively. However, there was weak suppliers buyer factors at $r= 0.276$. This shows as all factors should be considered to determine the supply chain management performance at the study area.

Table 4.8. Correlation between SCM performance and different factors (N=107)

Correlations		Suppliers buyers	environmen t	Human metrics	Information sharing	Supply chain mgt performance
Spearman's rho	Suppliers buyers	1				
	environment	.161*	1			
	Human metrics	0.133	.647**	1		
	information sharing	.273**	.427**	.390**	1	
	Supply chain mgt performance	.276**	.367**	.352**	.484**	1
*. Correlation is significant at the 0.05 level (2-tailed)						
**. Correlation is significant at the 0.01 level (2-tailed)						

Source: Own Survey, 2020

4.6. Assumption Tests

Before applying the multiple linear regression analysis to test the effect of supplier's buyers, environment, human metrics and information sharing and supply chain management performance, some tests were conducted in order to ensure the appropriateness of data analysis as follows:

4.6.1 Normality Test

The researcher used histogram method of testing the normality of the data. Histogram is bell shaped which lead to infer that the residuals (disturbance or errors) are normally distributed. The residuals should be normally distributed about the predicted dependent variable score. As shown on figure 1 below, dependent Variable is normally distributed for each value of the independent variables.

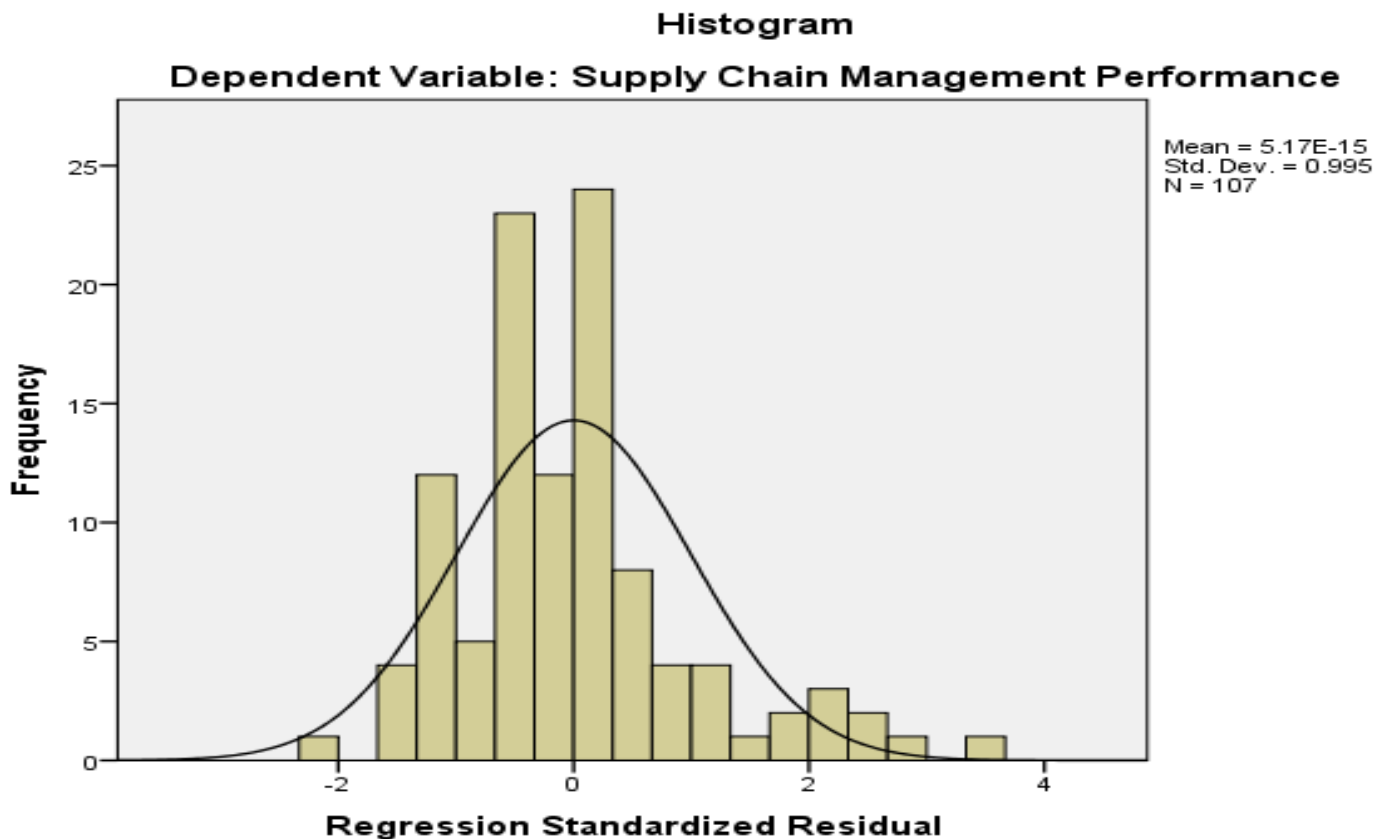


Figure1: The regression model assumption of normality in the study

4.6.2 Linearity Test

Linearity refers to the degree to which the change in the dependent variable is related to the change in the independent variables. To determine whether the relationship between the independent variables; suppliers buyers ,environment , human metrics and information sharing and dependent variable supply chain management performance is linear; plots of the regression residuals through SPSS software had been used. In case of linearity, the residuals should have a straight line relationship with predicted dependent variable scores.

As shown on figure 2 below, the change in the dependent variable is more of related to the change in the Independent Variables. Therefore, there is no linearity problem on the data for this study and residual follow at straight line.

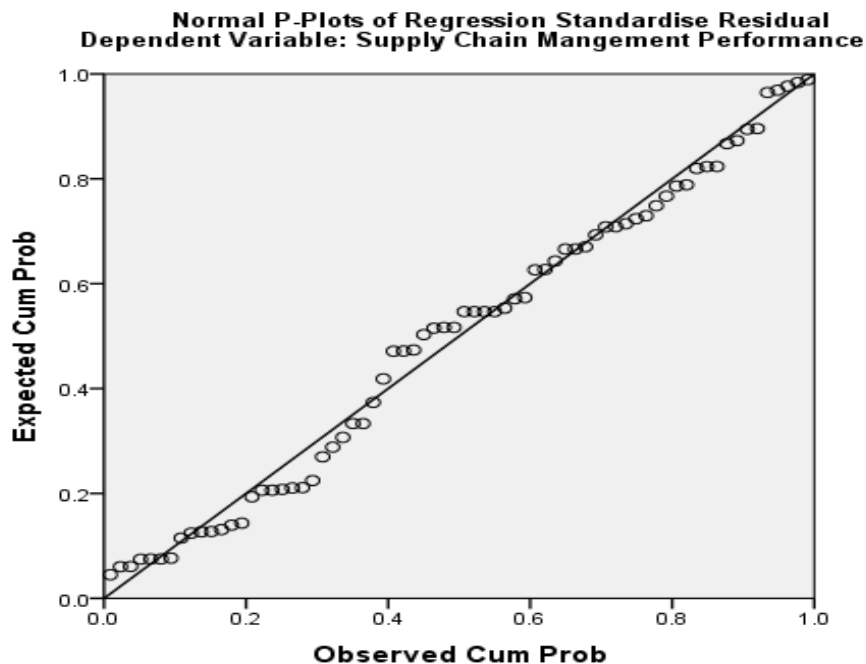


Figure 2: The regression model assumption of linearity in the study

4.6.3 Multi co linearity Tests

Multi co linearity can be checked by correlation matrix and Variance Inflation Factors (VIF). A correlation matrix is used to ensure the correlation between independent variables (Explanatory variables) and dependent variable to identify the problem of multi co linearity. In other hands, correlation matrix computing a matrix of Pearson’s vicariate correlations among all independent variables and the magnitude of the correlation coefficients. Whereas the Variance Inflation Factors (VIF) of the linear regression indicates the degree that the variances in the regression estimates are increased due to multi co linearity.

As Hair, et al., (2006) argued that correlation coefficient below 0.90 may not cause serious multi co linearity problem. The result in table 4.7 above shows that, there is a correlation among the independent variables and the coefficient of correlation (r) ranged from 0.133to 0.647 values. From those coefficients of correlations (r) the highest correlation is 0. 647 and it is less than the stated standard by Hair et al. So, it can be concluded that there is no multi co linearity problem among the independent variables in the model based on the correlation matrix result.

In other hands, the Co linearity statistics shows Variance Inflation Factors (VIFs) ranged from 1.162 to 1.957 and tolerance values ranged 0.511 to 0.860 as described in table 4.8.below, Table

Table 4.9: Co linearity Statistics

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Co linearity Statistics	
		B	Std. Error	Beta			Toleranc e	VIF
1	(Constant)	.660	.239		2.767	.006		
	Suppliers buyers	.176	.068	.179	2.572	.011	.860	1.162
	Environment	.151	.087	.156	1.730	.086	.511	1.957
	Human metrics	.167	.098	.143	1.709	.090	.599	1.668
	Information sharing	.437	.088	.371	4.982	.000	.754	1.326
a. Dependent Variable: Supply chain management performance								

Source: Own survey, 2020

As stated by Field (2005) the Variance Inflation Factors (VIF) of the linear regression indicated the degree that the variances in the regression estimates are increased due to multicollinearity and VIF values higher than 10.0 shows as there is multicollinearity problem. In other hands, as stated by Pallant (2007) Tolerance is a statistical tool which indicates the variability of the specified independent variable from other independent variables in the model and it has no multicollinearity problem if the tolerance is greater than 0.10 values. The results of Tolerance and VIF suggests that multicollinearity is not suspected amongst the independent variables because the values of Variance Inflation Factors (VIF) are below 3 while the tolerance values are above 0.10

Thus, from an examination of the information presented in all the three tests (linearity, normality and multicollinearity tests), the researcher concludes that there is no significant data problem that would lead to say the assumptions of multiple regressions have been violated.

4.7. Multiple Regression Analysis

Upon the completion of the correlation analysis and different model tests (linearity, normality, multicollinearity's), regression analysis were run to find any association between the independent variables (suppliers, environment, human metrics and information sharing) and the dependent variable (Supply chain management performance).

According to Hair et al. (2007), multiple regression analysis is a form of general linear modeling and is an appropriate statistical technique when examining the relationship between a single dependent variable and several independent variables (predictors).

Table 4.4.8 below shows, the R value obtained by regression was .649 and the Adjusted R square value was .4130 which means that 41.3% variations in Supply chain management performance have been explained by suppliers buyer, environment, human metrics and information sharing factors

Table 4.10: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.649 ^a	.4212	.4130	.49373
a. Predictors: (Constant), suppliers buyers , environment , human metrics and information sharing				
b. Dependent Variable: Supply chain management performance				

Source: Own survey, 2020

From the model summary in table 10, the value ($R=.649^a$) are the multiple correlation coefficients between independent variables (:), suppliers buyers, environment, human metrics and information sharing and the dependent variable namely Supply chain management performance

Table 10, Shows how well the regression model explains about the variation of dependent variables. The higher the value of R^2 , the better independent variables in explained the dependent variable.

Based on table 10, it can be seen that the R^2 is .4212. This indicate that 42.1. % of the variance in Supply chain management performance can be explained by the variance of the Supply chain management performance (suppliers' buyers, environment, human metrics and information sharing) taking in to account the sample size and independent variables.

Besides, this also indicates that there are 57.9% other factors (exogenous variables) that can't be explained in this research but have significant effect towards partners supply chain management performance in the ECX jimma branch.

Positive and significance of all values shows the model summary is also significant and therefore gives logical support to these models.

The value of adjusted R square i.e. 0. 4130 give some idea of how well the model generalizes and ideally one would like its value to be the same or very close to the value of R square. In this study, the difference between the value of R square and adjusted R square is $0.4212-0.4130=.0082$ (about

0.08 percent). This shrinkage means that if the model was derived from the population rather than from the sample, it would account for approximately 1% less variance.

The standard error of the estimate is a measure of the variability of the multiple correlations. Therefore, as shown in the model summary for the regression analysis table 10 above the standard error estimate of this model summary is 0.49373. This implies that the variability of the multiple correlations is much as this numerical. Positive and significance of all values shows that, the model summary is also significant and therefore gives logical support to this study model. The model is statistically significant or the p-value for the model is less than (0.01). This means the fitness of the model in explaining supply chain management performance is influenced by the independent variables considered.

The Analysis of Variance (ANOVA) results of the regression between predictor variables and supply chain management performance shows that, the probability value of 0.000 ($p < 0.05$) indicates the relationship was highly significant in predicting how suppliers buyers, Environment, human metrics and information sharing factors explain Supply chain management performance as shown in table 4.10 below.

Table 4.11: ANOVA Results

ANOVA ^s						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.079	4	5.770	23.669	.000 ^b
	Residual	35.346	145	.244		
	Total	58.426	149			
a. Dependent Variable: Supply chain management performance						
b. Predictors: (Constant), suppliers buyers, environment, human metrics and information sharing						

Source: Own survey, 2020

The Beta Coefficient (B) result shows the strength of the effect of each individual independent variable to the dependent variable (Supply chain management performance) as shown in table 4.12 below.

Table 4.12: Multiple Regression Coefficients Result

Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.660	.239		2.767	.006	.189	1.131
	Supplier buyer	.176	.068	.179	2.572	.011	.041	.311
	Environment	.151	.087	.156	1.730	.086	-.022	.324
	Human metrics	.167	.098	.143	1.709	.090	-.026	.359
	Information sharing	.437	.088	.371	4.982	.000	.264	.610
a. Dependent Variable: Supply chain management performance								

Note: B = Regression Coefficient, β = Standardized Coefficients,

Source: Own survey, 2020

The Final Model of multiple regressions below can be used determine the quantitative association between the variables:

$$Y = 0.66 + 0.176 \times \text{supplier buyer} + 0.151 \times \text{environment} + 0.167 \times \text{human metrics} + 0.437 \times \text{information sharing}$$

Where; Y is E s (Supply chain management performance)

In other hands, based on the table 4.4.10 above, the Beta value (B) of supplier buyer is 0.176 which means that as supplier buyer increase/improved by 1 percent, the Supply chain management performance will increase by 17.6% keeping the other factors constant. Similarly, the Beta value (B) of information sharing factor is 0.437 which implies that as information sharing factor increase/improved by 1 percent, the Supply chain management performance will increase by 43.7% assuming the other variable is held constant. However, the Beta value (B) of environment and human metrics factor was not statistically significant at 5%.

Generally, based on the regression coefficient (B) results, supplier buyers and information sharing can predict more Supply chain management performance than other followed by and human metrics and environment factors that determine the supply chain management performance in the organization

4.8. Analysis of the Interview

Are there factors affecting the supplier buyer relations of the operation?

From interviews with respondents, the study also found that supply chain management performance is also affected by factors related to suppliers of raw materials. These factors include; late delivery of raw materials, delivery of poor quality raw materials and delivery of raw materials in a lower quantity than the order one. All these factors disrupt the production process and may result in low production. The supplier misbehavior was rated as the challenger in supply chain—indeed it was but not so much challenging the chain. Therefore researcher tried his best to find out which measures were taken to reduce or to eliminate challenges from suppliers, and discussion with procurement officer on the issue of quality of raw materials supplied to , the procurement manager said;

“In order to protect from the risk of being supplied low quality raw materials, has appointed an independent superintendent company to inspect raw materials supplied by suppliers. The inspection is carried out at expense. Reserves the right to reject raw materials if the inspection indicates that the raw materials do not conforming to the required standards”.

Do you believe that the environmental factors of the organization service can influence supply chain management performance of the operation?

The interviewee replied that yes, challenges were revealed some were outside and other inside of control. It was frequently mentioned that poor road infrastructure in the country was among the major factor affecting distribution of finished products by through its wide network of dealers scattered throughout the country. Since the main method of distributing finished products by the company is through road, poor road infrastructure deeply affects the logistical planning of distribution of products to consumers by making the process more expensive. This can be the reason why high management cost was ranked as a high challenge in the implementation of supply chain strategies. One of manager he said that

Due to poor condition of roads, sometimes it takes longer for distribution trucks to reach their intended destinations. As a result transportation costs become higher.poor road infrastructure also causes losses to the company due to breakage of some bottles while on transit. Due to these breakages, the company has been incurring huge losses to the company.

Do you believe that the information sharing can determine the supply management performance of the organization?

The interviewee replied that yes, information sharing is the other determinants Other, which affect supply chain management performance include are caused by poor management and poor communication between the management. It was researcher opinion that the management should strive to establish clear lines of communication between its staff members and between its various departments. In order to overcome supply management challenges arising from poor management and communication between staff members.

At the same time, due to breakage of bottles while on transit, consumers who were supposed to receive that consignment of goods are faced with a temporary shortage which created an opportunity for unfaithful dealers and traders to raise the price of the products due to higher demand for the products. In the end, this affects to final consumer paints a negative image of the company among consumers.

. Are there any supply chain determinant(s) which is (are) unique or special for your company?

The interviewee replied that yes ,supply chain determinants is the special for their company by that , how a given company has to evaluate determinants such as buyers - supplies , environmental ,information sharing and human metrics has to be the most useful that we need to give due attention as the objectives of our organization , because it is a process/system that manages customer order from receipt to delivery through its network of related activities that have primary focus to manage seamless/faultless flow of information, product and also cash flows. Apart from managing product, information, and cash flows supply chain would target maximization of return on investment to the shareholders.

In order to maximize profitability of the organization, all functions/activities within supply chain should have common goal and work as a team collaborating with other functions within the business.

What's look like Performance of your organization?

The interviewee replied that, the performance of their organization is in the way to increase its performance through effective. Because they understand that productivity growth is important to the any firm (either organization, service, or sales farms) because more real income means that the firm can meet its (perhaps growing) obligations to customers, suppliers, workers, shareholders, and governments (taxes and regulation), and still remain competitive or even improve its competitiveness in the market place. Interviewed officers had noticed low productivity in and put forward that there was need to increase output while minimizing input in Jimma ECX. It is better to know that productivity is the ratio of output to inputs in production; it is a measure of the efficiency of production.

CHAPTER FIVE

5. Major Finding, Conclusion and Recommendation

5.1 Major Finding

Based on the result of the analyzed data, the following major finding of the study is obtained:

As it can be seen on the first part of analyzed , the supplier's buyer's relation factors analysis, majority (73%) of the participants said that disagree. This revealed that, the organization did not consider as criterion numbers in selecting the suppliers. As it can also show on the same table , participants were asked about how they regularly solve the problems with jointly with suppliers ,majority (76%) of them replied disagree , and this revealed that the organization is not working with suppliers to solve problems of the organization . Regarding ,how the organization helped the suppliers to improve their products quality , majority (69%) of them replied that disagree and this portrayed that organization is not stand in position to help suppliers to improve their product quality .

Furthermore, participants were also asked about continuous improvement programs, and majority (72%) of them was disagreeing. Therefore, this revealed that the organization has problems in continuous improvement programs that included key suppliers.

Concerning the environmental factors, participants were also asked about how globalization helped the organization performance, majority (65%). This indicated that the organization is not effectively use globalization in order to improve the performance of this organization. Concerning the infrastructure facilities provided by the government, majority (62%) of the participants replied that disagree .Therefore, this confirm that the organization is not affected by infrastructure facilities provided by government. Progressively participants were also asked about customers' requirements, majority (68%) of them replied that disagree .So, this indicated that it is not difficult to forecast the customers' requirements that concern product features .Regarding the properties of materials ,majority(63%) of the participants replied disagree . This portrayed that the organization is not affected by the varieties of products that come from the same batch .Regarding the suppliers product quality unpredictable, majority (67%) of the participants were agree. This revealed that supplier's product quality is unpredictable in this organization.

Finally, majority (65%) of the participants replied that disagree. Therefore, this portrayed that technology is not changing the significantly in the organization.

Concerning human metrics, how the organization is powerful enough, and majority (64%) of the participants replied that disagree .So, this revealed that the organization is not powerful enough to ask supply chain partners to re adjust their products. Participants were also asked about how the organization and supply chain know the strength and weakness of each other , majority (64%) of the participants were disagree .This show that , the organization and supply chain partners not know their strength and weakness very well in the organization .In addition, on the questions about re adjusted prices strategy , majority (65%) disagree . Therefore, this indicated that, the organization is weak to ask the supply chain partners to re adjust prices strategy.

Regarding the training given, majority (65%) of the respondents was replied that disagree on the training support given by the organization to supply chain partners. This revealed that, Jimma ECX organization is not providing training to support the supply chain partners.

Regarding the willing share of the information, majority (67%) of the participants were replied disagree. So, this portrayed that the organizations willing share of information to help decision is weak.

Finally, participants were asked about honesty and truthfulness of the organization, majority (70%) of them replied that disagree. Therefore, this indicated that the supply chain partners doesn't perceived that the organization is perfectly honest and truthful , rather they perceived as the organization is imperfectly acting in handling the daily actions of the supply chain partners .

Concerning the information sharing participants were also asked about information sharing factors , among the questions under this factor ,respondents were asked about how trade partners share information with them , majority (86%) of the participants replied that disagree , this implies that trading partners were not share information with the organization. Regarding the how well partners are informed about factors affecting the business in the organization, majority (85%) of the participants were said disagree ,this portrayed that partners are not being well informed about factors affect the business of the organization Regarding how partners share business knowledge, majority (83%) of the participants were replied that disagree. Therefore, this portrayed that partners were not share business knowledge with organization. Regarding, the exchange

information established in business planning, majority (83%) of the participants were replied disagree. Therefore, there is no exchange of information established in business planning of this organization.

Concerning how partners are being informed each other; majority (85%) which confirms that, trading partners were not keep informed about changes that may affect the others partners.

Finally, under the sharing information participants were asked about information exchange between supply chain partners and the organization , majority (85%) of the participants were replied that disagree , and this revealed that information is not exchange between supply chain partners and the organization.

Based on the regression coefficient (B) results, supplier buyers and information sharing can predict more Supply chain management performance than other followed by and human metrics and environment factors that determine the supply chain management performance in the organization.

5.2 Conclusion

Based on the major finding of this study, the following conclusion were given

- ❖ The relationship between information sharing and supply chain management performance was moderately correlated with $r= 0.484$, however there was weak relationship with environment, environment, human metrics and suppliers buyer factors at $r=0.367, 0.352$ and 0.3 respectively. This shows as all factors should be considered to determine the supply chain management performance at the study area.
- ❖ The presence of informing trading partners in advance of changing needs and sharing proprietary information existence of informing about issues that affect the business, sharing of business knowledge of core business processes by trading partners, exchange of information that helps establishment of business planning are critical issues which are neglected by the organization.
- ❖ The power of the organization to ask the SC partner to readjust their Product and the understanding of the organization and the SC partner towards their strengths and weaknesses, the interest of pursuing advice for each other when doing marketing analysis, the provision of training support to other supply chain partner, the power of the organization to readjust price Strategy of SC partner and the interest to inform everything about new developments to SC partner are vital points properly by the organization.
- ❖ There is no multi co linearity problem among the independent variables in the model based on the correlation matrix result
- ❖ As supplier buyer and information sharing increase, the SCMP increase
- ❖ The relationship b/n the independent variable like information sharing, human metric, environmental factor and SCMP is moderate.
- ❖ The relationship b/n the independent supply buyer and SCMP is weak.

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5.3 Recommendations

Based on the major findings of the study, the following recommendations were given:

- The organization properly implementing the supply chain management performance to bring performance change
- The determinants of supply chain management performance vary across different of an organization or product specific and hence future research should focus on the variability of determinants across different aspect of an activity or products.
- The organization should strengthen their supply chain management performance by putting greater effort to the implementation of information sharing, supplier buyer relation best practices. Specifically, the following practices should be improved on sharing of information through information technology, increase of Suppliers, formal partnerships with suppliers, and work on environmental problems and human metrics.
- In order to improve the supply chain management performance, the organization needs to create a long-term strategic for supplier buyers and information sharing for strategic items.
- It is better if more empirical research done on the contribution of each determinant on supply chain management performance of jimma ECX.

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Appendixes

Jimma University

College of Business and Economics

Department of Management

Postgraduate Program

Dear respondent

Thank you for taking part in this study. I am a Postgraduate student at Jimma University in College of Business and Economics. As partial fulfillment for the Masters of Logistics and transport management, I am conducting a research study on “**Determinants of Supply chain management performance in the case of Jimma ECX**”. Therefore, I would like to appreciate if you could spare a few minutes of your time to answer the following questions according to your experience and your personal understanding. All the information provided will be purely used for academic purposes only and your identity will be treated with utmost confidentiality. Your assistance will be highly appreciated.

Thank you in advance!!!

Instructions

- ✓ No need of writing your name.
- ✓ For Likert scale type statements questions indicate your answers with check mark(✓) in the appropriate block and for multiple choice questions please circle them
- ✓ Write the correct answer on the blank spaces provided.

Researcher: Temam Jemal

Email: - Temamjemal19@gmail.com

Phone: - 0917025332

Thank you for your cooperation!

Part I: Demographic Information

Please mark (√) in appropriate box to your response.

1. Gender: Male Female
2. Age in years: Less than 20 , 20-30 , 31-45 , 46– 55 , above 56
3. Marital Status: married UN married Divorced , Windowed
4. How long have you worked in this organization: , 1-3 years , 4-5 years , 6 -8 years , above 9 years
5. Level of Education: None educated , write and read , primary level , secondary school , certificate , Diploma , Bachelor Degree , Masters , PhD

Part II: Determinants of Supply chain management performance in the Organization:

Please mark (√) in the appropriate cell to your response

1. To what extent do you agree about determinants of Supply chain management performance which stated in following statements? (Please mark √ in appropriate box to your opinion) Where; SD = strongly disagree, D = disagree, N = neutral A=agree and SA = strongly agree

S. no	Statements/determinants	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		1	2	3	4	5
1. Supplier Buyer Relation						
1.1	We consider quality as our number one criterion in selecting suppliers					
1.2	We regularly solve problems jointly with our suppliers					
1.3	We have helped our suppliers to improve their product quality					
1.4	We have continuous improvement programs that include our key suppliers					

1.5	We include our key suppliers in our planning and goal setting activities					
1.6	We actively involve our key suppliers in new product development processes					
2. Environmental factors						
2.1.	Globalization has helped in our organization performance					
2.2	We are affected by the infrastructure facilities provided by the government					
2.3	Customers' requirements regarding product features are difficult to forecast					
2.4	The properties of materials from suppliers can vary greatly within the same batch					
2.5	Suppliers product quality is Unpredictable					
2.6	Suppliers ' delivery time can easily go wrong					
2.7	Technology is changing significantly in our organization					
3 Information Sharing						
3.1.	Our trading partners share proprietary information with us					
4.3	Our trading partners keep us fully informed about issues that affect our business					
4.4	Our trading partners share business knowledge of core business processes with us					
4.5	We and our trading partners exchange information that helps establishment of business planning					

4.6	We and our trading partners keep each other informed about events or changes that may affect the other partners					
4.7	Information exchange between our Supply chain partners and us is timely					

Indicate the extent of supply chain management (SCM) performance

To what extent do you agree about the Supply chain management performance which stated in following statements (Please mark \surd in appropriate box to your opinion) Where; SD = strongly disagree, D = disagree, N = neutral A=agree and SA = strongly agree

S. No.	Question	1	2	3	4	5
1	Ability to respond to and accommodate the periods of poor organization performance such as input and out put					
2	Ability to respond to and accommodate the periods of poor supplier performance is clear and on time					
3	Ability to respond to and accommodate new products, new markets or new competitors are fear					
4	Total cost of distribution, including transportation and handling cost are easy and manageable					
5	Total cost of organization, including labor, product and re-work cost effectively					
6	Cost associated with held inventory is implemented properly					
7	Sales are visible and fair					
8	Customer response is given on time					

Interview

Using semi structured interview guide interview will be held with one purposely selected key Informant to collect in-depth information about determinants of supply chain management performance: supplier- buyer relations, environmental factors, information sharing.

1. Are there factors affecting the supplier buyer relations of the operation?

HOW? _____

2. Do you believe that the environmental factors of the organization service can influence supply chain management performance of the operation?

How? _____

3. Do you believe that the information sharing can determine the supply management performance of the organization? _____

How? _____

4. Are there any supply chain determinant(s) which is (are) unique or special for your company?

5. What's look like Performance of your organization
