THE ROLE OF SUPPLY CHAIN INTEGRATION ON FREIGHT TRANSPORT PERFORMANCE: THE CASE OF ETHIOPIAN SHIPPING AND LOGISTICS ENTERPRISE IN KALITY BRANCH

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A THESIS SUBMITTED TO ADDISABABA UNIVERSITY, SCHOOL OF COMMERCE FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF ARTS IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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DECLARATION

I, **Kassahun Zergaw,** *declare that this thesis in title "***"The Role of Supply Chain Integration on Freight Transport Performance: The case of Ethiopian Shipping and Logistics Enterprise in Kality"** *was conducted by myself, that the work contained herein is my own except where explicitly stated otherwise in the text, and this work has not been submitted for any other degree or professional qualification except as specified for the partial fulfillment of the requirements for the Degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University,*

School of commerce. I have duly acknowledged all the sources and references from which the ideas and extracts have been taken.

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CERTIFICATION

This is to certify that the thesis in title "**The Role of Supply Chain Integration on Freight Transport Performance: The case of Ethiopian Shipping and Logistics Enterprise in Kality"***that is being submitted by* ***Mr.*** **Kassahun Zergaw** *for the partial fulfillment of the requirements for the award of the degree of Masters of Art in Logistics and Supply Chain Management at Addis Ababa University, School of commerce is a record of bona fide work carried out by him under my guidance and supervision. The results embodied in this thesis have not been submitted to any other*

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ShiferawMitiku (PhD)

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LIST OF TABLE

LIST OF ACRONYMS

ESLSE: Ethiopian Shipping and Logistic Service Enterprise

SCI: Supply Chain Integration

SCIP: Supply Chain Integration Performance

IISCP: internal integration Supply Chain Practice

EISCP: external integration supply chain practice

INFOISCP: information integration Supply chain practice

CISCP: information integration Supply chain practice

ABSTRACT

Due to lack of long term relation with suppliers, poor infrastructure, instability of higher manager and employees turn over. Moreover, Enterprise Resource Planning (ERP) is not implemented yet and these make: the relationship become weak among the actors on the supply chain, unavailability of spare parts on time, vehicles with high cost but low round trip, In order to solve those problem, the researcher believe that trying to show the supply chain integration on performance of on Kaity freight transport sector was needed. Thus, the research was undertaken.

The primary data was collected using likert scale questionnaires distributed to company employees and interviews for selected expertise. The dependent variable was supply chain performance. Independent variables were internal, external, customer,

supplier and information integration. The target populations were 89 employees. The researcher utilized sampling techniques to select the participants. The descriptive statistics was used to analyze the supply chain practice and explanatory analysis to determine relationship between supply chain dimension and supply chain performance and to test the hypothesis. Accordingly, the regression output indicated that internal integration, information integration and supplier integration have a significance and positive effect on company supply chain performance. And the remaining variables namely external and customer integration were insignificant. All the five independent variables are making 54.57% of the contribution for supply chain integration performance. Thus, the researcher recommended that it is better for the organization to give due emphasis about external and customer integration so as to improve the organization performance. In addition, the good practice that the organization performed such as internal integration, information integration and supplier integration should be continued. On the other hand, short term training should be given to those employees who are directly related to transport operation in order to gain a competitive advantage.

Keywords: *Supplies Chain, Supply Chain Integration, Supply Chain Performance.*

CHAPTER ONE

INTODUCTION

This chapter presents background of study, statement of the problem, research questions, and research objectives, significant of the study, scope of the study, definitions of terms and organization of the study

1.1. Background of Study

Today companies have been searching for a new market model for competitive advantage. Company began to realize the potential of information technology to dramatically transfer their business in order to improve competitiveness. Instead of outdate machine, inefficient process, company began to reengineer business processes using technology as enabled. Models of the supply chain emerge from this lead. (Hussin,2010).

The concepts of integrative buyer and supplier relationships gained renewed attention during the 1980s and 1990s. The supply chain management principle notes that supply chain assets and resources, information, and fund management flows to maximize overall supply chain efficiency (Chopra 2001). Integration is characterized as a process of cooperation and collaboration in the supply chain management, in which companies work together in a particular supply chain to achieve mutually acceptable results (Pagell, 2004) Generally speaking; business has begun to produce extremely close relations with selected clients. The global competitiveness and the shortening product life-cycle are the two key factors that enable organizations to change their emphasis from competitive competition to mutually beneficial partnerships and collaboration (Lambert and Cooper, 2000; Wisner and Keah, 2000).

In this sense, supply chains entities would align their strategy with other supply chain members in an effort to be more environmentally responsive, and thus remain competitive (Richey *et al.,* 2009. A strategic view of supply chain integration is seen as one of the management methods with the ability to develop competitive advantages inside organizations (Flynn *et al ,* 2010; Vickery et al., 2003 There has been evidence in recent years to show that successful integration of the supply chain can improve the performance and competitive advantage of a firm (Wiengarten et al., 2010).Supply

chain integration goal is to achieve effective and efficient flows of products and services, information, money and decisions, to provide maximum value to the customer at low cost and high speed (Flynn *et al.,* 2010).

1.2 STATEMENT OF PROBLEM

Integration of the supply chain is widely considered on the investigation of collaborative relationships between a manufacturing firm and its supply chain partners. Daniel, Jan O, Prajogo (2012). A variety of relevant issues have arisen as supply chains grew up. Though customer needs are constantly increasing, businesses are forced to spend and concentrate their attention within and outside the boundaries of organization. Customers expect wider choice, better service, quick delivery and higher quality, all of which are critical factors that affect the strategies of the company and the final outcome of their operations (Li, Yulong, Subba R, Monideepa T, 2012)

Accordingly Rafaela(2013) the rising international competition has forced companies not only to build their own efficiency but also to focus on incorporating their supply chain partners into the strategic advantage of the overall supply chain. There are constraints in the supply chain that have a crucial effect on an organization's operational efficiency, such as longer lead times, supply delays caused by global tariffs, international regulations and port congestion, political and/or economic uncertainty in a source country and changes in economics, such as exchange rates, which in turn lead to higher commodity costs, reducing speed of delivery of product and flexibility of the company (Fernie & Sparks, 2014).

Like other fields, freight transport also faced different problems. According to (Fernie & Sparks, 2014), inability to strengthen the supply chain vision beyond procurement or product distribution to include larger business processes; inability to integrate the company's internal procedures; lack of confidence within and outside a company; organizational resistance to the concept; lack of integrated information systems and connecting companies in electronic commerce. Based on past experience assessment kality freight transport face some problems. There was lack of alignments among the department; Due to lack of long term relation with suppliers there is unavailability of spare part goods timely needed, vehicles with high cost low round trip makes the

enterprise profitless. Enterprise Resource Planning (ERP) is not implemented yet this makes the relationship become weak among the actors on the supply chain. There is Poor infrastructure, instability of higher manager and employees turn over. In order to solve those problem the researcher believe that trying to show the role of supply chain integration on performance of on Kaity freight transport sector.

1.3 Research questions

- How supply chain integration is being practiced at ESLSE'S freight transport at Kality branch?
- What is the supply chain integration performance of the ESLSE freight transport at Kality branch?
- How supply chain integration affects the supply chain performance of the ESLSE'S freight transport at Kality branch?

1.4. Research objectives

1.4.1General objectives

The general objective of this study was the role of supply chain integration on freight transport performance: the case of Ethiopian Shipping and Logistics Service Enterprise (ESLSE) in Kality freight transport branch.

1.4.2Specific Objectives

- To assess the supply chain integration practices of freight transport in ESLSE Kality branch
- To determine the supply chain performance the ESLSE freight transport at Kality branch?
- To determine the role of supply chain integration on the supply chain performance of freight transport in ESLSE Kality branch

1. Significant of the study

This study is a guide that readers will often refer to along their path toward that deeper understanding of the effect of supply chain integration on freight transport. Organization within supply chains must coordinate their approach with other supply chain members to be more environmentally friendly, and therefore stay competitive (Richey, 2009). Therefore the study makes the advantages for different freight

transport business as a benchmark as an initial point for other studies as well as support for intellectuals.

1.6 Scope of the Study

Different research subjected the supply chain integration concept however the main focus of this study covers the supplier integration, internal integration, customer integration, and external integration and does not include other supply chain integration dimension like measurement integration. It does not include other ESLSE employees beyond the transport sector. The study is restricted in Kality freight transport branch situated near Addis Ababa light rail terminal.

1.7 Limitation of the study

This study encountered problems due to the case of Covid 19. Nature of this disease does not allows attachment, deprived of me an employees to response freely. This was direct impact on respondents and there were lack of willingness among the employees. To solve this problem the researcher explains importance of the paper repeatedly to the respondents keeping our distance for interview and transfer documents.

1.8 Definitions of Terms

Freight: goods, but not passengers, that are carried from one place to another, by ship, aircraft, train or truck. (Cambridge Advance Learner's Dictionary, 2019)

Supply: to provide something that is wanted or needed, often in large quantities and over along period of time (Cambridge Advance Learner's Dictionary,2019).

Integration: a process of interaction and collaboration in which companies in a particular supply chain work together to mutually acceptable outcomes (Pagell, 2006).

Supply Chain: the network of organizations that are involved through upstream and downstream linkage in the different process and activities that produce value in the form of products and service in the hand of the ultimate consumer (Christoper, 2005)

1.9 Organization of the Study

The study comprised five chapters. Chapter two is literature review specifically, it briefly discuss related literature study that helps as a basis and evidence to support the basic questions. Chapter three is method of the study .In this categories discuss the description of study area; the research approach and design; population and sampling; data collection and analysis. The fourth chapter presents results, discussion, and interpretation of results. Finally, chapter five is deals with the summary, conclusion and, recommendation of the study.

CHAPTER TWO

RELATED LITERATURE REVIEW

This chapter covers the theoretical literature review, empirical literature review, research the conceptual structure of study and literature gap allied to the concept of supply chain integration.

2.1Theoretical Literature Review

2.1.1 Definition of supply chain integration

Supply chain integration (SCI) can be describes as the extent to which a manufacturer works effectively together with partners within its supply chain and collaboratively manages inter-and intra-organizational process (Flynn, B.2010).Several writers explaining about dimensional and variables recognition.

Supply chain integration is one of a well-known researched topic in the field of supply chain management. It has a different explanation to different researchers. Supply chain integration is an important factor that should be explored in the events that organizations are to outlive, develop, and accomplish a competitive advantage in expanding competitive environment (Daness and Romano, 2010). Supply chain management as the effective collaboration and integration of all the movement associated with moving items from the raw material stage through to the end customer for continued competitive advantage .(Lummus and Vokurka,1999).

The objective of integration handle along the components of supply chain to diminish costs and move forward advantage is well set up as one of the key role of supply chain. (Simchi,2000). management of the integration is most important enterprise process from customer through original supplies that provides good, service and data that more desirable for customer and others supply chain actors.(Lambert and Cooper,2000).The formers writers' states that meaning gives impassively the significance of the integration of move of products, service, funds and information among the firms for an effective supply chain management.

Firms are entering a period in which self-sufficient of operations can no more provide a competitive advantage. Success now depends on how firms integrate with supply chain actors. (Simon,2004). Not all supply chain integration is benefited. Some supply

chain integration efforts should not centered on holistic integration, instead on established a semi integrated supply chain with collaborators who perform certain process better than the organization.(Bagchi and Ha,2005).

The concept of integration describe as a mechanism to support business process among the supply networks to surmount intra-and inter-organizational boundaries (Romano, 2003). Supply chain integration interact to coordination mechanisms and exactly employ that business progress should be modernize and inter connected, both inside as well as outside company boundaries. (Cagliano, 2006).

2.1.2 The impact of supply chain integration

Around 1990,academics first described supply chain from a theoretical stand point to clarify how it vary from more traditional approaches to managing the flow of materials and the associated flow of information (Cooper and Ellram,1993)

A few scholars demonstrate that supply chain has risen to conspicuousness or over the period of twenty years , getting to be such a ‘hot topic\ that it is troublesome to choose up periodical on manufacturing, distribution, marketing, customer management or transportation without seeing an article about supply chain related topics. Integration is presently broadly taken the central concept of effective supply chain management, because putting in to practice of Supply Chain Management needs the integration of processes from sourcing, up to distribution among the supply chain (Cooper ,M.C 1997; Ellram and Cooper, 1990); Mentzer,J.T 2001). The scope of supply chain integration is unlimited but it has wide scope extending from supplier integration to end user integration covering central concept of internal integration also (Flynn ,B 2010; Zhao,X,2010)for both practitioners and academicals, Logistics, supply chain, has long been concern (Mentzer,2004).

The logistics and operational management section at Cardiff Business School, which between 2001and 2001 studied the opportunities that can be raised by better integrating transport into supply chain process to improve overall supply chain performance. At the beginning two important goals were find out: to deliver improved commercial performance; Enhancing the commercial performance; leading to a more competitive delivery solution. Supply chain positions with freight transport sectors

management have a benefit of upgraded vehicle turnaround times and reduce vehicles waiting at loading and dropping points.

About supply chain there is a difference definition among the authors The Supply chain describes as a comprehensive cooperate between supply chain network actors in strategic, tactical and operational decision making. (Bachchi, 2005) Integration has to all levels of arrangement in arranging in arrange be viable .Whereas operational coordination can as it were lead to operational benefit., (Sanders, 2008). Studies say that supply chain integration analyzes and measure in three approach that is external and internal integration, process integration, and information integration. Definition and dimension has highlight develop in supply chain integration. Some indicate on individual dimension of supply chain integration that is customer supplier integration (Cousins, and Menguc, 2006; Homburg and Stock, 2004)

Buyer-supplier relationship advancement is not the extreme objective for supply chain integration. It is the only implies to realize superior supply chain integration and way better supply chain execution.(Lee, H.2000) Suggested there are three necessary dimensions of Supply Chain Integration: organizational relationship linkages, information integration, and coordination and resource sharing. (Handfield RB and Nichols, E.1999) characterize the three foremost components of Supply Chain Integration as relationship management, information systems, and management of material flows. (Van, D and van,T) also propose similar concepts of Supply Chain Integration. Thus, relationship management delivers the implementation-end of Supply Chain Integration, whilst Supply Chain Integration is the extent that organizations are integrated with their supply chain (Christopher, M.2011).

Given the expanding slant of worldwide supply chain competition integration is respected as one of the key supply chain competition, integration is regarded as one of the key prerequisites for sustained supply chain success (Kannan,VR and Tan,C.2010). The fundamental concept of Supply Chain Integration begun from a framework view point , in which the optimized entirely will continually have more value adding than any sub system.

Cooperation, collaboration, information sharing, trust, partnerships, joint new product introduction, process alignment, as well as other traits can characterize supply Chain

Integration. Benefits and advantages of integration have long been demonstrated via its impact on supply chain performance (Gimene and Ventura, E.2003; Frholich,MT;Westbrook K.2001) .It is therefore also logical to make extrapolated casual links from perception.

2.1.3The feature of supply chain integration

Supply chain integration as global competition has increasingly caused organizations to rethink the need for cooperative, mutually beneficial supply chain partnerships. (Lambert and Wisner, 2000).Quick changes within the domain of supply chain have brought within the advancement of networked supply chain where in all firms coordinated to extend the esteem of supply chain. Supply chain integration has a characteristic of cost saving, inventory reduction, increase visibility, reduction in bullwhip effect etc. Firms have completely recognized integration as basic feature to an energetic supply chain. It subsequently requires high levels of trust, commitment, and information sharing among supply chain partners. In this manner, it gets to be basic to create a bundle of information, skills and capacity among employees. Which are the clue to creating and realizing organizational objectives along with accomplish inter-firm integration. a profoundly coordinates supply chain requests an proficient work force with the correct firms properties to operate at external and outside levels. The expanding worldwide competitive and the shortening item life cycle are the two fundamental variable that empower organization to change their center from competitive competitions to common advantage relation and cooperation .(Lambert and Cooper,M,2000.In the IOP conference arrangement material science and engineering states that coordinates supply chain system is required to tie the complete arrange together in arrange to decrease perennial supply chain challenge such as functional silos, poor transparency of knowledge and information and the inadequate formation of appropriate customer and supplier relationships. Supply chain integration ought to not fair center on single entities and ought to see at different sub-system, actuate relationship and operations (Chandra and Kumar, 2000). Supply Chain Integration requires all the hubs within the arrangement whether inside or outside the organization, to communicate, exchange ideas step by step current information.

2.1.4The relation View and the Resource based View

The relational view is valuable in understanding supply chain connections with basic provider and clients. The circular segment of integration has made a difference organization to realize a better level of business execution in terms of customer responsiveness, taken a cost and time, as appeared by a worldwide think about over business (Frohlich and Westbrook, 2001).

In supply chain integration there is also a theory of Resource Based View and Relation View this may affect on competitive advantage on firm's performance. The elemental objective of the BRV is to clear why a few firms outperform their counterparts, centering on the idea that uncommon, values and inimitable resources lead to way better business performance and higher productivity (Barney, 1991). This includes the gaining of resources from internal and external parties, developing resources and divesting resources that are now not valuable for the strategy utilized by the firm (Hitt, 2011).

Relational view speaks another hypothetical outline for consider of connection between firms and supply chain partners. Theoretical framework for the study of relationships between firm and supply chain partners states that there is a connection between diverse functions and supply chain partners for better decision making and higher levels of coordination and collaboration (Sprague and Watson, 1979). The inactive view of the RBV sets that that a firm's resource base is the predecessor to competitive advantage (Barney, 1991) While the RBV centers on the significance of managerial activities in overseeing resources flow in a supply chain in arrange to improve firm performance. Relation view hypothesis can be utilized to get a relationship between two or more supply chain partners. The relational view theory was begin with enunciated by Dyer and Singh (1998) to suggest that idiosyncratic inter-organizational linkages can result in sustained competitive advantage. Four sources of relational rents are identified in the relational view: relation-specific asset investments, substantial knowledge sharing, complementary resources/capabilities and effective governance (Miguel and Brito, 2011).

2.1.5. Performance relation to supply chain integration

Commission on Engineering and Technical System (2000) describes supply chain

integration as customers and suppliers affiliations which utilize management techniques as well as optimizing performance. This shows that supply chain integration is done to add performance and in executing it cooperation between the whole networks within supply chain is needed.

A few authors found that integration over the supply chain incorporates a positive effect on firms performance.(Bagchi and Ha, 2005) Whilst others has shown that integration contains a positive impact on supply chain performance.(Lee, 2007; Narasimhan and Kim, 2002) and operation performance (Flynn, 2001;Frohlich and WestBrook,2001).Supply Chain Integration has been found to efficient performance of the supply chain. According to Sezen, B.(2008) in the study of one hundred twenty-five manufacturing firms within UK it was assured that sharing of Supply Chain Information leads to enhance the performance.

A study found that integrating with a firm's suppliers and customers along with the firm's competitive strategy leads to progressives actions in operations performance (Zailani, and Rajagopal, 2005).The connection between supply chain linkages including customer, supplier, and internal processes of the firm with performance has moreover been consider by (Won,L2007) The122 manufacturing firms operating studies in the US and found out that internal integration is the fundamental strategy for cost reduction in the supply chain while supplier integration leads to better operational performance.

A few performance indicators such as up grad customer service, internal efficiency, demand flexibility, and product progression (Hugos, M.2011) are all pointers that firms attempt to move forward and do so through Supply Chain Integration .Because of this study Supply Chain Integration in food sector where the quality and safety of food are two crucial components that related with consumers (Van, R .2008) .This has driven firms to integrate and exceed the amount of information sharing with their suppliers to ensure that there is visibility among the supply chain so that food products material sourcing can be tracked (Pieter, V.2008) Numerous firms look for to enter in to modern markets to boost their benefit. This has driven them for way better relation to provide them the platform for such marketing opportunity to a huge customer network.

According to M.Beheshti, and (H, Oghazi,2014) firms want to create value activities that would reduce their operational costs and boost profitability. This would require internal and external integration of their processes. The nature in which companies operate is characterized by rapidly changing market demands that require firms to enter into partnerships to be able to be responded to such external factors (Glenn,R, 2009) Meeting the demand of the customers through marketing activities would still involve business processes integration to ensure goods accessibility (Hilletofth, P, 2011).

There are factors that driving supply chain integration among firms. Among these are globalization competition from different companies, involving to enter new market, worldwide regulation and law are some of them (Goeltz, D.R., 2014). An author differentiated that internal integration, supplier integration, customer integration and information integration as main measures of Supply Chain Integration. Internal integration is the facilitated and good arrangement of business process and capability inside an organization that's organized to guarantee that the firm accomplish of maximum performance.

According to Basnet, C, (2013) supply chain Integration begins to begin with internal integration among the diverse departments and functions inside an organization before external integration is pursued. (Ralston,P.M. and Blackhurst,J,2015) also in the study found out that internal integration progress the firms performance by decreasing costs and limiting the capable of division within the organization from taking steps that would distort the entire objective of the organization. Supplier integration speaks the circumstance where suppliers are include in the key decision making processes of the firm with information respect to demand forecasts, production and stock levels being shared between them. It includes focal firms working in partnership with their suppliers to increase the benefits of the relationship like improving the lead times, creating new idea, and quality (Thun,J.H, 2010).

The customer- supplier integration prepared ought to be one that centered on solidifying the linkage between both parties for their collective benefits (Furlan,A.,2006).The impotant drive of supplier integration with customers ought to be on how to progress the customer experience or serve them better. The integration of customers in the supply chain gives the opportunity for firms to have an overview of

the requirements and their specific needs giving them the advantage of serving them better. Integrating customers in a supply chain is centered on drawing information from customers such as their buying patterns, their choice for products and their capability to purchase products which would then be used in making better decisions during the manufacturing process or sales to customers (Lotfi,Z and Saharan,S.2013).

When firms collaborate with their customers, they are able to response in a speedy and productive way with their customers enhancing their arrange fulfillment as well as progressive perceivably. Information integration has been found to be a need for firms search integrate with their customers and suppliers (Amue, G.J.2014) However, the integration of information is not limited to the efficiency and use of technology. It requires the inputs and role playing of people, technological systems to originate, sort, process, and disperse information to the designated location at the right time for effectual decision making process (Sadler, L, 2007) When information is shared across the supply chain, data can be collected in real time as closer communications are then created with other members in the supply chain which would lead to improved customer service and improved demand forecasting (Amue, G.J.2014)

Luque, Lopez and Dey.,(2012) information integration, coordination and resource sharing and organizational relationship linkage are three main pillars for SCI. It is not only a process or technique but also it needs to be inculcated in organizational culture. So, organizations need to n healthy culture of internal and external collaboration with supply chain partners for more attractive performance of organization in terms of operations and business growth. (Leuschner, Rogers and Charvet, 2013) expressed that there is good relationship between SCI and firm performance and it includes information integration, operational integration and Relational integration.(Lee,2000) In today's world of intense rivalry, supply chain management is the way to success.

2.1.6 Performance measures

Authors have used either operational measures of performance (Dong ,Y. 2001; Shin

,H. 2000), or only financial performance (Benton,W.C,2005; Duffy,R;Fearne,A. 2004)) or only customer service measures (Bagchi,P.K;Skjoett-Larsen,T 2005; Carr, Pearson ,2002; Kaufmann, Carter 2006; Ramdas,K.. 2000; Stank,T.P. 2001) or time based measures (Droge,C 2004). Others have utilized combinations of these performance measures in their research (Das,A. 2006; Devraj,S. 2007)

Moreover, the analysis of these item level performance measurements reveals the difference in the measurement of the same structure, hence the lack of consistency For example, (Dong ,Y. 2001) used three and five items respectively (inventory cost, outbound transportation cost and production cost) (Lee,W,C.2007) and (inbound cost, outbound cost, warehousing cost, inventory holding cost and return on net asset) to measuring cost based performance.(Droge,C. 2004) used two different factors to hold times based operational performances these are time to market (product introduction, developing time) and time to product (manufacturing lead time, purchasing lead time and delivery speed (Frohlich,M. 2001) used three measures of performance, namely productivity, non-productivity and marketplace performance.

The analysis of productivity -productivity construct reveals that they are measured using time based (manufacturing lead time, procurement lead time etc.), cost based (manufacturing cost, overhead cost etc.) and customer service based (customer satisfaction on time delivery etc.) items, eight items were used to measure both the constructs (Flynn, B.2010) applied two measures of performance these are operational performance and business performance.

They also captured an operational performance using eight elements which are a time based combination (on time delivery, quick introduction of new products in the market, quick response to market changes, etc.) and customer service based (high level of customer service) performance measures. Contrary to this, only three items were used to capture operational performance by (Frohlich,M 2002) (delivery time, transaction cost and inventory turnover) and (Aryee,G 2008) (production cycle time, new product time to market and percentage of supplier getting forecast or demand data).

The same irregularity can be seen in the measurement of financial performance measures. (Flynn ,B.2010) used eight items (growth in sales, return on sales, growth in

profits etc.), (Kannan, V. 2010) used four items (market share, ROA, customer service level and overall competitive position),(Frohlich,M. 2001) used three items (market share, profitability and ROI), (Vickery ,S.2003) used three items (ROI, ROA and return on sales) and (RosenzweigE.D. 2003) used also used three items (ROA, percentage of revenue from new product and overall customer satisfaction rating) to capture firm performance.

Process reference models integrate the well-known concepts of business process engineering, benchmarking, process measurement and Process organizational design into a cross-functional frame work. The Supply Chain Operations Reference (SCOR) model is special in that it joins business processes, performance metrics, practices, and people skills into a unified structure. It is hierarchical in nature, interactive and interlinked**.** (APICS Global Standard, 2019)

The performance area of SCOR comprises of two sorts of component: Performance Attributes and Metrics. A performance attribute is a grouping of metrics used to express a strategy. An attribute itself cannot be measured; it is used to set strategic direction. Metrics measure the ability of a supply chain to achieve these strategic attributes.

Table 1:Performance Attribute

Performance Attribute	Definition
Reliability	The ability to perform tasks as expected. Reliability focuses on the predictability of the outcome of a process. Typical metrics for the reliability attribute include: On-time, the right quantity, the right quality.
Responsiveness	The speed at which tasks are performed. The speed at which a supply chain provides products to the customer. Examples include cycle-time metrics
Agility	The ability to respond to external influences, the ability to respond to marketplace changes to gain or maintain competitive advantage. SCOR Agility metrics include Flexibility and Adaptability
Costs	The cost of operating the supply chain processes. This includes

	labor costs, material costs, management and transportation costs. A typical cost metric is Cost of Goods Sold.
Asset Management Efficiency (Assets)	The ability to efficiently utilize assets. Asset management strategies in a supply chain include inventory reduction and in-sourcing vs. outsourcing. Metrics include: Inventory days of supply and capacity utilization.

2.1.7 Operational performance

Organizational performance is necessary to scholars across the whole domain of management research. Strategy and accounting scholars search for influence and measure organizational performance. Marketing, operations, and human resource management researcher aim to understand and improve performance. doing that, they adopt discipline specific measuring customer satisfaction, productivity, and worker satisfaction (Chenhall & Langfield-Smith, 2007).Organizational performance comprises three specific areas of firm outcomes :namely , financial performance , product market performance and shareholder return. (Pierre Richad, 2009).

Organizational performance has been explained in two dimension: operational and financial performance (Stock,Greis ,and kasarda,2000). Multiple study have measured organizational performance by using financial and market tracer such as market share, return on investment ,profit margin on sales, entire competitive position and the growth of market share, sales, and return on investment (Li *et al*.,2006; Stock ,Greis, Kasarda,2000). Linking supply chain integration with organizational performance, Supply chain managers take a comprehensive perspective of relevant actions and seek to improve performance by coordinating their customer satisfaction activities (Tan *et al*., 2002, Yousuf*et al* 2019). The increasing of integration of supply chain has good contribution for enterprises improvement (Frolich and Westbrook,2001).

2.2 Empirical literature Review

2.2.1 Constructs (dimension) of supply chain integration

2.2.1.1 Supplier integration

Supplier integration reflect a situation in which suppliers are active in company's' main the key decision making processes, with information being exchanged them about demand forecasts, production and inventory rates being shared between them. Focal firms working in collaboration with their key suppliers to enhance the benefits of the relationship such as progressing the lead times, innovation, and quality. Thun. J. H (2010). The key focused of supplier should collaboration with clients how to enhance or better support to consumer experience.. The process of customer- supplier integration should be one that centered on solidifying both parties' relationship for their collective benefits. Fyrlan. A.*et al* (2006). Thus Supplier integration positively related to performance.

2.2.1.2 Internal integration

Internal integration contributes to cost reductions, the reduced stock-outs and lead time, as well as competitive advantage. Chen*et al* (2009). Customer integration encompasses multiple strategies and procedures, such as collaborative problem solving programs, direct customer communications, compliance management, improve customer locality and long term customer relationship. different activities and practices such as integrated problem-solving initiatives, direct customer contacts, managing customer complaints, increasing customer satisfaction, and establishing long-range relations with customers (Bouldinget al., 2005; Sousa, 2003; Tan et al., 1998)Internal integration and its correlation to external integration as there is a move towards more seamless process the focus is put on achieving internal integration. Both Rushton et al and Simchi-Levi advocate the integration evolution as going from functional to internal to external integration. Rushton *et al* (2006).Internal integration is a prerequisite for successful SCM (Lambert, Cooper &Pagh, 1998). Companies with a low internal integration strategy will also achieve a low external integration level and companies implementing the full internal integration strategy will have the highest external integration levels (Gimenez and Ventura, 2005).. In general, companies are believed to achieve a relatively high level of internal integration before attempting to develop a higher degree of external integration (Otchere et al. 2013). Thus the internal integration was positively performance-related.

2.2.1.3 Customer integration

The integration of customers in the supply chain gives the opportunity for firms to have an overview of the requirements and their specific needs giving them the advantage of serving them better. The integration of customers in a supply chain focuses on gathering information from customers such as their buying patterns, their product preference and their ability to buy products that would then be used to make better decisions during the manufacturing in selling processes.. Lotfi.Z(2013). When firms make partner with their customers, they are able to respond quikly and efficiently by improving their order fulfillment as well as increasing quality. So Customer Integration has a good impact on performance..

2.2.1.4 Information integration

Integration of information has found to be a must for businesses looking to communicate with their clients and suppliers. Amue, G (2014). Information integration however is not just restrained to the efficiency and application of technology. Information requires people's inputs and role-playing, technological systems to originate, sort, process and information at the right time for effective decision-making process to the designated location. Sadler (2007).When Information is shared across the supply chain, data can be collected in real time as closer communication is then established with other supply chain members leading to better customer service and better demand forecasting Amue, G (2014).

2.2.1.5Measurement-integration

Ensure that each part of the supply chain is accountable for achieving its own objectives, there must be consistent instructions and specific requirements as to what is needed to achieve the overall objectives. Members of the supply chain will have expectations that will produce a report card about how the members work. Jenifer Lombared (2013)

2.2.1.6 External integration

External integration is very efficient. Its efficiency can be seen after the successful application of internal integration and must be present in the supply chain of all companies, and is thus a precondition for external integration. Stock noted that external integration can be implemented along the supply chain. Stock *et al.* (1998) Presents the integration of logistical activities that extend beyond the enterprise. This results in external integration relating to the collaboration and cooperation with other supply chain members.(Lee2000) He stress that three dimension of external integration across the supply chain integration of information ,co-ordination and co-use of resources as well as organizational connection of relations. The theory of organizational learning suggests that organization seek to acquire external knowledge to establish a competitive advantage by acquiring external knowledge. According to empirical study results, such as Frohlich and Westbrook (2001) and Lau et al. (2010), External integration results in the operational performance of suppliers and customers which the researchers propose to positively relate to performance.

2.2.2 Mono or multi dimension

Integration in the supply chain has been found to improve performance of the chain therefore it is important for organizations to set out clear cut indicators on what they intend to measure. According to (Fatta,F, and Nookabadi,A,2013) performance measures should focus on the overall performance of the supply chain taking into account variables of financial, customer service, flexibility, efficiency indicators. Others may argue on contrary this.

The number of literature on supply chain management is growing rapidly (Alfalla and Mendia, 2009).According to the Journals in Supply Chain/Logistic Management and Operation Management. The book entitled Production planning and Control: The Management of Operations (2013) study indicate that systematic content analysis of 36 papers was undertaken for identifying dimensions and variables for Supply Chain Integration and developing the conceptual Supply Chain Integration framework. Each of the selected papers was thoroughly studied and the Supply Chain Integration dimensions and variables were identified and analyzed. While gathering information

on dimensions and variables of Supply Chain Integration from prior research, the complementary papers of the authors of above 36 papers have also been looked into (Sahin and Robinson 2002, Bagchi, 2005).

Key dimensions and variables in previous research, Supply Chain Integration has been studied from several perspectives and there are varied dimensions and variables for measuring Supply Chain Integration. This is mainly due to the lack of clarity of the concept of Supply Chain Integration. While few authors examine Supply Chain Integration through a single construct as follows

Table 2 Supply chain integration as mono-dimensional construct in previous study

Article	Supplier(s),internal(l)or customer scope	Dimension analyzed
Biscoe and Dainty(2005)	Supplier/Internal/Customer	Supply chain integration
Cousins and Menguc (2006)	Supplier	Supply integration
Dong(2001)	Supplier/Customer	Supply chain integration
Frohich and Westbrook(2001	Supplier/Customer	Supply chain integration
Kannana and Tan(2005)	Supplier/Customer	Supply chain integration
Petersen(2008)	Supplier	Supply integration
Rosenzweig(2003)	Supplier/Internal/Customer	Supply chain integration
Sandeson(2005)	Supplier	Buyer supply integration
Sezen(2008)	Supplier/Customer	Supply chain integration
Tan(2002)	Supplier/Customer	Supply chain integration
Vickery(2003)	Supplier/Internal/Customer	Supply chain

		integration

Others consider Supply Chain Integration through multi-dimensional constructs. Multi-dimensional approaches receive greater attention because of complexity of the concept of Supply

Table 3 Supply chain integration as Multi-dimensional construct in previews study

Article	S/1/C Scope	Dimension Analyze
Bagchi et al.(2005)	S/C	Information sharing and communication across the SC collaboration and shared decision making with network partners collaboration leading to risk ,cost, and gain sharing or incentive alignment sharing of skills , ideas and institutional culture (operational and strategic collaboration) organization
Cagliano(2006)	S	Integration of information flows of physical flows
Das (2007)	S/1	External integration practice(supplier integration) internal integration practice (supplier integration)
Devaraja(2007)	S/C	Supplier production information integration customer production integration
Droge (2004)	S/1/C	External strategy design integration internal design process integration
Germain and Iyer (2006)	I/C	Internal integration Downstream integration
Gimenez and Ventura (2006)	S/I/C	Internal integration External integration
Gimenez and Ventura (2005)	S/I/C	Internal integration: logistic production Internal integration: logistic marketing External integration
Hsu(2008)	S/C	Information sharing Buyer –suppler relationship
Kim(2009)	S/I/C	Company's integration with suppliers cross-functional integration within a company Company's integration with customers
Koufteros(2007)	S	Black –box supplier integration

Kulp (2004)	S/C	Information sharing collaboration
Lee(2000)	S/I/C	Information sharing coordination and resource sharing organizational relationship linkages
Mollenkopf and Dapiran(2005)	S/I/C	Customer integration internal integration Material /service supplier integration Technology and planning integration Relationship integration
Narasimhanand Kim(2002)	S/I/C	Company's integration with suppliers Internal integration across the SC Company's integration with customers
Quesada(2008)	S/C	Customer integration supplier integration
Rodrigues(2004)	S/I/C	Integrated internal operation and integrated external operation
Sahin and Robinson (2002,2005)	S/I/C	Degree of information sharing and decision-making coordination
Sanders and premus (2005)	S/I/C	Internal collaboration and external collaboration
Stank(2001)	S/I/C	Internal collaboration external collaboration
Stock(2000)	S/I/C	Internal logistics integration external logistics integration
Swink (2007)	S/I/C	Strategic customer integration Strategic supplier integration product-process technology integration and Corporate strategic corporate integration
Vachon and Klassen(2006,2007)	S/C	Logistical integration with supplier Logistical integration with customers Technology integration with suppliers Technology integration with customers
Wong and –Boon-itt(2008)	S/I/C	Internal integration supplier integration and customer integration

Source: Production planning and control (Rafaela, L.201

When Supply Chain Integration is investigated as a mono-dimensional construct, the variables are in number and focus very different. Supply chain integration constructs have been found to be built from three (Vickery, 2003) to four items (Dong, 2001, Rosenzweig, 2003, Cousins and Menguc, 2006) to eight items (Frohlich and Westbrook 2001, Briscoe and Dainty 2005)

.The diversity of the items was very wide. For example, Rosenzweig, (2003) measured the Supply Chain Integration constructs by the question: How integrated is your

business unit's Supply Chain? (1) Integrated closely within your own organization (cross-functional), (2) integrated closely with raw material supplier, (3) integrated closely with distributors/retailers, and (4) integrated closely with customers.

The above Supply Chain Integration steps are somewhat different from the study by Frohlich and Westbrook (2001) where Supply Chain Integration considers items like (1) access to planning systems, (2) sharing production plans, (3) joint EDI access/networks, (4) knowledge of inventory mix/levels, (5) packaging customization, (6) delivery frequencies, (7) common logistical equipment and containers and (8) common use of third-party logistics. In another study, (Vickery, 2003) define Supply Chain Integration constructs by means of three items, such as (1) supplier partnering, (2) closer customer relationships and (3) cross-functional teams.

These three examples reveal the non-uniformity of Supply Chain Integration constructs, and make clear the need for consensus building for Supply Chain Integration to pursue further research. Few authors have considered Supply Chain Integration through multi-dimensional constructs. Differing dimensions characterize the concept of Supply Chain Integration. (Sahin and Robinson, 2005) proposed the degree of information sharing and coordination of decision making as two major dimensions of operational Supply Chain Integration. (Lee 2000) outlined three dimensions of Supply Chain Integration: information integration (II), coordination and resource sharing (CRS) and organizational relationship linkage (ORL). Bagchi et al. (2005b) categorized Supply Chain Integration into five interrelated dimensions: information sharing and communication across the Supply Chain, collaboration and shared decision-making with network partners, collaboration leading to risk, cost and gain sharing (operational and strategic collaboration), sharing of skills, ideas and institutional culture and organization.

The dimensions identified by Lee (2000) and Bagchi et al. (2005b) for the Supply Chain Integration are quite similar. The first two dimensions are similar, and the third dimension indicated by Lee (2000) matches the last three, as Bagchi et al. (2005b) have indicated. The most common techniques used are intercompany and intracompany integration. While internal integration is a prerequisite for external integration, various papers only focus on external integration with suppliers (Cousins and Menguc 2006;Das ,2006, Koufteros,2007) or with suppliers and customers (Dong

, 2001, Frohlich and Westbrook 2001, Bagchi , 2005;Vachon and Klassen 2006, 2007, Devaraj, 2007, Quesada ,2008;Sezen, 2008). Just one selected paper distinguishes between knowledge flow integration and physical flows (Cagliano et al . 2006). Others emphasis on the integration of suppliers and customers' supply information flows (Devaraj, 2007). Only one selected paper differentiates between integration of information flows and physical flows (Cagliano et al. 2006). Others focus on the integration of production information flows of suppliers and customers (Devaraj , 2007).

Table 4Classification of supply chain integration selected paper

Supplier integration	Number of paper		Percentage (%)
Mono dimension construct	11		30.6
Multi- dimension construct	25		69.40
Total	36		100
	YES	NOT INCLUDE	
Customer integration	30	6	83.3
Internal integration	19	17	52.8
Supplier and customer integration	29	7	80.6
External and internal integration	17	19	47.2
Total	36		

Source: Production planning and control (Rafaela, L.2012)

The table above summarizes the features of the papers chosen. It shows the predominance of the Supply Chain Integration concept as a multi-dimensional construct (69.4 %) and that both external and internal integration research (47.2 %) is the lowest one. The majority of papers focus only on the integration of suppliers and/or customers. A conceptual framework for Supply Chain Integration

The above paragraphs show exactly the lack of unity on the dimensions and variables of Supply Chain Integration and the need to establish conceptual framework with dimensions and variables of Supply Chain Integration which could be used across

industries and regions to achieve comparable results. A conceptual framework has been developed based on prior research on Supply Chain Integration constructs. The evidence suggests that integration of the Supply Chain is possible through multidimensional constructs. The integration of the supply chain covers both internal and external aspects of business. The key to Supply Chain Integration is to develop uninterrupted link with upstream suppliers and downstream customers along with total functional synergy internally. Integration could therefore be achieved through three key interrelated activities-customer relationship management, internal supply chain management and supplier relationship management

In other words, Supply Chain Management's task is to integrate consumers as well as suppliers into the business processes of the company. In this study, as suggested by Lee (2000), information integration, CRS and ORL were considered as dimensions of the Supply Chain Integration. Table4 shows three-tier Supply Chain Integration framework. The proposed framework helps researchers understand every other dimension and variable for supply chain integration and allows practitioners to measure the integration level and identify improvement measures.

Table 5 the three-tier supply chain integration: Supply chain integration Construct

Dimension	Scope	Variables
Information Integration(11)	11with customers	11 1to 115
	Internal 11	11 1to 115
	11with suppliers	11 1to 115
Coordination & Resource sharing (CRS)	CRS with customer	CRS1TO CRS8
	Internal CRS	CRS TO CRS3
	CRS with supplier	CRS1 to CRS9
Organizational Relationship linkage (ORL)	ORL with customer	ORL1to ORL 9
	Internal ORL	ORL1toORL2 4TO 7
	ORL with supplier	ORS1 to ORL 9

According to Lee (2000), information integration refers to information exchanging

internally and between supply chain members including information on demand, inventory status, marketing plans, sales forecasts and production. The members are also working together to formulate joint demand and replenishment forecasts. CRS refers to intra- and inter-organizational realignment of the decisions and resources. In this dimension, reorganization of the outsourcing and logistical aspects is particularly important. Finally, ORL involves stable interactions and transparent relationships between the Supply Chain members, which entails, among other things, common visions and objectives, incentive realignment, sharing of skills, ideas and institutional culture and laying down performance measures. Table 4 shows the variables that enable measurement of the three dimensions of Supply Chain Integration. The variables are collated from the literature as shown in column 4 of the table. Additionally, column 3 shows the type of integration (supplier/internal/customer) that each variable facilitates.

The last column shows how each variable is defined. And organizational integration should continue with knowledge sharing as it is one of the main factors for improving the SC (Lee 2000, Frohlich and Westbrook 2001;Mentzer*et al*. 2001, Bagchi*et al*. 2005a, Paik and Bagchi 2007, Hernández *et al*. 2008, Moyano Fuentes 2010, Moyano Fuentes *et al*. 2012). For the overall organizational performance improvement, it is necessary that the exchange of information to be perfect (Gavirneni*et al*. 1999) and the managers choose appropriate information for exchange (Zhou and Benton 2007).

Information flow specifically affects production plans, inventory management and delivery plans (Lee et al . 2004). Organizations therefore have to implement an integration strategy with the SC partners (Akkermans et al . 1999, Caskeyet al . 2001, Jain et al . 2009). CRS looks for synergy based on trust and the dependence between SC members. However, it is not easy to break down departmental and business barriers and adopt a strategy of process integration. If coordination between the SC members is not sufficient, there could be some imbalances between capacity and planning of production. Realignment to the work is therefore essential.

The logistic aspects are very essential too. Outsourcing reorganization, packaging customization / standardization, frequency distribution agreements and the common use of logistics equipment have a high impact on cost, quality and speed. However, not all suppliers or consumers will have the same level of collaboration, as it will rely on

the company's shared interest (Lambert et al . 1999, Bagchi and Skjoett-Larsen 2002). The ORL requires a better strategic vision to achieve common visions and goals, share risk, reduce costs, promote rewards, develop skills and institutional culture and define joint performance measures. Contact networks need to be built and cross-functional teams set up in the Supply Chain. Lots of organizations have changed their attitude towards their customers and suppliers in recent years. Today the focal company strives to collaborate with its clients and suppliers to prepare and function for greater performance than independent research (Simatupang and Sridharan, 2002). To develop supply chain integration, it is therefore necessary to build long-term relationships among the supply chain members (Beth,S. 2003) indicate that, despite much technological and process advancement in Supply Chain Management, '… an agile, adaptive Supply Chain remains an elusive goal'. (Jin,F. 2013) suggest that their research answers an important question: 'Why are companies not doing better?' According to them, organizations lack willingness to combine skills and processes, so few businesses take advantage of the higher organizational efficiency potential presented by Supply Chain Integration (Jinet al.2013)206 .It is clear from previous studies (Jie, F. 2013 Mackelprang A.W. 2014Xu, Huo and Sun 2014) that there is a positive relationship between the level to which organizations pursue enhanced external and internal integration and improvements in organizational performance through improved customer service and reduced costs (Tseng, P and Liao,C. 2015).

Here the external and internal integration is linked to the performance of the supply chain. Supply chain integration starts first with internal integration within an entity between the different divisions and functions before external integration is sought.In their study, (Ralston, P. M., Blackhurst, J., Cantor, D. E., and Crum, M. R. 2015) also found out that internal integration improves the firms performance by reducing costs and limiting the ability of departments within the organization from taking steps that would distort the overall goals of the organization. Measurement integration ensures that each part of the supply is accountable for meeting its own goals.

Integration of information has been found to be a requirement for businesses looking to connect with their customers and suppliers (Amue, G. J., and Ozuru, H. 2014).Information integration however is not just restrained to the productive and application of innovation. It requires the inputs and role playing of people,

technological systems to originate, sort, process, and disperse information to the designated location at the proper time for effectual decision making process (Sadler, I. 2007). Once information is transmitted through the supply chain, data can be gathered in real time as closer connections are then generated with other supply chain participants that will lead to improved customer service and improved demand forecasting (Amue, G. J., and Ozuru, H.2014).

2.3 Conceptual Framework of the study

Supply Cain Integration Supply Chain Performance

H_1

H_2

H_3

H_4

H_5

Source: The conceptual Framework of the study, adapted from (Vikas Kumar et al. /) modifies by researcher

Hypothesis Summary

H1: Supplier Integration has Significant and positive impact on Supply Chain performance

H2: Internal integration is positively linked to supply chain performance

H3: Customer integration has significant and positive impact on supply chain performance

H4: Information integration has significant and positive impact on supply chain performance

H5: External integration has significant and positive impact on supply chain

performance

Source: The conceptual Framework of the study, adapted from (Vikas Kumar et al. /) modifies by researcher.

2.4 Gaps in literature related to the concept of supply chain integration

The literature review shows there is relation between the supply chain integration and performance. Some writers put the negative relation others says supply chain integration has a positive impact. Some mentioned there is three primary dimension of supply chain integration others stated more than that. Others book on the same area share the same idea on gaps. Relationship between Supply Chain Integration and performance shows that there is a need to establish the immediate of performance outcomes of various dimensions of Supply Chain Integration. There is an idea of relation link between diverse functions and supply chain partners for better decision making and higher levels of coordination and collaboration. On the contrary, others argue that the resource base of the firm is the antecedent to competitive advantage for better business performance and profitability. Some give the buyer-supplier relationship stress where, as others explain, it's just a means not the ultimate goal. This study try to fill gap by using primary data collected from questionnaire and interview. The scope of supply chain integration is not limited, as suggested in the literature review, but has a broad range of scope. On the area it needs to be further investigated.

CHAPTER THREE

RESEARCH DESIGHN AND METHODLOGY

This chapter describes the methodologies that were used in the study: the research approach and design; data gathering, and analysis technique.

3.1 Descriptive of the study area

The Ethiopian Shipping and Logistics Service Enterprise (ESLSE) established on 21

November 2011. With the combination of Ethiopian Shipping Lines Share Company, The Maritime and Transit Service Enterprise and the Dry Port Service Enterprises.(Federal Negarit Gazeta of The Federal Democratic Republic of Ethiopia 18th year No.3 Addis Ababa 21thNovember 2011).

In 2015 Comet Transport Share Company merges with ESLSE. Comet situated near Addis Ababa rail way station in kality, Debrezeitroad. Comet transport was one of five freight transport set up on the dissolution of the former Ethiopian Freight Transport Corporation (EPTC) in1986.As result of the structural adjustment program. Nowadays the comet transport share company transfers its name to Kality freight transport under the Shipping enterprise. The kality freight transport, with help of deployment and maintenance handling office, work with different stations. These are Mille, Modjo and Djibouti the multimodal and uni-modal system. In addition, this transport sector gives trip round among the province within the country transport fertilizer, wheat, sugar, iron etc. This sector plays major role contributes progress of nation economy as a whole.

3.2 Research approach and design

3.2.1 Research approach

Qualitative and quantitative approach was applied for this study researcher. Qualitative offers a full description and analysis of a research topic, without limiting the scope of the research and the nature of participant's response (Collis and Hussey, 2013).Qualitative research reflects a systematic approach involving discovery .Qualitative research is also described as an unfolding model that occurs in a natural setting that enables the researcher to develop a level of detail from great involvement in the actual experiences (Creswell, 1994). Qualitative data is in word, image, or object form. It's important to view the events subjectively-individually.

3.2.2 Research Design

A research design is the 'procedures in research studies to collect, analyze, interpret and report data' (Creswell & Plano Clark 2007, p.58). Descriptive research is to provide a description of a circumstance, person or event or demonstrate how things

relate to each other and how things happen naturally (Blumberg, Cooper and Schindler, 2005). The research attempts to systematically explain a situation, problem, trend, service or provides information about, say, a community's living conditions, or describes attitudes toward a problem. (Ranjit.k2011). Explanatory research design has been used to demonstrate the hypothesis about SCI's role in the performance of freight for Kality. An explanatory research examines the causes and reason and gives evidence to assist or reject a prediction or explanation. It is conducted to discover and report some relationships among different aspects of the phenomenon under study. An explanatory research sets out the basic details to clarify and account for. Descriptive studies may ask what kinds of questions, explanatory studies seek to ask questions about 'why' and 'how' (Grey, 2014).

3.3 Population and Sampling

3.3.1 **Population**

The recent merged branch, kality freight transport is the only which exercised freight transport activity. The total population of kality freight transport branch is 860. The researcher was used Stratified sampling. Population divides into strata (with department)/subgroup. Stratified random sampling is one of the probability sampling designs in which the total study population is first classified into different subgroups based on a characteristic that makes the classification variable more homogeneous for each subgroup. It benefits researchers by enabling them to obtain a sample population that best represents the entire studied population. (Chris B.Murphy2019)).

3.3.2 Sample size

The study area was located at Addis Ababa near Light railway kality terminal. The population is 860. According to Nasiurma (2000) the sample size can be determine

$$n=\frac{Nc^2_v}{c^2_v + (N-1)\, e2}$$

Where n is sample size

Nis population

C_v is coefficient of variance

e is tolerance at desired level of confidence

n became 107

$\underline{860*0.5^2}$= 107

0.5^2+ (860-1)0.05^2

Operation and planning (50), Finance and related (58), General administrative and service (176), Drivers (376), Technical employees (200).The sample Size is 107 it was taken proportional. There were five stratums 50/860*107=6, 58/860*107=7, 176/860*107=22, 376/860*107=47 and 200/860*107=25 from each subgroup select 6, 7, 22, 47 and 25. The researcher calculated a total sample of 107, assuming that a 95% confidence interval, and 0.5 coefficient of variation.

3.4 Data Collection

The researcher was used primary sources data for the purpose of study. It had been gathered in two ways. These were interviews and questionnaires. Questionnaire research is a reliable and fast method of gathering information effectively and in a timely manner from multiple respondents. This is especially important when it comes to large projects, with several complex objectives, where times is one of the major constraints (Greenfield, 2002; Silverman, 2004).

Questionnaire functions as a tool as it protects the respondent's privacy rights (Denzin and Lincolon, 2005) Interviews offer an opportunity for a more in-depth, open dialogue and more informal, free communication between the interviewer and the interviewer. (Sarantakas, 2013) (Potter, 2002; Winchester, 1999)

3.5 Data Analysis

The method of data analysis was based on the type of instrument employed to gather information. To analyze of data the researcher was apply tools. After the quantitative data were collected, edited and processed and entered in to STATA, a test for reliability has been made .The analytics method was based on the type of method that used gather information. Consequently, a descriptive statistics mainly frequency count, percentage, central tendency (mean), dispersion measure (standard deviations) were used to summarize and describe the observation results. The Ordinary Least Square (OLS) assumptions were also used to determine the relationship between the

variables and to test the, correlation and regression analysis, correlation and regression analysis was used by meeting the Ordinary Least Square (OLS) assumptions of the linear regression model.

3.6 Scale Reliability and Validity

3.6.1 Reliability Test

Measuring the consistency or reliability of the questionnaires in likert-scale is essential. To measure such a reliability analysis Cronbach's Alpha (is the most common measure of reliability scale. Reliability test is acceptable when analysis value (greater than 0.60 (Cronbach's, 1951).

According to (Field 2009), providing a measured reliability value (either) greater than 0.70 is quite acceptable. As shown in table 3.1 below, a value of Cronbach's alpha for each variable was greater than 0.70 that is very suitable.

Table 3.1 Reliability test

Test scale = mean(standardized items)

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
INTERNALIN-N	89	+	0.7663	0.6579	0.6157	0.8890
EXTERNALIN-N	89	+	0.8102	0.7183	0.5943	0.8799
CUSTOMERIN-N	89	+	0.8514	0.7766	0.5742	0.8708
INFORMATIO-N	89	+	0.8586	0.7868	0.5707	0.8692
SUPPLIERIN-N	89	+	0.7870	0.6862	0.6056	0.8848
SCIPERFORM-E	89	+	0.8040	0.7096	0.5973	0.8812
Test scale					0.5930	0.8973

Source: Field survey, 2020

Key words: INTERNAL IN-N for internal integration, EXTERNAL IN-N for external integration, CUSTOMER IN-N for customer integration, INFORMATIO-N for information integration, SUPPLIER IN-N for supplier integration and SCIPERFORM-E for supply chain performance.

3.6.2 Validity Test

To ensure the quality of this research design content of the research instrument was checked. Other researchers were also conducted as it is another way to check the suitability of questions. This was assessed to know whether the development tool measures what it means to measure and to check the clarity, length, question structure.

3.7 Ethical consideration

The researcher had taken into consideration ethical issues. Respondents were notified of the purpose of the study in advance, and were informed to consent to free involvement in writing. Their name and the business names to which they belong were held in strict confidence. The company's Privacy and Privacy Policy was also taken in to account. All information that was collected for this study used only for this paper was kept confidential.

CHPTER FOUR

RESULTS, DISCUSSION AND INTERPRETATION

This chapter presents the analysis and discussions for the research findings obtained from the questionnaires and interview. The purpose of the study was to show the role of supply chain integration on freight transport performance, the case of ESLSE in Kality Branch.

4.1. Descriptive analysis

4.1.1 Response rate

Within ESLSE Kality freight transport the questionnaires were distributed to all employees. Of the 107 questionnaires, however,18 respondent were not return the questionnaires and 89 respondents were distributed fully filled in and returned the questionnaires, resulting in a response rate of 83 percent and this response rate was satisfactory for the study to reach the conclusion.

Table 4.1 summary of the response rates

Data sources	Methods of data collection	Sample size	Response	Frequency	Percentage
Operation and planning, Gen. Adm. and Service, Finance and related, and Technical employees	Questionnaires	107	Filled and returned the questionnaires	89	83
			No response	18	17
Totals				107	100

Source: Field survey, 2020

4.1.2 Demographic information

The outputs processed by STATAsoftware are given to show the demographic profile of the participants in terms of gender, age, study area, and professional certification, as well as the experiences shown below.

Studies indicate that the respondents (24.72 percent) were female and (75.28 percent)

were male.

Table 4.2: Demographic Profile of the respondents

Demographic Profile of the respondents	Item	Frequency	Percentage
Gender of the respondent	male	67	75.28
	female	22	24.72
Age of respondent	18 up to 25	10	11.24
	26 up to 31	22	24.72
	31 up to 40	29	32.58
	Above 40	28	31.46
Educational Qualification	Below 12	9	10.11
	Grade 12	36	40.45
	Diploma	15	16.85
	1st Degree	25	28.09
	2nd Degree	4	4.49
Work Experience	1 to 5 years	20	22.47
	6 to 10 yrs	27	30.34
	11 to 15 yrs	14	15.73
	16 to 20 yrs	12	13.48
	Above 20 yrs	16	17.98

Source: Field survey, 2020

Age of the respondents

The study respondents were required to indicate their age group and the results shows that (32.58%) of respondents were between 31 and 40 years of age, (31.46%) of respondents indicated that they were over 40 years of age, (24.72%) that they were between 26 and 30 years of age, and (11.24%) .

Educational Qualification

The study requested the respondents' Educational qualification level. The (4.49%) of the respondents obtained Second Degree, (28.09%) First Degree, (16.85%) were Diploma, (10.11%) Below grade12, (40.45%)

Work experience

The study requested respondents, to indicate the number of service years they had served for. The (30.34%) of the respondents had worked for a period ranging 6 to 10 years, (22.47%) of the respondents were between 1 to 5 years, (17.98%) of the respondents had served above 20 years, (15.73%) of respondent had served between 11 to15 years, and (13.48%)

The demographic data helps to determine the response of the questions. Most of the employees were grade 12 students so they might be less acquaintance with the concept of SCI.

4.3. Supply Chain Integration Practices

Based on the first section of the questionnaire (Question1-Question4) which examines the internal integration all question had a mean response value less than 3.00. This implies that participants were agreed on the Question1-Question4.The standard deviation of Q1, Q2, Q3 and Q4 were greater than 1.00. It indicates that the respondents perceptions were vary one to another.

According to the second section of the questionnaire (Q5-Q7) which examines the External integration of ESLSE Kality freight transport branch the mean response values was less than 3. This implies that participants were agreed on the external integration. The standard deviation of the questions was greater than 1.00 and this shows the respondents perception were far from one another.

The third section of the questionnaires (Q8- Q11) which examines the practice of customer integration, only question no. 8 had a mean response of 2.00. This implies that participants were agreed on the customer integration of the branch. However, the rest respondents were neutral. The standard deviations for all questions (Q8- Q11) were greater than 1.00 which indicates that all the respondents' perceptions were differ from that of each another.

The information integration of the branch was studied and the result showed that the mean score value of the questions Q12 & Q14 were approach to 2.00 and the rest responses were approach to 3.00. While we observed the standard deviations were greater than 1.00

Based on the first section of the questionnaire (Question16-Question19) which

examines the supplier integration all question had a mean response approach to 3.00.

Table 4.3: Supply chain integration practice (N=89)

Internal integration Practices	**Mean**	**Std. deviation**
Q1.There is a practice of flow of sharing information across departments	2.438202	1.296455
Q2.There is a practice conduct of problem solving among internal function	2.505618	1.197759
Q3. There is a practice data integration among internal departments	2.685393	2.266666
Q4. There is a participation of cross functional groups in process of improvement	2.58427	2.213644
Total mean score	2.55337	
External integration Practices	**Mean**	**Std. deviation**
Q5. There is a participation in establishing long term relationship	2.534091	1.144189
Q6. There is an exchange of feedback evaluation	2.696629	1.080872
Q7.There is dealing with others to improve cost efficiency	2.58427	1.250536
Total mean score	2.6049	
Customer integration Practices	**Mean**	**Std.deviation**
Q8.There is sharing information with customer.	2.41573	1.165888
Q9. There is long term relationship with customer	2.674157	1.084763
Q10. There is an agreement of decision to improve cost efficiency with customer	2.617978	1.162928
Q11.There is a practice of effective communication with selected customer	2.573034	1.21438
Total mean score	2.57022	
Information Integration Practices	**Mean**	**Std.deviation**
Q12. There is a practice of timely sharing information among the partners	2.393258	1.154221
Q13.There is a practice of wisely utilize of	2.674157	1.125886

information among the supply chain actors		
Q14.There is a freely interchange the information among partners	2.449438	1.066123
Q15.There is a practice of give training among the partners to cope with new Information Technology	2.640449	1.307732
Total mean score	2.53932	
Supply integration Practices	**Mean**	**Std.deviation**
Q16.There is a practice of sharing information through selected supplier	2.52809	1.262122
Q17. There is a practice of sharing strategy with supplier	2.539326	1.206575
Q18.There is a long term procurement through suppliers	2.674157	1.312313
Q19.There is a practice of smooth order system with supplier	2.606742	1.221195
Total mean score	2.58707	

Source: Field survey, 2020

As interview communication result of Supply chain integration practice, from interview conclude that practices is there. From interior to port from port to interior there has been well exercise collaboration among the partners. Whereas as per the information obtained through questionnaires described in the following table that summarized the supply chain integration practice of the freight transport, it was noted that the mean value approaches in between agree and neutral.

Internal integration

Several literatures ensured a very critical integration of the supply chain to enhance operational performance (Frohich and Westbrook, 2001). However, some authors found there is no direct relationship between internal integration and operational performance (Koufleros *et al*. Gimenez. C,2003). Traditional managers are worried with their own departmental roles (Premkumar, 2002). Each function is bureaucratic in nature, but this concept is not advisable a successful supply chain .Cross-functional behavior is relevant .So internal functions should be integrated (Narasimahn and Kim,

2002). The study conducted internal integration (II) on supply chain performance of Kality freight transport analysis showed that the mean score value for all questions were 2.55 this implies that the overall average response for the performance of field work was agreed by the respondent. The standard deviation of internal Integration (II) on SCI was greater than 1.00.It indicated that the respondent perception were far from one another.

External integration

External integration may be applied along the supply chain and according to Stock *et al*. (1998) presents the integration of logistic activities that go beyond the company. The result of this is that external integration refers to coordination and collaboration with other supply chain members.(Lee2000) emphasized three dimension of external or integration across the supply chain integration of information, co-ordination and co-use of resources as well as organizational connection of relations. The organizational learning theory also suggests that firms seek to establish a competitive advantage by acquiring external knowledge. According to (Frohlich and Westbrook (2001) and (Lau *et al*.2010), external integration (EI) results in the operational performance of suppliers and customers thus, the researchers propose that external integration positively related to performance. The study conducted on of external integration (EI) on supply chain performance of Kality freight transport analysis showed that the mean score value for all questions were 2.59 this implies that the overall average response for the performance of field work was agreed by the respondent. The standard deviation of EI on SCI was less than 1.00.It indicated that the respondent perception were close from one another.

Customer integration

The incorporation with consumers into a supply chain focuses on collecting information from customers such as their purchasing habits, their preference for goods and their ability to purchase items that can then be used to make informed choices during the production phase or sales to customers (Lotfi, Z., Sahran, S., & Mukhtar, M. (2013). When firms collaborate with their customers, they are able to respond and effectively by improving their order fulfillment as well as enhancing visibility. Integration of information was found to be a must for businesses looking to integrate

with their customer. (Kumar *et al*. Vikas(2017) The study conducted on customer integration (CI) on supply chain performance of Kality freight transport analysis showed that the mean score value for all questions were 2.57. This shows the respondent accepted on the overall average response for field work results. The standard deviation of CI was less than 1 which indicated that the respondents perception was close one another.

Information integration

The sharing of information refers to the exchange of information between companies, customers and suppliers. Lee (2002) said the information should be interoperable, meaning that one system can say to another. Integration of information has been found to be a necessity for companies looking to integrate with their clients and suppliers. G.J. Amue, & Ozuru, H.(2009). (2014).Information integration however is not just restrained to the efficiency and application of technology. It requires the inputs and role playing of people, technological systems to originate, sort, process, and disperse information to the designated location at the right time for effectual decision making process Sadler, I. (2007). As information is shared through the supply chain, data can be gathered in real time as better communication with other supply chain stakeholders are then generated which would lead to enhanced customer support and demand forecasting Amue, G. J., & Ozuru, H. (2009). (2014).The study conducted on information integration (INFOI) on supply chain performance of Kality freight transport analysis showed that the mean score value for all questions were 2.53 which means that the respondent agreed on the overall average response for field work results. INFOI's standard deviation on SCI was less than 1.00.It indicated the perception of the respondent was close from each other.

Supplier integration

Supplier integration describes a situation that the suppliers are active in the company's key decision-making processes, with information being exchanged between them about demand forecasts, production and inventory rates. This includes focal companies collaborating with their main suppliers to optimize the advantages of the partnership, such as enhancing lead times, creativity and efficiency. The customer-supplier integration process should be one that focuses on solidifying the relationships

between both parties for their collective benefits Furlan, A., Romano, P., &Camuffo, A. (2006). The study conducted on role of Supplier integration (SI) on supply chain performance of Kality freight transport analysis showed that the mean score value for all questions were 2.58 this implies that the overall average response for the performance of field work was agreed by the respondent. The standard deviation of SI on SCI was greater than 1.00.It indicated that the respondent perception were far from one another.

4.3. Assessments of ordinary least square assumptions

The study conducted the regression analysis to show the Internal Supply Chain Integration (ISCI), External Supply Chain Integration (ESCI), Customer Supply Chain Integration (CSCI), Supplier Chain Integration (SSCI) and Information Supply Chain Integration (INFOSCI) on Supply Chain Performance in the case of ESLSE Kality branch. When using the regression analysis the data is subjected to regression analysis assumptions without even any breach being found. The following are thus done to evaluate the assumptions of ordinary least square (OLS).

4.3.1Assessment of normality

The skewness and kurtosis were used to test the normality distribution. Skewness is used to describe the balance of distribution, i.e. it is unbalanced and shifted to one side (right or left), or centered or symmetric. A positive skew represents a left-shift distribution while a negative skewedness indicates a right-shift. Whereas kurtosis refers to the distribution's peakness or flatness as compared to the normal distribution. The values of Skewness and Kurtosis (available for a variable evaluated by all statistical methods as part of the standard descriptive statistics) and if the measured value exceeds the particular critical value, then the distribution is non-normal. The most commonly used critical values are ±2.58 (0.01significance level) and ±1.96 which corresponds to a 0.05 error level (Joseph et al, 2014). With this test, the researcher can easily assess the degree to which the skewness and kurtosis distributions vary from the normal distribution. Table 4.4 provides the results of the normality distribution test, demonstrating that the values of Skewness and Kurtosis measured in stata software do not exceed the critical value. Therefor it means that the data are natural and accurate for research.

Table 4.4 Stata output for Skewness /Kurtosis tests for normality

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	joint adj chi2(2)	joint Prob>chi2
INTERNALIN-N	89	0.0879	0.0006	12.15	0.0023
EXTERNALIN-N	89	0.1128	0.0922	5.24	0.0729
CUSTOMERIN-N	89	0.2372	0.0001	13.08	0.0014
INFORMATIO-N	89	0.1890	0.0064	8.13	0.0172
SUPPLIERIN-N	89	0.0455	0.0049	10.14	0.0063
SCIPERFORM-E	89	0.0338	0.7970	4.62	0.0994

-

Source: Field survey, 2020.

Key words: INTERNAL IN-N for internal integration, EXTERNAL IN-N for external integration, CUSTOMER IN-N for customer integration, INFORMATIO-N for information integration, SUPPLIER IN-N for supplier integration and SCIPERFORM-E for supply chain performance.

4.3.2. Assessment of Multicollinearity

The regression coefficient is less reliable in multiple regression analysis as the degree of correlation between the independent variable increases, and there is a problem of what is commonly described as the multi-colinearity problem (Kothari,2004).). Multi-collinearity is a statistical problem which exists when the explanatory variables (independent variables) are much relate with each other. It means when the strong correlation among predicators and the existence of correlation value greater than 0.80, tolerance value less than 0.10 and Variance Inflation Factor (VIF) greater than 10 in the correlation matrix (Field, 2009). In this case, tolerance is defined as a statistical tool that is used to show the variability of the stated independent variables in the model from other independent variables. Based on Table 4.5, the tolerance levels for all variables were greater than 0.10 and the Variance Inflation Factor (VIF) value for all variables were less than 10 and according to Table 4. 6. The correlation matrix of all variables among the predictors was also less than 0.80 which reveals the correlation between independent variables. Therefore, the correlation value, tolerance level, and VIF value indicates that this study did not cause a multicollinearity problem.

Table 4.5 Stata output for collinearity statistics

. estat vif

Variable	VIF	1/VIF
CUSTOMERIN-N	3.04	0.329066
INFORMATIO-N	2.59	0.386688
EXTERNALIN-N	2.35	0.424938
SUPPLIERIN-N	1.94	0.516359
INTERNALIN-N	1.79	0.559431
Mean VIF	2.34	

Key words: CUSTOMER IN-N for customer integration, INFORMATIO-N for information integration, EXTERNAL IN-N for external integration, SUPPLIER IN-N for supplier integration INTERNAL IN-N for internal integration,

Table 4.6 Correlation matrix

	INTERN-N	EXTERN-N	CUSTOM-N	INFORM-N	SUPPLI-N	SCIPER-E
INTERNALIN-N	1.0000					
EXTERNALIN-N	0.6035	1.0000				
CUSTOMERIN-N	0.5417	0.7070	1.0000			
INFORMATIO-N	0.5774	0.5924	0.7255	1.0000		
SUPPLIERIN-N	0.4069	0.5361	0.6485	0.6342	1.0000	
SCIPERFORM-E	0.6078	0.5125	0.5302	0.6580	0.6129	1.0000

Key words: INTERNAL IN-N for internal integration, EXTERNAL IN-N for external integration, CUSTOMER IN-N for customer integration, INFORMATIO-N for information integration, SUPPLIER IN-N for supplier, SCIPERFORM-E for supply chain integration performance.

4.3.3. Assessment of auto correlation

If there are patterns in the residuals from a model, then they can be considered as auto correlated (Brooks, 2008). The Durbin-Watson (DW) is a test of auto correlation in first order (Field, 2009). It assumes that the relationship between an error and the previous of an error. In this type of test, the null hypothesis of no autocorrelation cannot be rejected when DW result is near 2, (Brooks, 2008). Because, it shows there is little or no evidence of autocorrelation. Based on Table 4.7 the Durbin-Watson (DW) statistics value is 2.12 which are close to 2. Therefore, there is no evidence of autocorrelation among error terms in this study.

Table 4.7 Durbin Watson Test Model Summary

Model	R^2	Adjust. R^2	Durbin_Watson
1	0.5715	0.5457	2.125

Independent variable: (Constant), internal, external, customer, information, supplier integration. Dependent variable: SCI performance.

4.3.4. Assessment of Hetroscedasticity/ Presence of Homoscedasticity

The variance of the error was assumed to be constant, and this is known as the assumption of homoscedasticity. When there's no continuous difference between the errors, they are said to be hetroscedasticity (Brooks, 2008). All statistical packages have tests to assess homoscedasticity and P – value > 0.05 is acceptable (Joseph et al, 2014). Breusch Pagan test was conducted in STATA Homogeneity software and the results shown in the table below show a critical value greater than 0.05, showing no evidence of hetroscedasticity

Table 4.8 Hetroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of SCIP
chi2(1) = 0.02
Prob> chi2 = 0.873

4.4. Regression Results

Analysis of regression was performed to establish the statistically significant relationship between the independent and dependent variables. The results of the regression analysis were presented using tables with model summary, and beta coefficient. STATA tools applied to the analysis and the results of the analysis are presented as follows:

In order to measure how well the statistical model was likely to predict future results,

the coefficient determination also known as model summary was carried out. Analyzing the appropriateness of a single descriptive model for the research with the guidance of coefficient determination, R2, is standard practice in the context of model estimation.

In empirical studies, the most important benefit of R^2 is that it serves as a measure for the goodness of fit of the estimated model (Reisinger, 1997). The r-squared value more than 25% can be acceptable and good to fit (Thompson, 2002).

Table4.9. Model summary

Model	R^2	Adjust. R^2	Durbin Watson
1	0.5715	0.5457	2.125

Independent variable: (Constant), INTERNAL IN-N, EXTERNAL IN-N, CUSTOMER IN-N, INFORMATIO-N, SUPPLIER IN-N.

Based on the table 4.9, the model had a coefficient of determination (R^2) = 0.57 indicated that 57% of the variation in SCIP was explained by the variables in the model leaving 43% of the variation in SCIP to be explained by variables not in the model. Adjusted R^2 indicates the true behavior of R^2 that varies in accordance with the changes in independent variables. It means the overall contribution of internal integration, external integration, customer integration, information integration and supplier integration accounted for 54.57% of the variation in performance.

4.5. Tests of coefficient

The table below shows the level of significance on the variables. The standardized and unstandardized coefficients were also presented as follows:

Table 4.10 Regression Results Coefficients

Model	Unstandardized coefficients		Standardized coefficients	t.	Sig.	Collinearity statistics	
	(β)	Std.error	(β)			Tolerance	VIF
Constant	0.6958	0.17641		3.94	0.001		
Internal integration	0.2309	0.06627	0.33466	3.48	0.001	0.559431	1.79
External integration	0.0183	0.08583	0.02356	0.21	0.831	0.424938	2.35
Customer integration	0.9532	0.09699	0.12310	0.98	0.329	0.329066	3.04
Information integration	0.2640	0..09345	0.32650	2.83	0.006	0.386689	2.59
Supplier integration	0.2309	0.0685	0.33681	3.37	0.001	0.516359	1.94

H1: Internal integration has significant and positive impact on Supply Chain Integration

The positive beta sign and a statistically significance result of internal integration shows positive relationship with the supply chain performance. (ß = 0.33, t =3.48, and P<0.05). The positive magnitude sign and t-value of greater than 2 is indicating a strong relationship between the independent and dependent variable (Tadios., 2016). The interpretation is that holding all other variables constant, internal integration can contribute 33% of variation in supply chain performance which is statistically significance at 5% level of test. Thus, the regression coefficient of internal integration was significant in predicting performance.

This result is consistent with the finding by Frohlich &Westbrook (2001),Ralston, P.M.,*et al*(2015) those authors, who identified a positive relationship between Internal Integration and operational performance; indicate the positive effect of internal integration on cost, quality, delivery, flexibility, innovation, process efficiency, time-based performance and logistics service performance. However, some authors found no direct relationship between internal integration and operational performance (Koufteros et al., 2005; Gimenez. C, 2003.

Thus, the study does not reject the null hypothesis that states that there is a significance effect between internal integration and supply chain performance.

.**H2: External integration has significant and positive impact on supply chain performance**

The result shows positive relationship with the supply chain performance with ß = 0.02, t =0.21, and P>0.05). The positive magnitude sign and t-value of less than 2 is indicating a weak relationship between the independent and dependent variable. The interpretation is that holding all other variables constant, external integration can contribute 2% of variation in supply chain performance which is statistically insignificance at 5% level of test.

According to empirical study results, such as Frohlich and Westbrook (2001) and Lau et al. (2010), external integration positive results on operational performance.

Thus, the study rejects the null hypothesis that states that there is a significance effect between external integration and supply chain performance.

H3: Customer integration has significant and positive impact on supply chain performance

The result shows positive relationship with the supply chain performance with ß = 0.12, t =.98, and P>0.05). The positive magnitude sign and t-value of less than 2 is indicating a weak relationship between the independent and dependent variable. The interpretation is that holding all other variables constant, customer integration can contribute 12% of variation in supply chain performance which is statistically insignificance at 5% level of test.

This result is inconsistent with the finding by (Hausman& Stock, 2003). Kratochvil and Carson (2005) argued that customer integration leads to reduced steps in a business process and minimized losses by eliminating misunderstanding in the order process, which subsequently result in lower costs, improved quality and delivery, and increased customer responsiveness. Moreover,(Cox, 2004) also suggested that Customer integration is positively related to SC performance

Thus, the study rejects the null hypothesis that states that there is a significance effect

between customer integration and supply chain performance.

H4: Information integration has significant and positive impact on supply chain performance

The magnitude (β) of the effect of this variable on supply chain performance was 0.32 and the t value of 2.83 and P<.05. The positive magnitude sign and t-value of greater than 2 is indicating a strong relationship between the independent and dependent variable. The interpretation is that holding all other variables constant, information integration can contribute 32% of variation in supply chain performance which is statistically significance at 5% level of test.

This result is consistent with the finding by Moberg et al. (2002) asserted that timely and shared information in the SC results in more accurate decisions and can be regarded as a pillar of superior performance. Shared information enables companies to enhance inventory control and management and increase inventory turnover. Furthermore, shared information among SC partners improves delivery performance, logistics communication, and SC planning (Trevile et al., 2004). Additionally, information sharing significantly reduces costs (Wang et al., 2006), shortens cycle time (Lin et al., 2002), and improves overall SC performance (Zhao et al., 2002).Thus, the study does not reject the null hypothesis that states that there is a significance effect between information integration and supply chain performance.

H5: Supplier Integration has Significant and positive impact on Supply Chain performance

The analysis result indicates that magnitude (β) of the effect of this variable on supply chain performance was 0.33 and the t value of 3.37 and P<.05. This shows that there is a strong relationship between the independent and dependent variable. The result is consistence with the finding by Liu et al., (2010). Furthermore, integrating suppliers in new product development activities result in improved product quality, reduced development time and engineering changes, reduced costs, and early resolved potential problems of the supplier (De Toni & Nassimbeni, 2000). Generally, supplier integration positively affects lead time performance, manufacturing performance

(Vachon & Klassen, 2008), delivery performance, customer service, and competitive advantage (Gimenz& Ventura, 2005).Thus, the study does not rejects the null hypothesis that states that there is a significance effect between information integration and supply chain performance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS & RECOMMENDATIONS

5.1. SUMMARY

To achieve the research objectives, the study used questionnaires and interviews prepared for respondents regarding supply chain dimension and supply chain performance. The responses obtained from them were tabulated and interpreted by using STATA statistical tools through descriptive and inferential statistics. The supply chain practice of the enterprise was studied in terms of internal, external, customer, information and supplier integration as well as the supply chain performance interims of reliability, responsive, agility, and cost as well as asset management.

This study also examined the relationship between supply chain dimension and supply chain performance in ESLSE Kality freight transport sector. The result of this research shows that the internal integration, information integration and supplier integration have a significance effect on supply chain performance. However, external integration and customer integration have insignificance effect on supply chain performance.

5.2. Conclusion

The overall objective of this study is to assess the supply chain integration dimension on freight transport performance in case of Ethiopian Shipping and Logistics Service Enterprise in Kality branch. Having this objective, the data was analyzed using quantitative and qualitative methods. Based on the data analysis, the researcher noted that internal integration, information integration and supplier integration have valuable (significance) effect to improve organizational performance. Whereas, as per the analysis showed external and customer integration has weak relationship with supply chain performance.

Recommendations

The researcher recommended that it is better for the organization to give due emphasis about external and customer integration so as to improve the supply chain performance of the organization. The good practice that the organization performed such as internal integration, information integration and supplier integration should be continued.

While interviewing respondents, the researcher noted that there is a knowledge gap among employees and management members regarding the questions raised. Thus, the researcher recommended that the organization should give short term training to

employees who are directly related to transport operation.

5.3. Suggestions for future research

This research study focused on the integration of internal, external, consumer, information and supplier. The researcher recommended that future researchers can explore other dimension of supply chain integration such as measurement, integration and so.

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Questionnaires

Addis Ababa University

School of Commerce

Department of Logistics and Supply Chain Management

Questionnaire to be filled by ESLSE staff

Dear respondents,

I am Kassahun Zergaw, Master's degree student, department of Supply Chain Management at the Addis Ababa University, School of Commerce. To fulfill my master's degree, I conduct a research entitled *"The Role Of Supply Chain Integration On Freight Transport Performance: The Case Of Ethiopian Shipping And Logistics Service Enterprise In Kality Branch".* The objective of this questionnaire is to gather needed data for the research that I am conducting on your transport sector. So to perform this study, your willingness is important in giving the required information. You do not require to write your names.

The information you give will be utilizing for this research purpose only and will be kept confidential. I would like to give thank you for your cooperation. Please make a tick mark (✓) on only one box that best explains your opinion for each statement.

If you do have questions, please call by following address

I would like to say thank you advance for your precious time.

Regads,

Kassahun Zergaw

Email address: kassu.zergaw.55@gmail.com

Cell phone: 0946396775

General Instructions

- ✓ *It is not necessary to write your name*
- ✓ *Try to address the entire questions given below*
- ✓ *Where answer options are available, please tick (√) in the appropriate space provided.*

PART-I: General Information

This section intends to gather general information on the background of the respondent and the organization.

1. Gender: A. Female ☐B. Male ☐

2. Age: A. 18-25 years. 26-30 years ☐

C. 31-40 years☐ D. above 40 years ☐

3. Educational Qualification:

A. Below grade 12 ☐B. Grade 12 completed ☐

C. College Diploma ☐ D. First Degree ☐ E. Second Degree and above ☐

4. Your department/work unit:

Operation and planning ☐Finance and related☐ Drivers☐

General administrative and service ☐Technical employee ☐

5. Years of experience in this organization:

A. 1- 5 Years ☐B. 6-10 Years ☐ C. 11-15 Years ☐

D. 16- 20 Years E. Over 20 Years ☐

Part Two: Supply Chain Integration Practices

Below are questions related to Supply Chain Integration Practices of freight transport in ESLSE (case of Kality freight transport) . Kindly indicate your level of agreement to the items by putting a tick mark **(√)** in the boxes provided. A scale of 1-5 is used to respond to the questions where:**1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=strongly disagree**

Supply Chain Integration Practices of freight transport in ESLSE (case of Kality freight transport)

No	Supply Chain Integration Dimensions	1	2	3	4	5
1	**INTERNAL INTEGRATION**					
1.1	There is a practice of flow of sharing information across departments					
1.2	There is a practice conduct of problem solving among internal function					
1.3	There is a practice data integration among internal departments					
1.4	There is a participation of cross functional groups in process of improvement					
2	**EXTERNAL INTEGRATION**	**1**	**2**	**3**	**4**	**5**
2.1	There is a participation in establishing long term relationship					
2.2	There is an exchange of feedback evaluation					
2.2	There is dealing with others to improve cost efficiency					

3	**CUSTOMER INTEGRATION**					
3.1	There is sharing information with customer					
3.2	There is long term relationship with customer					
3.3	There is an agreement of decision to improve cost efficiency with customer					
3.4	There is a practice of effective communication with selected customer					
4	**INFORMATION INTEGRATION**					
4.1	There is a practice of timely sharing information among the partners					
4.2	There is a practice of wisely utilize of information among the supply chain actors					
4.3	There is a freely interchange the information among partners					
4.4	There is a practice of give training among the partners to cope with new Information Technology					
5	**SUPPLIER INTEGRATION**					
5.1	There is a practice of sharing information through selected supplier					
5.2	There is a practice of sharing strategy with supplier					
5.3	There is a long term procurement through suppliers					
5.4	There is a practice of smooth order system with supplier					

Part Three :Supply Chain Performance of freight transport in ESLSE

Below are questions related to Supply Chain Performance of freight transport in ESLSE. Kindly indicate your level of agreement to the items by putting a tick mark **(√)** in the boxes provided. A scale of 1-5 is used to respond to the questions where:**1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=strongly disagree**Supply Chain Performance of freight transport in ESLSE (case of Kality Freight transport)

Supply Chain Integration Performance of freight transport		**1**	**2**	**3**	**4**	**5**
1	RELIABLITY					
1.1	The ESLSE Freight Transport has the ability to perform task on-time in terms of On time arrival and on-time departure.					
1.2	The ESLSE Freight Transport has the ability to perform task with the right quantity ,					

1.3	The ESLSE Freight Transport has the ability to perform tasks with right quality (claims free shipment, damage –free shipment, very high distance between accidents, perfect delivery and perfect route)					
2	RESPONSIVE					
2.1	The ESLSE Freight Transport has the ability to perform tasks with high responsiveness with less in-transit time variability					
2.2	The ESLSE Freight Transport has the ability to perform tasks with high responsiveness with less vehicles load/unload time.					
2.3	The ESLSE Freight Transport has the ability to perform tasks with high responsiveness with less detention time.					
2.4	The ESLSE Freight Transport has the ability to perform tasks with high responsiveness with less delayed in traffic time.					
3	AGILITY					
3.1	The ESLSE Freight Transport has the ability to response external influence					
3.2	The ESLSE Freight Transport has the capacity to change or react the market turbulence					
3.3	The ESLSE Freight Transport has the capacity to adapt different management tools to maintain competitive advantage					
4	COST					
4.1	The ESLSE Freight Transport has high round trip with less cost					
4.2	The ESLSE Freight Transport has a cost minimization concept					
4.3	The ESLSE Freight Transport has an existing of inventory turn over					
4.4	The ESLSE Freight Transport offers lower price compare to competitors					
5	ASSET MANGEMENT					
5.1	The ESLSE Freight Transport has strong ability to efficiently utilize					
5.2	The ESLSE Freight Transport has an approach of the optimization of costs, risk and service					
5.3	The ESLSE Freight Transport has high commitment to manage resource					

Interview questions

1. How is the integration of the supply chain in freight transport practiced at ESLSE within the Kality freight transport branch?
2. What is the performance of supply chain integration at the Kality freight transport branch ESLSE?
3. How does integration of the supply chain impact the supply chain performance of freight transport at the ESLSE freight transport branch in Kality?

Thank you!