LOGISTICS MANAGEMENT PRACTICES, LOGISTICS INFORMATION SYSTEMS, LOGISTICS SERVICE QUALITY AND CUSTOMER SATISFACTION OF SELECTED SHIPPERS IN KENYA

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF NAIROBI

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DECLARATION

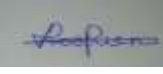This thesis is my original work and has not been submitted for award of a degree in this or any other university.

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DEDICATION

To my two lovely caring children, Shyne Richu and John Richu, who have been so keen to see me clear this Research Thesis; and to my late parents Lucia and John Richu Gatonye who believed strongly in my academic capabilities. Also to my siblings Gatonye, Wahu, Wangui, Wangari, Nginyo, Mwihaki, Ngugi, Muthoni and Wandundu plus their spouses, for their prayers, social and emotional support during the entire PhD journey.

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ABBREVIATIONS AND ACRONYMS

3PL/TPL	Third-Party Logistics
CILT	Chartered Institute of Logistics and Transportation
CIPS	Chartered Institute of Purchasing and supplies
CoC	Certificate of Competence
CPA	Certified Public Accountants
CPS	Certified Public Secretary
ECTS	Electronic Cargo Tracking System
EDT	Expectancy Disconfirmation Theory
EFA	Exploratory Factor Analysis
ERP	Enterprise Resource Planning
GDP	Gross Domestic Product
GPS	Global Positioning System
GOK	Government of Kenya
ICD	Inland Container Depot
ICMS	Integrated Customs Management System
KEBS	Kenya Bureau of Standards
KMA	Kenya Maritime Authority
KPA	Kenya Ports Authority
KRA	Kenya Revenue Authority
LISs	Logistics Information Systems
LMPs	Logistics Management Practices
LSPs	Logistics Service Providers

LSQ	Logistics Service Quality
NACOSTI	National Commission for Science, Technology and Innovation
RFID	Radio Frequency Identification
SCEA	Shippers Council of Eastern Africa
SCEA-LPS	SCEA- Logistics Performance Survey
SCM	Supply Chain Management
SSS	Superior Service Solutions
WSC	World Shipping Council

ABSTRACT

One of the main challenges for any organization is to focus its logistics management strategies of satisfying the customer needs of ensuring products are delivered when and where they are needed. The key objective of this study was to establish the influence of Logistics Management Practices (LMPs), Logistics Information Systems (LISs) and Logistics Service Quality (LSQ) on customer satisfaction of shippers in Kenya. The four specific objectives were to assess the effect of LMPs on customer satisfaction of shippers in Kenya; establish the effect of LISs on the relationship between LMPs and customer satisfaction of shippers in Kenya; determine the effect of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya; and determine the joint effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya. Subsequently, four hypotheses were formulated to achieve these objectives which were LMPs has no significant effect on customer satisfaction; LISs has no significant moderating effect on the relationship between LMPs and customer satisfaction; LSQ has no significant mediating effect on the relationship between LMPs and customer satisfaction; LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction. The positivism philosophical foundation and descriptive cross-sectional research design were adopted, and primary data collected from senior managers in the logistics department of the shippers. A census method was used. A response rate of 59 percent from the population of 63 shippers was acquired. Shippers Council of Eastern Africa (SCEA) was the sampling frame of the study. Customer satisfaction had loyalty and expectations met as the sub-constructs, while LMPs used inventory management, transportation, warehousing, packaging, materials handling, order processing and information flow maintenance. The LISs sub-constructs were Enterprise Resource Planning (ERP), Global Positioning System (GPS), Electronic Cargo Tracking System (ECTS), Radio Frequency Identification (RFID) and bar codes; while LSQ was assessed by functional and technical quality. The study findings were statistically significant and there was positive relationship between LMPs and customer satisfaction; the relation between LMPs and customer satisfaction was not moderated by LISs but was mediated by LSQ; and the joint effect on the relationship between LMPs, LISs and LSQ on customer satisfaction was significant. The study further found that the seven LMPs as a composite had a statistically significant effect on customer satisfaction, while only inventory management was found to be significant when LMPs were regressed individually. The ranking on the extent of implementation of LISs by the Logistics Service Providers (LSPs) was found to be ERP, GPS, ECTS, bar codes, with RFID being the least implemented. The study further found that the shippers in Kenya were more concerned with the benefits accrued from LISs than the type implemented. On LSQ, the shippers indicated that they were more satisfied with the functional quality than the technical quality of their logistics service providers. The study concludes that LSPs ought to implement all LMPs, consult with their shippers on benefits and type of LISs to use and put emphasis on both functional and technical service quality. The study recommends that logistics service providers implement the seven LMPs to a greater extent especially materials handling and packaging which are fundamental in the actual logistics' movements. The study supported and contributed to the theories it was grounded on, namely material flow theory, expectancy disconfirmation theory, network design theory and systems theory. Further, the study contributed to knowledge, policy and practice in the logistics management sector, to the logistics service providers, the shippers in the region and beyond and their advocacy bodies, especially SCEA, the relevant government agencies and future researchers and academicians. The Chartered Institutes of Logistics and Transportation (CILT) will find this study relevant in their advocacy for both academic and professional applications of logistics and transportation management.

CHAPTER ONE: INTRODUCTION

1.1   Background of the Study

The Logistics Management Practices (LMPs) entails integrating all the departments in a firm to ensure overall firm performance just like the roles played by individual body organs towards the overall performance of the body. The LMPs can have a value addition role towards customer satisfaction, which results to high turnover, customer retention and improved wealth creation of the firm. By ensuring customers receive their goods when and where they are required, logistics enhance the firm's competitive advantage (Pienaar & Vogt, 2009; Stock & Lambert, 2001). When LMPs are well-coordinated they contribute to the loyalty and perception of customers (Bouzaabia, Bouzaabia, & Capatina 2013; Irene, David, Gloria, & María 2008). The LISs provides the specific information needed for decision making in logistics (Sople, 2010; Rushton, Croucher & Baker, 2008). The LSQ, which defines how customers are handled during and after the process of service, has two main components, namely technical quality and functional quality (Sze, Keng, & Wai, 2013; Fiala, 2012; Irene et al., 2008; Vinh, 2008).

Building on the material flow theory, Expectancy Disconfirmation Theory (EDT), network design theory and system theory, the study focused on assessing the effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya. Application of material flow theory of logistics leads to customer satisfaction by ensuring materials are available when and where they are needed (Hou, Chaughry, Chen, & Hu, 2015). The EDT states that expectations are predictions of future performance and that customer satisfaction is based on the degree to which expectations are fulfilled (Ove & Marie,

2004). If well designed, used and managed, the logistics networks ensures goods and services are delivered effectively and efficiently, improving customer satisfaction and can be a basis of strategic competitive advantage (Levinson & Huang, 2012). Logistics-transportation networks have made use of the applications of network design theory in determining the least expensive method of achieving their goals (Wu & Chao, 2004; Graham & Hell, 1985). Understanding organizations as systems, as described by the system theory, enables logistics managers to effectively and competently accomplish the firms' logistics' goals of time and place utility (Jaradat, Adams, Abutabenjeh, & Keating, 2017; Jose, 2004). The motivation for this study was to bring together all the aspects mentioned above to assess the influence of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya.

Shippers in Kenya have been experiencing delayed shipments occasioned by logistical challenges at the port of Mombasa and extended to the Inland Container Depots (ICD). The degree of automation and the calibre of logistics service by the key players in the movement of goods at these ports has been a main concern by the Shippers Council of Eastern Africa, (SCEA), which was used as the sampling frame in this study. Kenya Revenue Authority (KRA) for instance has been blamed for such delays in clearing cargo at the ports (SCEA-LPS, 2018; Bwana, 2018; Sanga, Beja, Mwakio, & Oketch, 2018). These delays forced the President of Kenya to visit the Nairobi ICD in May 2019 due to the many complaints from the shippers. Thereafter, discussions on the Naivasha ICD which is proposed to have a railway marshalling yard were held to help decongest the port of Mombasa (Wachira, 2019). Therefore, for firms in the maritime sector to

contribute to wealth creation through logistics by focusing on time and place utility, there is need to address specific logistical challenges that they face. Some of these challenges are poor road networks, multiple taxes, access to modern technology, infrastructure, lack of logistics experts and professionals, government/political interference in most industries, high costs of imports and delays in transit of goods.

In addition, Kenya as a country has not appreciated the academic/professional need of logistics management; for example, Chartered Institute of Logistics Management (CILT) in Kenya has had minimal student's registration compared to other professional bodies like Certified Public Accountants (CPA), Certified Public Secretary (CPS) and Chartered Institute of Purchasing and Supplies (CIPS) (Mwangangi, 2016; World Bank, 2005). The performance of global trade and global economy has been anchored on the success of maritime transport. All countries world over rely on maritime trade since no country is entirely self-sufficient for their import and export needs (Ki-Moon, 2016). However, maritime sector in Kenya is facing a number of challenges ranging from government policies, infrastructure, many government bodies managing the port of Mombasa, poor support of SCEA by government, among others. Notably, logistics contributes to a firm's wealth creation by managing the customer logistics process to deliver time and place utility for improved customer satisfaction (Sople, 2010; Pienaar & Vogt, 2009; Panda, 2008).

1.1.1 Logistics Management Practices

Logistics management has been well-defined by the Council of Logistics Management (CLM), as the component of the supply chain operation in charge of planning, executing and controlling the efficient back and forth flow and storage of commodities, services and appropriate information from the source to destination aiming at satisfying customers' demands (Stock & Lambert, 2001:3). Further, the Institute of Logistics (UK) defines logistics management as that process responsible for managing the movement and storage of all states of materials from the source to the point of final use (Rushton, Croucher, & Baker, 2008: 6).

Logistics management, also termed as business logistics, industrial logistics, material flow, physical distribution, channel management and materials management (Hou, et al., 2015; Stock & Lambert, 2001) has its origin in the military referred to as military logistics, since 1840. It referred to the function of integrating and coordinating the quartering, transportation, supplying and helping the troops through reasoning by skilled calculations during their campaigns (Pienaar & Vogt, 2009). The development of logistics was highly promoted by military logistics activities in World War II. During this period, there was poor collaboration, integration and balancing of activities related to logistics and equally minimal effort to coordinate the key players. Logistics research later developed from engineering, management and marketing fields (Christopher, 2016; Hou et al., 2015; Sople, 2010).

The seven practices of logistics management, referred to as LMPs, are inventory management, transportation management, warehousing, packaging, materials handling, order processing and information flow processing (Swink, Melnyk, Cooper & Hartley, 2011; Sople, 2010; Panda, 2008; Stock & Lambert, 2001). When these LMPs or customer logistics activities and functions are well-coordinated, they contribute to the loyalty and perception of customers (Bouzaabia et al., 2013; Irene at al., 2008). The chain of logistics transactions referred to as product value chain, starts at the source up to the point of final intake of the product. Logistics activities create place and time utility (Christopher, 2016; Sople, 2010; Pienaar & Vogt, 2009; Rushton, 2008). A close working relationship among the logistics managers, suppliers and procurement managers ensures effective inbound flow of materials to the firm. Logistics managers are in charge of the flows of information, products and materials among a firm's diverse sectors to certify that the customer requirements are fulfilled. This means that LMPs effectively plays a role in revenue growth and developing competitive advantage (Sople, 2010; Panda, 2008).

For maximization of current and future profitability of firms, which arises from customer satisfaction, applying competent fulfilment of orders, logistics as a strategic function can ensure that movement and storage of materials, management of parts and finished inventory, procurement process and related information flows, are well handled in the organization and well-coordinated with its marketing channels (Ristovska et al., 2017; Christopher, 2016). The logistics management components and their relationship with customer requirements and expectations under each component are clearly explained in Appendix X. This study used the seven LMPs as the independent variable's sub-

constructs, namely inventory management practices, transportation management practices, warehousing management practices, packaging management practices, materials handling management practices, order processing management practices and information flow processing management practices. The choice of these independent variable sub-constructs was informed by literature in that empirical studies reviewed had used two or three of the LMPs. Further, use of the seven LMPs would enable ranking which would be necessary for the logistics and transportation industry, in stating and documenting the best logistics management practices.

1.1.2   Logistics Information Systems

The LISs is an information system enabling management to access logistics information that is relevant and timely (Arunkumar, 2016). The LISs is an instrument for gathering, accumulating and analyzing data from the operative applications. The coordination of all logistics activities and processes, like inventory replenishment and planning of material flow is entirely supported by LISs (Danilo & Marcel, 2010). Closs and Xu (2000) indicate that a LISs consists of the hardware, software and information exchange technologies. Stakeholders in the maritime industry use new ICT for example GPS navigation, electronic seacharts, RFID technologies, Artificial Intelligence (AI) and Big Data. In this way, the actors in the maritime transport chain, such as the terminal operators, ship brokers, tugboats, pilots and forwarders, can bundle and, in case the time of arrival changes, adapt their resources appropriately (Fruth & Teuteberg, 2017).

Further, all parties concerned, like the terminal operators, can be informed about the loaded goods prior to the ships' docking. Sea containers are equipped with RFID chips and thus become intelligent containers. Through smart containers and a suitable networking of single information systems, it is possible to fully digitize and globally network the entire maritime transport in order to render transparent the respective processes (Berg & Hauer, 2015). All terminal vehicles, machines and devices that are involved in the transportation, loading and unloading of goods are interconnected and communicate with each other, which is enabled by means of suitable information, communication and automation technologies. Such an inclusion in higher order systems leads to cyber-physical systems (Bai, Zhang, & Shen, 2010). In the case of forward and hinterland transport, the synchronous modality is based on the idea that the optimal transport mode and route combination can be selected based on real-time information, (Lee, Tongzon, & Kim, 2016). The first step towards logistics excellence is to develop performance improvement strategies that most contribute to customers' satisfaction. Logistics is an information-based process of material movement, as such the success of logistics operations depends on the flow of information. Customer orders mark the starting point of the information in logistics (Danilo & Marcel, 2010).

The LIS provides the specific information needs for decision making in logistics. The most prominent LISs are Enterprise Resource Planning (ERP), Global Positioning System (GPS), Electronic Cargo Tracking Systems (ECTs), Electronic Data Interchange (EDI), bar code, Radio Frequency Identification (RFID), transportation management systems and warehousing management systems. The LISs are crucial as they contribute

towards the overall performance of LMPs (Miler & Bujak, 2014; Danilo & Marcel, 2010; Helo & Szekely, 2005; Giannopoulos, 2004). Zakaria, Zailani, and Fernando (2010) whose study noted that LIS did not have a moderating effect on logistics relations and logistics service quality, used warehouse management system, EDI, RFID, bar coding and freight consolidation as the sub-constructs. On the other hand, Mwangangi (2016) and Bae (2016) who found that LIS had a moderating role used loading planning system, warehouse, transport and terminal management systems; and Superior LIS respectively as the LIS sub-constructs.

Risks in logistics' decision-making can be reduced by taking into account some characteristics of these LISs like accuracy, availability, timeliness, flexibility and interactive nature, since logistics is an information-based process of materials movement. It is crucial for organizations to identify the benefits their customers derive from the types of LISs they implement; meaning there is need for information sharing and coordination between the buying and supplying institutions (Arunkumar, 2016; Perdana, 2012; Sople, 2010; Rushton et al., 2008). The key and most applicable LISs are ERP, GPS, ECTs, RFID and bar codes; and were thus used to help establish the moderating effect of LISs on the relation between LMPs and customer satisfaction; which was the second objective of this study.

1.1.3   Logistics Service Quality

The LSQ is the capability an organization has to accomplish the service as promised with dependability and accuracy and appreciate the desires and expectations of customers (Işık, Metehan & Gülmüş, 2018). The LSQ is a combination of customers' desired service dimensions. The quality of the service offered is experienced both during a service and on completion, known respectively as functional and technical quality (Sze, Keng & Wai, 2013). The expectations of a customer should be contrasted with the experiences of both the functional and technical quality (Fiala, 2012). The LSQ strategically influences the economy at both firm and national levels, having a strong market influence and thereby increasing overall customer satisfaction (Juga, Juntunen & Grant, 2010; Saura, Francés, Contrí, & Blasco, 2008). The ability to generate greater customer satisfaction from delivered logistics service is crucial (Irene et al., 2008). The SERVQUAL is a well-known model for quality service that has continued to inspire research on service quality (Milorad, Svetlana & Milan, 2016).

Superior growth in shippers' loyalty can be attained by developing higher levels of LSQ and improving relationship quality by container shipping lines, in the maritime transport (Jang, Marlow & Miroussi, 2013). Customer service is majorly influenced by logistics management. The 3PL companies aid shippers in providing enough value to their customers so that they can pass it on to their customers, for a competitive logistics chain. In maritime transport, service quality comprises of resources, process, management, outcomes, social responsibility and image, and each dimension can further be measured by other factors. Among the dimensions ranked highly are management factors and those

concerned with service provision process and outcomes. Further, safety aspects as well as environmental protection activities in maritime service quality are as crucial as the reliable, safe and efficient transport services (Vinh, 2008; Imrie, Durden, Cadogan & Mcnaughton, 2002; Lin, Durden, Imrie & Cadogan, 2000).

1.1.4 Customer Satisfaction

Customer satisfaction is the magnitude to which a consumer's perceived needs from an institution are met commendably, and the product/service is in the context defined by the customer's expectations and experience (Emrah, 2010: 79). Further, Sharmin (2012) states that customer satisfaction is an evaluation by a consumer of any inconsistency perceived to exist between the actual and expected outcome of a good/service, called customer response after consumption. Customer satisfaction is highly influenced by individual expectations since it is a prominently individual assessment. A satisfied consumer is not too sensitive to price, buys more products, is less influenced by rivals and remains loyal for a longer time. A customer's expected experience defines his level of satisfaction based on the level to which the expectations are fulfilled (Ove & Marie, 2004). The most common measures of customer satisfaction are loyalty and expectations met (Ernest & Ike-Elechi, 2015; Fiala, 2012). The expectancy disconfirmation theory developed by Oliver in 1980 states that expectations are predictions of future performance. When customer's expectations are not met by actual performance of specific good or services, customer's dissatisfaction, referred to as negative disconfirmation can occur (Naeimeh & Aryati, 2014; Aigbavboa & Thwala, 2013).

Customer loyalty, which is influenced by satisfaction among other predictors, entails a readiness to endorse, referrals, reconsider and optimistic word-of-mouth intents. Loyalty is further defined by the extent to which a customer shows behavior of repeat purchase, considers using only this supplier again and again and is positive about them (Rama & Rajeev, 2015; Fiala, 2012; Irene et al., 2008). Serenko and Stach (2009) who employed the EDT as a lens of analysis, noted that one of the outcomes of customer satisfaction that businesses are more interested in is loyalty. Satisfaction is the consumer's accomplishment reaction on whether the features of goods or services delivered a delightful level of consumption-related fulfilment, (Salam, Othman, & Zainal, 2018).

Customer satisfaction can arise from one transaction, a specific attribute, cumulative from past experiences or just from a process of evaluating specific experiences (Pondichery, 2014). A satisfying experience is more desirable to consumers than the products (Yeung, Ramasamy, Chen, & Palinoda, 2013). The works of Mittal and Laser (1998) and Sureshchandar, Rajendram and Anantharaman (2002) on "why do satisfied customers switch: The dynamics of satisfaction versus loyalty", was quoted by Yeung et al. (2013) as indicating that companies often benefit from investing in activities that promote customer satisfaction. Such activities include the logistics customer service activities that ensure consumers get their products, whether parts, raw materials or finished goods, when and where they are needed. The customers in this study comprised all the shippers based in Kenya, both importers and exporters, and have membership with SCEA, which was the sampling frame in this research. It is from the outlined views that

the first objective of the study sought to assess the effect of LMPs on customer satisfaction of shippers in Kenya.

1.1.5   Shippers in Kenya

A shipper, also referred to as a consigner, is a person or company that transports or receives goods by sea, land, or air. Shippers are categorized under the maritime sector which is a sub-sector of the maritime industry in the area of transport. The maritime industry includes organizations involved in the various activities of shipping lines operations, customs, importers/exporters, brokerage services, shipping and freight forwarding services (SCEA, 2020; Berg & Hauer, 2015; Peretomode, 2014). Infrastructure, reliable service performance, equipment availability, adequate facilities and responsiveness all define quality in the maritime transport (Ugboma, Ibe, & Ogwude, 2004). Firms in the maritime transport chain use LISs to adapt their resources appropriately on real time and are even alerted about the goods loaded before the ships' docking (Fruth & Teuteberg, 2017).

The maritime industry sub-sector world-wide, accounts for almost ninety percent of the transport requirements (Airahuobhor, 2011). Recently, sea trade registered double growth in comparison with the world GDP and the world trade, with the World Shipping Council (WSC) rating Shanghai and Singapore ports at the top since 2014 (World Shipping Council, 2021; UNCTAD, 2019; Mousavi, Ghazi, & Omaraee, 2017; Grote et al., 2016). Appendix X1 shows a list of the top 50 ports that the WSC has noted as the biggest container ports in the world, referred to as the hubs that keep global trade moving (World

Shipping Council, 2021). The key players in supply chain in the maritime sector and the order of their related routes are shown in Appendix I (Fruth & Teuteberg, 2017).

Shippers in Kenya are registered under various bodies for ease of business effectiveness and efficiency. The SCEA, which was the sampling frame of this study, is an organization advocating for the welfare of shippers both importers and exporters, and logistics service providers for appropriate freight transport regulations and policies that can spur an efficient and economical freight logistics system in Eastern Africa. The SCEA was formed in 2012 at a period when the competitiveness in the region was deteriorating and has managed to engage governments from a regional perspective thereby achieving some greater heights of advocacy success (SCEA, 2020; SCEA-LPS, 2018; SCEA strategic plan 2016-2020; SCEA website). It envisions a logistics chain that is efficient and heightens the competitiveness of the members. The council's total current membership is 103 out of which 63 are importers and exporters who are based in Kenya. These Kenyan based 63 importers and exporters formed the unit of analysis of this study.

Poor coordination among the government bodies at the port of Mombasa has frustrated efforts of the council to fully achieve its mandates. This failure has exposed SCEA members to many challenges which include delays due to lengthy clearance procedures, port congestion, lack of clear policies and legal framework and general management logistical issues, resulting in products from the region being both uncompetitive and unattractive to local and international markets (Bwana, 2018; Sanga et al., 2018; Mwangangi, 2016; World Bank, 2015). These challenges triggered this study whose aim

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was to find out the impact of implementation and application of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya. The Kenya Maritime Authority (KMA) has a mandate of regulating, organizing and managing maritime affairs in Kenya and should facilitate the country to remain white listed by International Maritime Organization (IMO) (KMA strategic plan, 2013-2018).

1.2   Research Problem

There has been growing concern towards the contribution of LMPs to the overall competitiveness of an organization by creating customer value continuously (Yen, Mark, Chih, & Shan, 2017; John, Soonhong, & Michelle, 2004). A customer's satisfaction can be seen through their loyalty or when their expectations are met (Pondichery, 2014; Isac & Rusu, 2014). For LMPs to accomplish its aim of time and place utility to meet customer needs, there is need to invest in LISs such as ERP, ECTs, RFID and GPS which provide the specific information needs for decision making in logistics (Arunkumar, 2016; Sople, 2010; Rushton et al., 2008). Research in logistics focuses on logistics' ability to deliver both functional and technical service quality, LSQ, so as to generate greater customer satisfaction from the delivered service (Juga et al., 2010). This denotes that when LMPs is well coordinated with the right LISs and LSQ, customer satisfaction will be enhanced, which is the core objective of this study.

Bwana (2018) reported a loss of KSh 106 million in unpaid customs duty at the port of Mombasa and as such, the Government of Kenya (GoK) needs to re-think modern LMPs, LISs and LSQ to avoid such losses. Similarly, Sanga et al. (2018) noted that the port of

Mombasa has logistical chaos, resulting to delayed exports and imports, unnecessary costs occasioned by massive system failure and poor coordination among various government bodies like Kenya Ports Authority (KPA), National Transport and Safety Authority (NTSA), Kenya Bureau of Standards (KEBS), Kenya Railways and Kenya Revenue Authority (KRA). The establishment of SCEA was informed by demand from manufacturers, shippers and logistics service providers as a unifying body to help get solutions to the many challenges in capacity and logistics inefficiencies at the port of entry and exit in the northern and central corridors (SCEA, 2016; World Bank, 2005). Though KMA's mandate is regulating, coordinating and overseeing maritime affairs in Kenya, a lot is yet to be done in regard to policy advocacy such as implementation of electronic cargo tracking systems and more investment in port infrastructure (SCEA-LPS, 2018; SCEA 2016). Currently, there is no Act of Parliament that enunciates LMPs or even shippers in Kenya. This study aims to trigger such a motion in the Parliament of Kenya.

This study aimed to address the various conceptual gaps, contextual gaps and methodological gaps that were identified in the literature reviewed. On the conceptual gaps for instance, most studies were noted to have used two or three of the LMPs, while this study addressed the seven LMPs documented in literature, aiming to further assess on the ranking of these independent variable sub-constructs. A study by Mukolwe and Wanyoike (2015) operationalized LMPs constructs, into transportation, information flow and warehousing on firm's operations and found that modern LMPs improved processes and flow of materials enhancing customer satisfaction, as explained by material flow

theory. Further, Thogori and Gathenya (2014) in their study evaluated customer satisfaction against inventory management only, while Mwangangi (2016) considered the sub-constructs transportation and inventory management of manufacturing firms using LISs as a moderating variable. Another study by Ristovska, Kozuharoc and Petkovski (2017) assessed company's performance using five LMPs sub-constructs namely inventory, information management, transportation, packaging and warehousing. Additionally, on the anticipated moderating variable LIS, while Zakaria, et al. (2010) found that LIS had no moderating effect, Mwangangi (2016) and Bae (2016) findings established that LIS had a moderating effect. And on the proposed mediating variable LSQ, Daniel, Roberto and Valdir (2018) found that LSQ wholly mediates the relation linking logistics capabilities with customer satisfaction of lubricant oil companies.

Additionally, Garrouch et al. (2011) conducted a study relating customer service and customer satisfaction to various logistics activities. The study established that loyal consumers are less sensitive to logistics efficiency. A study by Harriet, Poku and Anin (2013) on urban transportation and customer satisfaction found that inadequate logistics infrastructure affected customer satisfaction. Further, Ghoumrasi and Tigu (2017) studied on LMPs and customer satisfaction of Small and Medium Enterprises (SMEs) and affirmed that logistical skills and knowledge impacted on customer satisfaction. The above studies clearly showed there was need to consider an expanded approach on the seven LMPs constructs using LISs as a moderating and LSQ as a mediating variable. This conceptual gap prompted the current study to consider the seven LMPs components

and their effect on customer satisfaction, together with LISs and LSQ as explained by the systems theory.

The studies reviewed were from different contexts and contextual gaps were thus noted in that studies conducted in different geographical contexts in different jurisdictions may not be fully applicable in the Kenyan maritime sector context. For example, Ghoumrasi and Tigu (2017) study was in Algiers on LMPs and customer satisfaction of SMEs. Mwangangi (2016) studied LMPs, LISs and performance of Kenyan manufacturing firms while Bae (2016) studied the moderating effect of LISs on shipping and logistics firms' performance in Korea. Further, Mukolwe and Wanyoike (2015) focused on LMPs at Mumias sugar factory, while Harriet, Poku and Anin (2013) studied in Ghana on urban transportation and customer satisfaction.

Other closely related studies were conducted in Macedonia to analyze the effect of LMPs on business efficiency, effectiveness, customer satisfaction and competitiveness (Ristovska et al., 2017). Also in South Korea (Jang et al., 2013) on effect of LSQ on customer in the container shipping context. Another study was on SMEs in Brazil on customer satisfaction and loyalty in third-party logistics services (Tontini et al., 2017) and a further study in Japan (Suthikarnnarunai, 2008) on automotive supply chain. From these studies therefore, there was need for a study to test the relationship of the variables, LMPs, LISs, LSQ and customer satisfaction, in the maritime sector in Kenya. This study therefore sought to assess and determine the possible relations among these variables in the context of the shippers in Kenya.

The research also noted that most studies largely used either sampling in their empirical studies as conducted by Ghoumrassi and Tigu (2017) and Ristovska et al. (2017), or case studies such as Mukolwe and Wanyoike (2015) and Thogori and Gathenya (2014). In an attempt to address the methodological gaps that may arise from use of inappropriate sample size or cons of using case studies such as selection bias, replication difficulty and absence of respondents; this study used descriptive cross sectional census survey on all Kenyan firms listed under SCEA. A census study ensures highest level of accuracy is achieved (Kothari, 2005). Different models also need to be used in empirical studies to confirm if similar results would be achieved or even better results. The appropriate respondents for LMPs studies are the logistics managers who were used in this study, unlike other studies that used general managers as seen in Ghoumrassi and Tigu (2017) study. It was also noted from literature that, diagnostic tests had not been conducted in majority of the studies reviewed and different data analysis tools should be used to confirm results, both of which were addressed in this study. This study further used study variable's constructs and their indicators for more detailed findings as it has received least attention in previous studies. Incorporating these methodological gaps in this study made its findings more valuable to all relevant users.

Logistics management is capital intensive thus firms should invest in LMPs and functions that have greater impact on customer satisfaction as explained by the material flow theory, EDT and the systems theory. Ristovska et al. (2017) hypothesized and confirmed that application of LMPs leads to reduced costs and improved customer satisfaction.

From the above studies, it was clear that a study in Kenya on LMPs, LISs and LSQ on customer satisfaction in the maritime sector was timely. This study thus sought to address the various gaps outlined by addressing the question: What is the influence of LMPs, LISs and LSQ on customer satisfaction in the maritime sector of shippers in Kenya?

1.3   Research Objectives

The main objective of this study was to establish the influence of logistics management practices, logistics information systems and logistics service quality on customer satisfaction of selected shippers in Kenya. The specific objectives were to:

i.   Assess the effect of logistics management practices on customer satisfaction of shippers in Kenya.

ii.   Establish the effect of logistics information systems on the relationship between logistics management practices and customer satisfaction of shippers in Kenya.

iii. Determine the effect of logistics service quality on the relationship between logistics management practices and customer satisfaction of shippers in Kenya.

iv.   Determine the joint effect of logistics management practices, logistics information systems and logistics service quality on customer satisfaction of shippers in Kenya.

1.4   Value of the Study

The study aimed to confirm the contribution of the theories on which it was anchored, fill the theoretical gaps highlighted especially on the continuation of the development of the theory of logistics, identify areas for further study and provide recommendations.

Additionally, the study targeted to contribute to the critiques of the theories it was grounded on and come up with areas for further study on these theories. The study contributes to policy formulation in that it will provide government regulatory institutions with the information necessary to enable the SCEA members work closely with government, the government agencies and private sector aimed at competitive growth of the maritime industry particularly the maritime sector. In return, this will contribute to the country's economic growth since as Ki-moon (2016) stated, maritime transport is the mainstay of global economy and that no country is self-sufficient. Policy formulation helps eliminate unnecessary import/export costs at the ports of entry and exit which can be passed to the customers making the firms uncompetitive in the global market.

On the practical contribution, the study provides knowledge to logistics management professionals and practitioners on various aspects, especially in relations to customer satisfaction. The researcher in collaboration with players in the industry, will use the thesis to target have a policy note to government to help the ministry of transport/roads argue matters on challenges in the maritime sector. The SCEA members will get the much needed information necessary to harness and consolidate efforts of finding solutions to the various logistics challenges of capacity and in-efficiencies particularly in the port of entry and exit in the Northern and Central corridors. With several players in the general maritime industry, shipping lines, shipping agents, government bodies, ever changing regulations, among others, the maritime sector will benefit from the identification of the best LMPs that can enable them satisfy their customers more efficiently and effectively.

Finally, the study is useful to academicians in various areas like logistics management, transportation management, shipping lines, port operations, warehousing and inventory management, customer service, quality management and information systems, among others. Future researchers will benefit from the recommendations and limitations of the study, and areas for further study that this research study has highlighted.

1.5   Chapter Summary

The first part of the chapter is an introduction consisting of the background of the study, where all the study variables were explained in brief, and their interaction was also clearly outlined. This was followed by a summarized description of each of the variables, followed by the research problem and research objectives. Finally, the value of the study was clearly stated.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter begins by looking at the theories on which the study was anchored. This is followed by empirical literature on the relationships among the various study variables, namely LMPs, LISs, LSQ and customer satisfaction. The chapter ends by looking at the conceptual framework and the conceptual hypotheses that were drawn from the relationships. A chapter summary is also given.

2.2 Theoretical Foundation of the Study

Theories worldwide aim at providing guidance on new facts, suggesting new experiments, discovering new phenomena and new laws (Merwe, Berthon, Pitt & Barnes, 2007). This study was grounded on four theories, namely material flow theory, expectancy disconfirmation theory, network design theory and systems theory. The key anchoring theory of the study was the Material Flow theory. The theories and their inference to this research are reviewed in the following subsections.

2.2.1 Material Flow Theory

Csikszentmihalyi was the first to describe the flow state in 1975 on qualitative research basis. However, the material flow theory was first recommended by Xu in 1985 in China, as a widespread logistics theory that encompass the environmental, economic and social phenomenon attributes of logistics. The material flow is categorized as intrinsic and extrinsic naturally. The material flow theory, whose key elements or intrinsic natures are material, movement, possessor, zone and time, material being the main one; argues that

the logic initial locus of material flow is the structural relationship of place-time, the key factor affecting the material flow system formation and development. The material flow external elements comprise of the party, service, management, technology and economy (Hou, et al., 2015; Mahnke, Benlian & Hess, 2015). Other theories presented by Xu (2008) under the material flow theory, are comprehensive material flow theory, material flow element theory, material flow engineering theory and material flow industry theory. The four independent links of material flow element noted are shipping, storage, loading-unloading and delivery handling (Song & Xu, 2009). These links together with the key features of the material flow theory, both intrinsic and extrinsic ones, contributed to the theory being listed as the main anchoring theory of this study.

Applications of material flow theory were realized in the fundamental transitions of logistics for sustainable developments and customer satisfaction in a comprehensive system. Hou et al. (2015) further argue that, material flow theory of logistics leads to customer satisfaction by ensuring no mistakes of time and space, and that material flow activities are on time at every stage of the process, for a continuous supply chain (Pienaar & Vogt, 2009). The material flow is a breakthrough in the development of logistics theory and logistics performance. Applying the theory in all aspects of logistics ensures that customers are served when and where, thus raising satisfaction levels (Xu, Swanson, & Samuelson, 2009; Swanson, 2008; Ding, 2004). The theory has been critiqued in that in a pure competition environment, neither the supply side nor the demand side can influence demand through price, thus affecting materials flow through the supply chain (Schroeder, Goldstein, & Rungtusanatham, 2012, Van-Weele, 2010). Thus, arising from

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the material flow theory, there is need for all players in the shipping of raw materials, part components and finished goods during the entire logistics management to work and coordinate together to ensure effective and efficient delivery when and where, for improved customer satisfaction in the entire supply chain.

2.2.2 Expectancy Disconfirmation Theory

The Expectancy-Disconfirmation Theory (EDT) was first proposed by Oliver in 1980. The proposal was informed by drawbacks from earlier theories of customer satisfaction. The EDT has been termed as the most favorable theoretical framework in assessing customer satisfaction (Serenko & Stach, 2009; Yuksel & Yuksel, 2008). The theory denotes that customers buy products with prior expectations regarding the expected outcome. The expectation level thus forms a basis against which the products are judged. Therefore, when the products or services have been consumed, the results are matched against expectations. If the performance reflects the expected outcome, then confirmation ensues. Disconfirmation arises when there is a variance amid expectations and outcomes (Naeimeh & Aryati, 2014; Aigbavboa & Thwala, 2013).

This study adopted the EDT introduced by Oliver to help probe and describe shippers' satisfaction with their logistics service providers, on the basis of loyalty and expectations met. Facility to meet customer expectation is critical as satisfaction is the antecedent of positive post-purchase behavioural intention which can eventually increase future revenue and business performance. Figure 2.1 further elaborates the trends in the customer behaviour (Salam et al., 2018; Serenko & Stach, 2009).

Figure 2.1: Complete Expectancy Disconfirmation with Performance Model
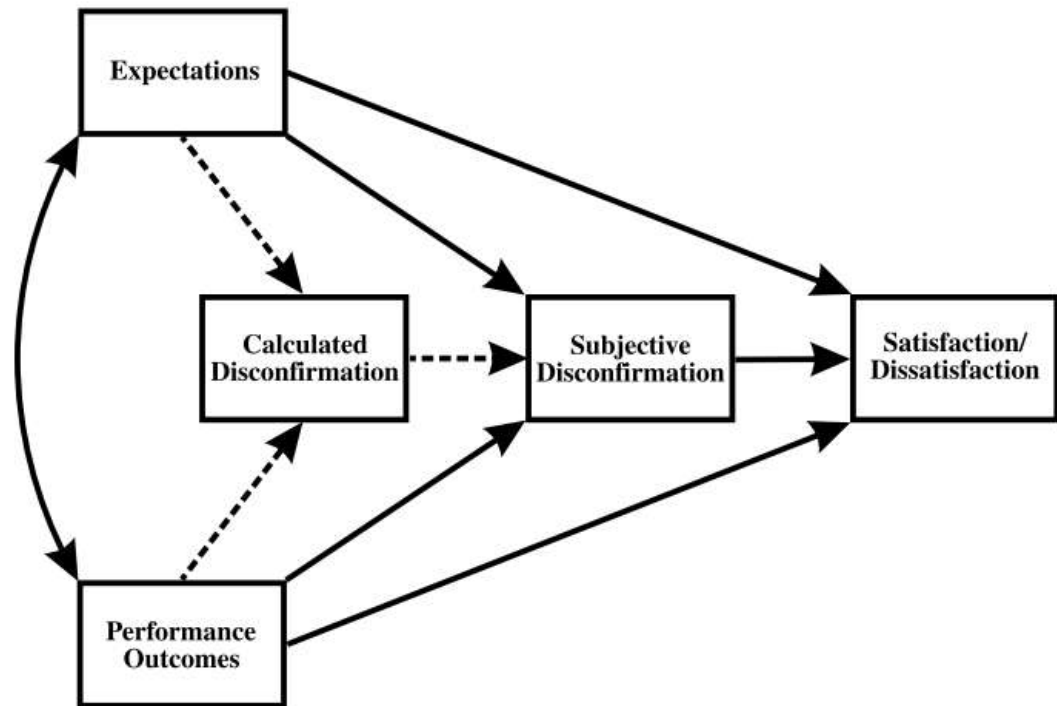
Source: Salam, S. S. A., Othman, M., & Zainal, U. F. U. (2018). Young consumers' expectation, perceived performance and disconfirmation towards SMEs Halal food products in Klang Valley, Malaysia. *Journal of Business and Management*. 20(11), 28.

The EDT has been widely used in assessment of job satisfaction and has also found heightened support from researchers in other fields of study. Additionally, EDT has been extensively applied to assess satisfaction with various products and services. Such assessments include the satisfaction measures in the flu treatment, the restaurant services, the automobiles, stock market services and with hotel and holiday destination services (Yuksel & Yuksel, 2008; Ove & Marie, 2004). The theory has however been critiqued in that measuring expectations only applies when consumers have well-rounded expectations preceding the service experience (Carman, 1990). Another critique on EDT is that assessments after acquisitions may not wholly be grounded on prior anticipations (McGill & Lacobucci, 1992). Further critique concerns the definition of expectations

terminologies to the respondent, and whether the term expectations mean the same thing to everybody, regardless of situations and circumstances (Ennew, Reed, & Binks, 1993). From the EDT therefore, the shippers in Kenya using the port of Mombasa for their imports and/or exports, base their choice of logistics service providers on prior expectations from referrals, prior experience, word-of- mouth or other applicable criteria.

2.2.3   Network Design Theory

The network design theory has its origins related to the works of Otakar Boruvka in the 1920s on the Minimum Spanning Tree (MST) problem, when there was an electrification problem at Moravia in the Czech Republic which he identified and solved (Jayawant & Glavin, 2009). Since then, general network design models applied in practice in logistics, transportation, Supply Chain Management (SCM) and telecommunication evolved. Logistics-transportation networks use the same applications in determining the least expensive method of achieving this goal (Wu & Chao, 2004; Graham & Hell, 1985). Modern supply chains and logistics management are described as supply networks due to their complexity (Mari, Lee, & Memon, 2015); and thus the choice of this network design theory in explaining applications and relations among the study variables namely, LMPs, LISs, LSQ and customer satisfaction.

Emphasis on design and efficiency in routing is key in a transportation network. Client engagement in the network design is crucial (Kurokawa, Schweber, & Hughes, 2017; Cho & Judge, 2015; Wissner-Gross & Freer, 2013); therefore the logistics service providers should work closely with the shippers for optimization of routing decisions. A

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network flow assigns values to the links of the network indicating quantities moving from one node to another (Yamins, Rasmussen, & Fogel, 2003). If well designed, used and managed, the logistics networks like the road networks can be a basis of a firm's strategic competitive advantage, which arises from increased levels of customer satisfaction (Levinson & Huang, 2012). Technology is the real key to LMPs that allows exponential cost reduction through networked and integrated processes (Christopher, 2016). Therefore choice of the LISs to be implemented by the logistics service providers is crucial to the shippers in their logistics processes.

The theory has been critiqued in that the organizations in these networks are independent of each other and thus to achieve any meaningful progress from these also called many-to-many networks, requires investments in communication technologies and a central, almost independent body coordinating them (Evert, 2007). It is on this basis that the study used SCEA the unifying body for the shippers and various agencies as the study's sampling frame. In addition, considering the logistics-transportation networks, as stipulated by the network design theory, the study assessed the level of harmonization and integration of the different government agencies involved directly in the imports/exports processes and their relationships with the shippers under SCEA umbrella.

2.2.4 Systems Theory

Ludwig von Bertalanffy, who was a biologist, developed the systems theory in the 1930s, and afterwards it was improved by Ross Ashby in 1956 aiming at making the human mind easily understand complexities in the world. A system is made up of independent

but interrelated parts. The systems theory considers organizations as systems. Several systems theories exist which include the integral theory, general systems theory and the chaos theory (Patton & McMahon, 2014; Cordon, 2013; Hayajneh, 2007). Applications of systems theory give an understanding of how things around us work. There are many internal subsystems in a firm's management systems which should continuously align with each other as firms transform inputs to desired outputs and also as organizations grow developing more complex subsystems (Chikere & Nwoka, 2015; Edman & Neuman, 2014).

The systems theory has survived the test of time and has remained a viable theory being used across many disciplines (Ramosaj & Berisha, 2014; Cordon, 2013; Corlett, 2005). This benefit explains the application of the theory to logistics' customer satisfaction, since customers' tastes and preferences change over time. Understanding organizations as systems should enable logistics managers to handle firm's activities more effectively and efficiently thereby achieving logistics' goals of ensuring goods are delivered when and where they are needed to meet customer needs (Jose, 2004). In a logistics management system, order processing activities serve as input of logistics system whereas warehousing, transportation and inventory control serve as the process of the system, products delivery is the output whereas information management is the feedback (Nilsson & Gammelgaard, 2012; Laurikkala et al., 2010).

The systems theory, like other grounded theories has been critiqued with time. The critique of the theory is found in the works of Vipin and Richard (2015) who argue that the main feature of a system is the coordination of its elements overtime; and that it leads towards a theory of economic systems as a whole, as it is a theory of the entire system that emerges from the sections' connectivity. The management and coordination of such parts of the system to achieve their goals, as seen in the case of the importers/exporters in this study, require a unifying body such as SCEA, to help in the advocacy, management and communication of policy issues affecting them.

2.3   Logistics Management Practices and Customer Satisfaction

Christopher (2016) states that all logistics managers should play a leading role in developing a customer-retention programme because they are at the core of many elements of customer service. Employing the correct logistics programs and addressing the challenges highlighted can to a great extent contribute to profits by building customer loyalty, enhancing customer retention and reducing customer defections. Emil, Liviu and Irina (2010) noted that logistics activities ensure smooth flow of raw materials and finished products when well integrated from source to destination. There are a number of challenges however facing LMPs that interfere with the smooth delivery of products and services. These challenges further distort the 7-Rs of customer logistics namely, quantity, product/service, place, conditions, cost and time with the right impression (Johnson, Nketia & Quaye, 2015; Panda, 2008).

Institution's activities like anticipating future demand, practising flexibility, gathering relevant details and discovering varying ways to serving clients is a vital function in logistics management (Soosay & Hyland, 2006). Logistics managers are expected to manage all functions within their areas of operations so as to achieve better firm productivity, customer satisfaction and competitiveness (Ristovska et al., (2017). Logistics excellence can be achieved by developing performance improvement strategies which contribute highly to customers' satisfaction (Danilo & Marcel, 2010). The emphasis is not on the fastest transport, or on minimizing inventories, but on a coordinated and integrated logistics systems approach aiming at customer satisfaction (Pienaar & Vogt, 2009; Rushton et al., 2008).

Responding to varying customer needs enables firms succeed in an uncertain environment improving customer satisfaction. Flexible logistics competence has a strong, positive and direct relationship with capability (Lan, Zhang, Zhong, & Huang, 2016; Zhang, Vonderembse, & Lim, 2005). Xuemei and Zhicai (2016) developed a model for public transit service on how passengers can be satisfied with their expected quality. A study by Ghoumtasi and Tigu (2017) on the effect of suppliers' LMPs on customer satisfaction of Algiers' SMEs found that suppliers who invested on logistics skills, sharing information communication technologies (ICTs), among other practices impacted positively on customer satisfaction. Harriet et al. (2013) assessed the challenges and effectiveness of urban transportation system which reflect on logistics system efficiency and customer satisfaction of drivers in Kumasi, Ghana. Inadequate logistics infrastructure and failures of traffic management systems were reported as key challenges.

Mokolwe and Wanyoike (2015) whose study was done at Mumias sugar company in Kenya studied the effect of LMPs specifically transportation, information, distribution and warehousing on operational performance and found that operations were improved by modern LMPs focusing on processes, speed of operation and faster cost effective flow of material. Thogori and Gathenya (2014) noted that poor management of inventory had a strong significant negative relationship with customer satisfaction. These studies however have not addressed the seven components of LMPs collectively. Ghoumtasi and Tigu (2017) focused on suppliers while this study focused on consumers. Maritime sector in Kenya continue to experience logistical challenges, with limited studies so far that have tried to address the concept of LMPs and customer satisfaction. Objective one of this study targeted to address this gap by assessing the effect of LMPs on customer satisfaction of Kenyan firms under SCEA.

2.4   Logistics Management Practices, Logistics Information Systems and Customer Satisfaction

For a firm to enjoy long-term competitive success and make considerable, long-lasting improvements in performance, proper management of information is crucial (Pieter, 2011). The capacity of LISs to convert data into valuable and pertinent information that can help management in decision making is vital (Irene et al., 2008). Geographically dispersed logistics activities can be integrated by use of information systems. Investing in LISs help reduce inventory along the supply chain as well as implementing time-based strategies. The LISs a firm uses facilitates optimization of costs in logistics processes and

levels of customer service (Danilo & Marcel, 2010; Tae-Woo, Nam-Kyu, John, & Woong, 2000).

Mwangangi (2016) found that LISs significantly moderated the relation of LMPs on the performance of Kenyan manufacturing firms listed under Kenya National Bureau of Statistics (KNBS). The study however operationalized LISs using only transport management systems (TMSs), warehouse management systems (WMSs), loading and terminal systems, and no indicators of these sub-constructs were used. Bae (2016) used LISs as a moderating variable for Korean shipping and logistics firms on inter-organizational collaboration and performance. The study however only referred to use of superior LISs without further operationalization, no sub-constructs or indicators. On the other hand, Zakaria, Zailani and Fernando (2010), whose research on registered logistics companies in Penang, Malaysia was on the moderating role of logistics information technology, found that there was no moderating role.

There is thus insufficient literature on the moderating role of LISs, operationalized by the most common LISs, namely ERP, ECTs, RFID, GPS and bar code, and their indicators clearly outlined, as was the focus of this study; yet information is referred to as the greatest driver in any system. Objective two of the study thus targeted to focus on this gap by establishing the moderating role of LISs on the relationship between LMPs and customer satisfaction in the maritime sector of shippers in Kenya.

2.5 Logistics Management Practices, Logistics Service Quality and Customer Satisfaction

Attention on LSQ, also referred as logistics customer service and its contributions towards performance of organizations has grown gradually. The strategic function of LSQ in the entire achievements of firms has been highly acknowledged by corporations and researchers. Capabilities of logistics service if well leveraged can create customer and supplier value by service performance positively impacting customer satisfaction (Yannis, Apostolos, & Spyridon, 2014). Richey et al. (2007) found that logistics capability influences LSQ provided. Further, Liu et al. (2010), studied China's logistics firms and noted that capability of logistics impacts highly on service quality.

The concern of LSQ to bring about customer satisfaction in a Business to Business (B2B) setup between manufacturing firms and their customers has also gained momentum. Sterline and Lambert (1989) linked customer satisfaction and firm's future sales to the level of logistics customer service. The LSQ contributes to customer satisfaction and further loyalty as it is referred to as a basis for firms' competitive advantage. A study by Fiala (2012) found that both technical and functional quality contribute to customer loyalty and meeting their expectations. Another study by Ho et al. (2012) that used modified service quality (SERVQUAL) model to determine how LSQ measurements influence customer satisfaction in the courier services industry noted that customer satisfaction is impacted by service quality indicators like timeliness, quality of information, order accuracy and readiness/quality of personnel. These are also referred to

as the indicators of LSQ constructs, namely process, capability and outcome quality (Jea-II et al., 2017; Vinh, 2008).

Lisińska-Kuśnierz1 and Gajewska (2014) established a strong positive correlation coefficient relationship between customer satisfaction levels and LSQ provided by companies using refrigerated transport, while a study by Adebayo (2017) established that customer satisfaction is impacted strongly by the operational dimensions of LSQ. Monique et al. (2017) study aiming to establish the interactions linking LSQ, customer satisfaction and consumer loyalty, found a strong positive relation among these variables. Daniel et al. (2018) in their study on logistics capabilities and customer satisfaction for lubricant oil companies in Brazil affirmed that LSQ fully mediates the relation between these variables, thus logistics capabilities do not directly influence customer satisfaction. King et al. (2014) explained the mediating effect of service quality in the relation of ICT and competitive advantage of logistics firms.

There is however insufficient literature on the mediating role of LSQ on the relation connecting LMPs and customer satisfaction. The on-going literature suggests LSQ can expound on the inter relations between LMPs and customer satisfaction. The third objective of this study purposed to address this gap on the mediating effect of LSQ on the relationship between LMPs and customer satisfaction.

2.6 Logistics Management Practices, Logistics Information Systems, Logistics Service Quality and Customer Satisfaction

John et al. (2004) conducted a study whose aim was to recommend a unified theory of logistics focusing on the strategic function and abilities of logistics' context (Appendix III). The theory intended to show the contribution of logistics in an organization. The study offered areas for future research to critique and/or refine how logistics is viewed, which was a further motivation for this study. Zhang et al. (2005) indicated that when logistics competence is flexible it results to a strong, positive and direct relationship with capability. A similar relationship was noted between flexible logistics capability and customer satisfaction (König & Spinler, 2016; Jea-II et al., 2017). Effective LMPs has been acknowledged as a crucial factor in the enhancement of both the profitability and competitive performance of business organizations while customer satisfaction is a way to assess the business stability by evaluating the customer loyalty (Ghoumtasi & Tigu, 2017).

The three main roles of logistics in the organization, namely: contributing to competitive advantage, ensuring products are delivered to point of consumption and efficient movements to the customer (Stock & Lambert, 2001), are shown by the Ps in Appendixes III and IV. The benefits of advanced LISs is to ensure real time data is broadly accessible using tools like ERP and EDI, link one activity with another and build automated information exchange infrastructure which leads to increased customer satisfaction (Zaryab, 2012). The ICT improves LSQ offered to customers, as tested as a moderator effect by Irene et al. (2008) and impacts on customer satisfaction and loyalty. Saura et al.

(2008) analyzed the relation of LSQ, satisfaction and loyalty with special attention to ICT. The motivation for the study was therefore to establish the joint effect of LMPs, LISs, and LSQ on customer satisfaction of shippers in Kenya, since it is not clearly explained in the studies above.

2.7   Summary of Past Studies and Knowledge Gaps

Table 2.1 below gives a summary of other studies that had been done on various dimensions of LMPs and customer satisfaction. The authors, focus of study, methodology and the study findings are outlined. Further, the researcher identified the studies knowledge gaps and the last column indicates how this study addressed the highlighted knowledge gaps.

Table 2.1: Summary of Past Studies and Knowledge Gaps

Author(s)	Focus of Study	Methodology	Findings	Knowledge Gap	How Study Addressed Gap
Mwangangi (2016)	To assess the impact of LMPs on performance of Kenyan manufacturing firms Moderating role of LISs on LMPs and performance of Kenyan manufacturing firms.	Primary data from 320 sampled manufacturing firms listed by KNBS used. Reliability test by Cronbach's alpha. Multiple regression analysis used.	LISs positively moderates the relation of the variables significantly. A significant positive relations between the variables.	Only two LMPs used. Affirming moderating effect of LISs. Study in a different industry in Kenya and a focus on customer satisfaction.	Used the seven LMPs and rank in order of importance. Moderating effect of LISs on the variables is timely. A focus on maritime industry and on customer satisfaction. Use of SCEA members.
Bae (2016)	To confirm the moderating effect of LISs on inter-organizational collaboration and performance.	163 firms from shipping and logistics firms in Korea; membership list used. Factor analysis and Cronbach's alpha coefficient tested the reliability & validity of the data, while multiple regression analysis verified the hypotheses.	The moderating effect of LISs confirmed. Thus, management should focus LISs to improve performance.	Confirming moderating effect of LISs on other variables. Use of relevant membership list. Other studies outside Korea. To test superior LISs leads to customer satisfaction.	Used LISs as a moderating variable, on LMPs and customer satisfaction. SCEA member list used. Focus is Kenyan shippers. Effect of LISs on LMPs and customer satisfaction will be assessed.

Table 2.1 Cont….

Author(s)	Focus of Study	Methodology	Findings	Knowledge Gap	How Study Addressed Gap
Tontini et al. (2017)	To explore whether there's a nonlinear effect on customer satisfaction by the performance of quality indicators of 3PL services. To find out if the quality indicators of 3PL services cause a nonlinear effect on customer loyalty.	A study of 167 SMEs 3PL managers in Southern Brazil. Snowball sampling method used. Validity test done. Conducted interviews. Penalty and reward contract analysis used.	A direct and nonlinear effect was confirmed on some indicators of quality like friendliness and flexibility on customer loyalty.	Study in other countries/ regions using different company sizes. Broader analysis using SEM. A study to explore interaction between the dimensions.	Study based on Kenyan firms. Both small and large firms involved. Customer loyalty is one of study variables.
Bouzaabia et al. (2013)	A comparison of Tunisian and Romanian LSQ as perceived by the consumers. To evaluate contributions from the two levels in describing overall customer satisfaction and loyalty.	A survey of "Carrefour" hypermarket customers, 100 in Tunisia and 100 in Romania. Relational and operational LSQ dimensions used. Data analysed by factor analysis, Analysis of Variance (ANOVA) and linear regression.	Romania customers have better perception of LSQ than Tunisian customers; on the two LSQ dimensions. Different environments and nationality lead to varying service quality perceptions.	A study involving other countries; and use of a collaborative research network. Use other dimensions of LSQ to compare findings.	Census from membership list was used to widen scope of respondents. Study in Kenya. Functional and technical LSQ was used.
Thiruvattal (2017)	Stakeholders value collaboration and customer loyalty in logistics service organizations. To Investigate if Superior Service Solutions (SSS) mediates the relations concerning the logistics activities and customer loyalty.	A survey of 330 SMEs who are United Arab Emirates (UAE) logistics customers. Dubai Chambers of Commerce Listings used. Exploratory factor analysis and structured equation modelling (SEM) used.	Firms' managers gain efficiency and achieve better customer loyalty by using external stakeholders through collaboration. SSS mediates the proposed relationship.	Replicate study in other sectors. Need to conduct a study outside UAE. More studies on logistics activities and customer loyalty.	Study in Kenya, maritime industry. SCEA listing. All the seven logistics activities and customer loyalty addressed. LSQ versus SSS used.

Table 2.1 Cont….

Author(s)	Focus of Study	Methodology	Findings	Knowledge Gap	How Study Addressed Gap
Ristovska, et al. (2017)	To analyse effect of LMPs on business efficiency, effectiveness, customer satisfaction and competitiveness.	80 firms in Republic of Macedonia used. Hypothesis: application of LMPs will lead to reduced costs and improved business results.	General hypothesis confirmed.	Study done in Republic of Macedonia only. Impact of mediating and moderating variables.	Study in Kenya. By introducing the moderating and mediating variables on the relation between LM and customer satisfaction in the study.
Ghoumrassi and Tigu (2017)	To show the impact of LMPs on customer satisfaction.	SMEs Algerian industrial companies based in Algiers studies. 22 managers from 12 companies interviewed. Nvivo software used.	Suppliers with fragile and leanness logistics solutions, skills and knowledge, green/reverse logistics solutions, sharing ICT, performance measurement systems, impacted on customer satisfaction.	A bigger sample size preferred. In other African countries. A similar study in the service industry to compare ranking of variables used.	Service industry used. A census from a membership list. All seven LMPs components used to help better ranking. Customer satisfaction variables of loyalty and expectations met used.
Harriet et al. (2013)	To assess the effectiveness of urban transportation system which reflects on logistics system efficiency and customer satisfaction. To assess the challenges facing the urban transportation.	A study of 450 drivers of all vehicle categories and commuters in the Kumasi Metropolis, Ghana. Linear regression, Statistical Package for the Social Sciences (SPSS), deduction, inferences used.	Inadequate logistics infrastructure, poor public transport services, and traffic management system failures, found as major challenges.	Further research to ascertain that logistics uncertainties have an impact on business. A replica study in other cities in Africa.	LISs used as a moderating variable on LMPs and customer satisfaction. Managers as respondents in this Kenyan based study targeting port of Mombasa.

Table 2.1 Cont…

Author(s)	Focus of Study	Methodology	Findings	Knowledge Gap	How Study Addressed Gap
Fransman, et al. (2014)	Find out the key customer service attributes valued by retailers. Assess the level of service they feel they received from those attributes. Establish the level of service offered by logistics service providers.	23 firms in Namibian retail industry used, procurement managers being main respondents.	The most important service attributes were state of the goods and delivery time. Satisfying customer demands by retailers influenced selection of supplier and service provider.	Research in other industries. More studies on service quality.	Maritime industry used. LSQ used as mediating variable with attributes such as delivery addressed.
Mukolwe and Wanyoike (2015)	To evaluate impact of LMPs, specifically transportation management, information flow, physical distribution and warehousing, on efficiency of firm's operations.	A sample size of 92 from Mumias Sugar Company Kenya staff, Agriculture Ministry, Kenya Sugar Board, and cane farmers. Correlation and regression analysis.	Modern LMPs, like improved internal and external processes, speed of operation, reduced wastage, faster cost effective flow of materials and goods improved operation efficiency.	More focus other than operational efficiency. A further study to incorporate all the seven LMP. Study other industry.	Focus was LMPs on customer satisfaction. All seven LMP were addressed. Study on maritime industry.
Thogori and Gathenya (2014)	Impact of levels of inventory, inventory costs and lead times inventory management on customer satisfaction.	A case study: A census on 50 Delmonte Kenya supply chain official interviewed. Descriptive statistics.	Poor inventory management practices have a strong significant negative relationship to customer satisfaction.	Only one LMPs used. A survey unlike a case study would be preferable.	All seven LMPs used and were ranked to confirm impact on customer satisfaction. A survey was used.

2.8   Conceptual Framework

The conceptual framework comprised of the independent variable, LMPs, the dependent variable, customer satisfaction, the mediating variable, LSQ and the moderating variable, LISs. The independent variable, LMPs was operationalized by seven sub-constructs, namely inventory management, transportation management, warehousing, packaging, materials handling, order processing and information flow processing (Swink et al., 2011; Sople, 2010; Panda, 2008; Stock & Lambert, 2001). The dependent variable, customer satisfaction was identified and operationalized by two sub-constructs namely loyalty and expectations met (Ernest & Ike-Elechi, 2015; Fiala, 2012). The independent variable, LMPs was hypothesized as having an impact on the dependent variable, customer satisfaction of shippers in Kenya. This relationship was shown by H_1 on the conceptual model.

The LISs was operationalized by five sub-constructs namely ERP, GPS, ECTs, RFID and bar codes (Arunkumar, 2016; Miler & Bujak, 2014; Perdana, 2012; Danilo & Marcel, 2010; Sople, 2010; Helo & Szekely, 2005; Rushton et al., 2008; Giannopoulos, 2004). The study hypothesized a moderating effect of LISs on the relation between the independent and dependent variables as shown by H_2 on the conceptual model (Mwangangi, 2016; Bae, 2016; Zakaria, et al., 2010). Further, the LSQ was identified and operationalized into functional quality and technical quality (Naeimeh & Aryati, 2014; Aigbavboa & Thwala, 2013; Yeung et al., 2013; Sze et al., 2013; Fiala, 2012; Irene et al., 2008). The study theorized a mediating role of LSQ on the relation linking LMPs and customer satisfaction (Daniel, et al. 2018; King, et al., 2014; Ding et al., 2014). This

relationship was represented by H_3 in the conceptual model. Finally, the study

hypothesized a joint effect of LMPs, LISs and LSQ on customer satisfaction. This

relationship was reflected by the null hypothesis, H_4 on the conceptual model and it was

consistent with the main objective of the study.
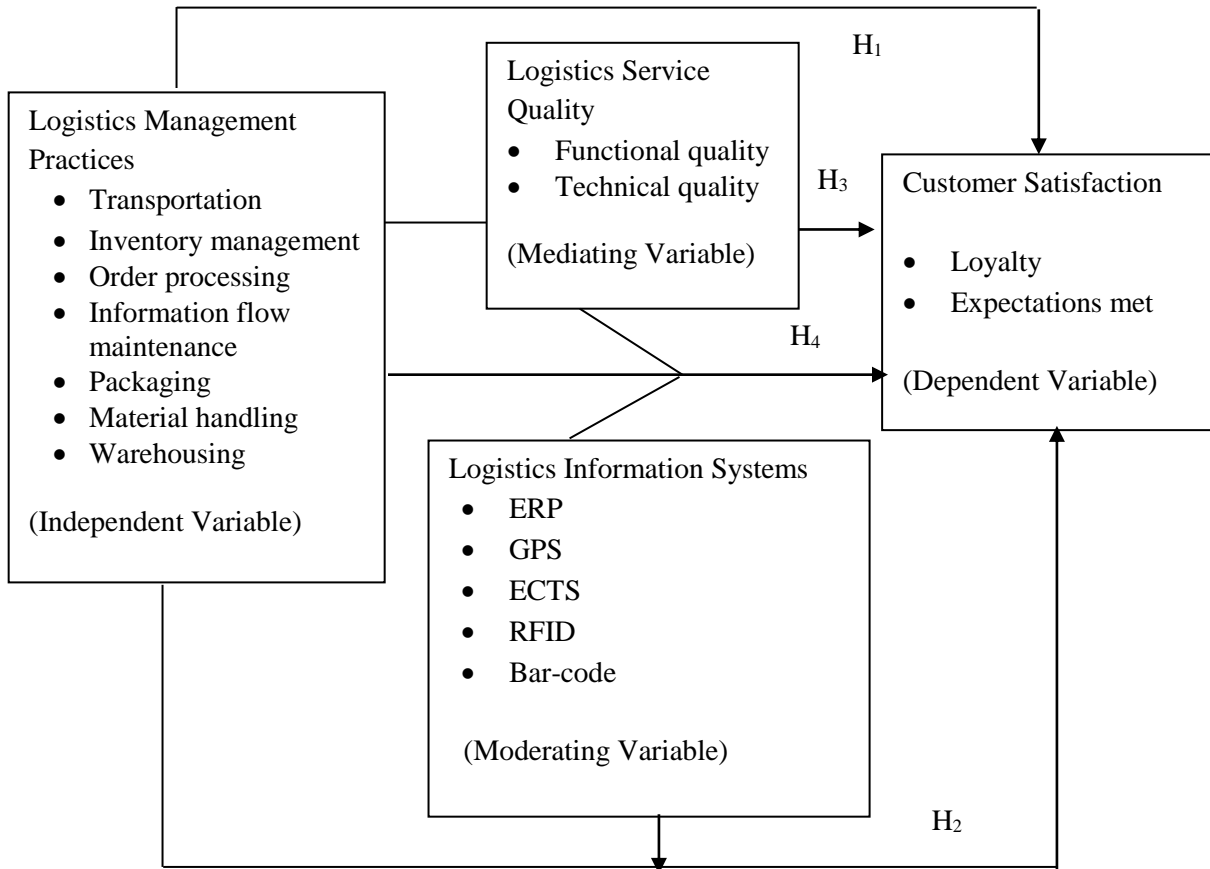
Source: Author, (2020)

Figure 2.2: Conceptual Framework

2.9   Research Hypotheses

From the conceptual framework, the following hypotheses were proposed:

H_1:   Logistics management practices have no significant effect on customer satisfaction.

H_2:   Logistics information systems have no significant moderating effect on the relationship between logistics management practices and customer satisfaction.

H_3:   Logistics service quality has no significant mediating effect on the relationship between logistics management practices and customer satisfaction.

H_4:   Logistics management practices, logistics information systems and logistics service quality do not have a significant joint effect on customer satisfaction.

2.10   Chapter Summary

Chapter Two started with the four theories on which the study was grounded and highlighted the material flow theory as the key anchoring theory. The chapter also discussed the literature on the relationships among key variables in the study namely logistics management practices, logistics information systems, logistics service quality and customer satisfaction. This was followed by a summary of past studies, revealing knowledge gaps and how the gaps were addressed. The study's conceptual model was then outlined. The chapter ends by stating the study's four conceptual hypotheses, which were consistent with the research objectives.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1   Introduction

The chapter outlines the research methodology that this study adopted. Specifically, the chapter details the research philosophy, research design, study population, data collection, operationalization of study variables, reliability and validity tests, diagnostics tests and data analysis. A chapter summary is also given.

3.2   Research Philosophy

The main research philosophies are phenomenological or interpretivism and positivist paradigm or empirical science approach. Interpretivism philosophy assumes that the researcher is part of the reality and thus not independent and assumes existence of multiple realities that are socially constructed. Positivism holds a deterministic philosophy where causes dictate effects or outcomes (Blumberg, Cooper, & Schindler, 2005; Carson, Gilmore, Perry, & Gronhaug, 2001). Beliefs as well as presumptions about knowledge development on a subject under research must follow a systematic methodology (Saunders, Lewis, & Thornhill, 2016).

The positivism philosophical foundation was adopted given that it advocates for objective methods instead of being inferred subjectively by feeling, reflection and/or intuition (Creswell, 2012; Easterby, Thorpe, & Lowe, 2002). Further, positivism encourages hypotheses development as well as use of quantitative data, which made it suitable for the study and equally as the researcher and the phenomenon being investigated were

independent. Since positivists place great emphasis on these characteristics, this research philosophy appeared predominantly appropriate to the focus of this study.

3.3   Research Design

The study applied the descriptive cross-sectional survey design. Descriptive studies are designed with visibly listed hypotheses or exploratory queries to offer a diversity of research objectives together with description of phenomena or features related to the study population (Cooper & Schindler, 2011). The objectives of the study were based on clearly stated hypothesis and the study aimed at describing relationships among different variables, namely LMPs, LISs, LSQ and customer satisfaction, hence the most appropriate research design for the study was the descriptive research design.

Cross-sectional study encompasses data collection at a single point in time and many descriptive studies are cross-sectional in nature (Zikmund, 2003; Owino, 2014). The cross-sectional survey design was appropriate since the study entailed collection of data only once revealing a snapshot at one point in time, a particular time, enabling assessing relationship between variables and because this academic course was time constrained (Saunders, Lewis & Thornhill, 2016; Cooper & Schindler, 2011).

3.4   Population of the Study

The study's target population was all Kenyan based institutions registered under SCEA which either import and/or export raw materials and/or goods through the port of Mombasa. The stratification to the SCEA as the preferred sampling frame of the study

was informed by the fact that majority of Kenyan shippers are their registered members. Further, shippers are on the receiving end of the performance of logistics service providers and transporters, also referred to as third party logistics (3PL), and thus were best placed to be respondents for this study, considering the main variables of the study, namely LMPs as the independent variable and customer satisfaction, which was the dependent variable. The membership of SCEA was 63 importers and exporters based in Kenya (see Appendix VIII) and for such a relatively small number, a census was conducted. This SCEA Kenyan based 63 importers and exporters thus made up the unit of analysis for the study.

3.5   Data Collection

A semi-structured questionnaire (Appendix IV) that had five different sections, was adopted to gather primary data for the study. Section A was on organizational background, section B was on the seven LMPs addressing objective 1, section C was on LISs addressing objective 2, section D was on LSQ addressing objective 3 and section E was on customer satisfaction, the dependent variable. The section F had an open ended question that aimed at capturing any other information that may have been left out that the organizations wished to share that was relevant to the study.

The target respondent was one senior manager in the logistics department or its equivalent, or his/her equivalent since the study assessment was organization based and not individuals. The choice of one respondent per institution was also meant to avoid possible information duplication as a result of multiple responses from the same

organization. The key respondent should be individuals with detailed knowledge of what is being studied and should be agreeable to share the information (Odock, 2016), justifying therefore the choice of one senior manager in the logistics department. The questionnaires were administered through emails since data collection happened during the early outbreak of Covid-19 pandemic in Kenya, when most people were working from home and there were strict government instructions on social distancing and periodic regional and county lockdowns.

To improve on response rate, researcher consulted the SCEA team, as they interacted with the respondents on regular basis before contacting the individual respondents. This gave the researcher such information as to how, when to contact the individual respondents. Additionally, the researcher had letters of introduction from the University's post graduate office and from the National Commission for Science, Technology and Innovation (NACOSTI), as attached. The letters gave a reassurance to the research respondents that the study had been approved by the conformant government institutions.

3.6 Operationalization of Study Variables

Each variable was measured using its component indicators. Table 3.1 shows the operationalization of the study variables. The table shows the variables and their nature, the sub-constructs and their indicators. The sources from literature are well outlined in the table. Further, the scale used is also shown in the table. The final column shows the position of the items on the study instrument.

Table 3.1: Operationalization of the Study Variables

Variable and Nature	Sub-Constructs	Indicator	Source	Scale - Ordinal	Question Number
LMPs (independent variable)	Transportation	Carrier selection, scheduling, fleet management, maintenance schedule, statutory management.	Swink et al., 2011; Sople, 2010; Panda, 2008; Stock and Lambert, 2001.	5-point Likert type	14 to 20
	Inventory management	Quality, inspection, control, stocktaking, policy			
	Order processing	Timeliness, interactions, on-line processing, checks and balances.			
	Information flow maintenance.	Accuracy, level of info sharing, confidentiality.			
	Packaging	Type, eco-friendly, unitization, cost			
	Material handling	Equipment, layout, guidelines, safety, value			
	Warehousing	Layout, type, throughput, site, documentation			
Customer satisfaction (dependent variable)	Loyalty	Referrals, word of mouth, repeat purchase	Ding et al., 2014; Naeimeh and Aryati, 2014; Aigbavboa and Thwala, 2013; Yeung et al. 2013; Irene at al. 2008.	5-point Likert type	26 to 29
	Expectations met	Consultations, feedback, customer involvement			
LISs (moderating variable)	ERP	Integrating of functions, real time data manipulation, information system connections, automated distribution and transportation/routes planning, inventory/warehouse management, checking delivery error, reporting.	Arunkumar, 2016; Bae, 2016; Mwangangi, 2016. Perdana, 2012; Sople, 2010; Danilo and Marcel, 2010; Lai, Ngai and Cheng, 2005.	5-point Likert type	21 to 24
	GPS	Management of fleet safety, efficiency, vehicle routing and tracking, vehicle movement control			
	ECTs	Management and tracking of cargo; real-time visibility; cargo security			
	RFID	Tracing and identifying stock, accurate information and reporting.			
	Bar Code	Balancing stock at point of sale (POS), accurately capturing info at POS, continuously updating replenishment status			
LSQ (mediating variable)	Functional quality	Process quality – safe/appropriate delivery, kindness of staff	Jea-II et al. 2017, Irene et al. 2008; Vinh, 2008.	5-point Likert type	25
	Technical quality	Capability and outcome quality - promptness, responsive, proactive			

Source: Author, (2020)

3.7 Reliability and Validity Tests

To denote the goodness of fit of the data that was collected on the study variables, two major criteria for evaluating measurements namely reliability and validity tests were conducted. Reliability gauges the level to which a measure provides congruous results or the extent to which measures are error free. It is concerned with the internal property of a measure (Cooper & Schindler, 2011; Zikmund, 2003). The Cronbach's alpha test of reliability was used to find out how reliable the research instrument would be. The test shows the extent to which research instrument items are homogenous and measure the same underlying construct. The acceptable values of alpha that range from 0.70 to 0.95 are said to be sufficient (Tavakol & Dennick, 2011; Cooper & Schindler, 2011; Gliem & Gliem, 2003). This study used values within 0.70 to 1.0; where values close to one suggested a high level of consistency.

Validity has various forms, namely, the face or content validity which assesses whether the content is suitable to its intended aims and whether it fully represent what it was supposed measure; concurrent or criterion-related validity which checks if the results relate to a different test of a similar thing; and predictive and construct validity which finds out if it is to measure the concept it is envisioned to quantity, (Zikmund, 2003; Cooper & Schindler, 2011). To establish these forms of validity the instrument was drawn from literature in consultation with senior academic experts on issues of specificity, representativeness, clarity, content and face validity (Odock, 2016).

A pilot study was carried out for purpose of proper interpretation, testing logic and clarity of the questionnaire by the respondents (Kerre, 2018) by exposing the instrument to selected members of the study population. A pretest of seven representative respondents was used (Hair, Money, Samouel & Page, 2007). In addition, the instrument was exposed to senior academic experts and to a senior member of SCEA. Their feedback was utilized to advance the content of the study instrument. The validity test was carried out using exploratory factor analysis, from which the results on the values of communalities, total variance explained and the component matrix were generated and evaluated. The appendix V shows the results of the values of communalities; appendix VI shows results of total variance explained, and appendix VII, shows the values of the component matrix.

3.8   Diagnostics Tests

The study targeted to use linear regression analysis that targets to evaluate whether one or more predictor variables explain the dependent also known as the criterion variable. However, like other linear models, linear regression analysis has several assumptions, and as such, the study adopted and conducted several diagnostics tests to ensure the presuppositions of regression analysis are not violated. The five key presumptions of regression analysis are: first, a linear relationship; second, multivariate normality; third, no or little multicollinearity; fourth, no heteroscadascity; and fifth, no auto-correlation (Bluman, 2018; King'oriah, 2013; Levine, Krehbiel & Berenson 2006). The study thus tested the data to ensure the presumption of regression analysis were not violated before proceeding onto further data analysis.

The linearity of the data was assessed by use of Pearson Correlation matrix, while Shapiro-Wilk test (where p-value should be greater than 0.05) was used for the normality test. Further, test for multicollinearity was done by use of the Variance Inflation Factor (VIF) where VIF of less than 10, and tolerance of less than one, meant no multicollinearity. The other diagnostics tests that were done were a test for heteroscedasticity where Koenker test was used and a test for autocorrelation where Durbin Watson test was used (Saunders et al., 2016; Zikmund, 2003; Öztuna, Elhan & Tüccar, 2006, Sarwar et al., 2018).

3.9 Data Analysis

After the data was gathered, the completed questionnaires were all checked for consistency and then coded and the data entered into a database. Descriptive statistics were computed for all the study variables in order to understand the nature of the data. For the objectives, linear regression analysis was done and specifically, hierarchical regression was used for objective two and corresponding H_2. The four-step path analysis by Baron and Kenny for mediation test (Thomas, 2017; Christian et al., 2016; Jose et al., 2011; Baron & Kenny, 1986) was conducted for the objective three and its corresponding H_3.

To evaluate the nature of the relations between the various study variables, multiple linear regression analysis was used. The values of correlation coefficient, r and coefficient of determination R - square were computed and used to determine and test the significance and strength of the relationship between the variables. The ANOVA was done to establish the overall significance of the model. The regression coefficients tables

were also formulated and the results used to assess the behavior of the individual items, that is, the dependent or criterion and independent or predictors, in the regression.

The general moderation and mediation models, as shown in Figure 3.1 below were used for the analysis of hypotheses two and three respectively.
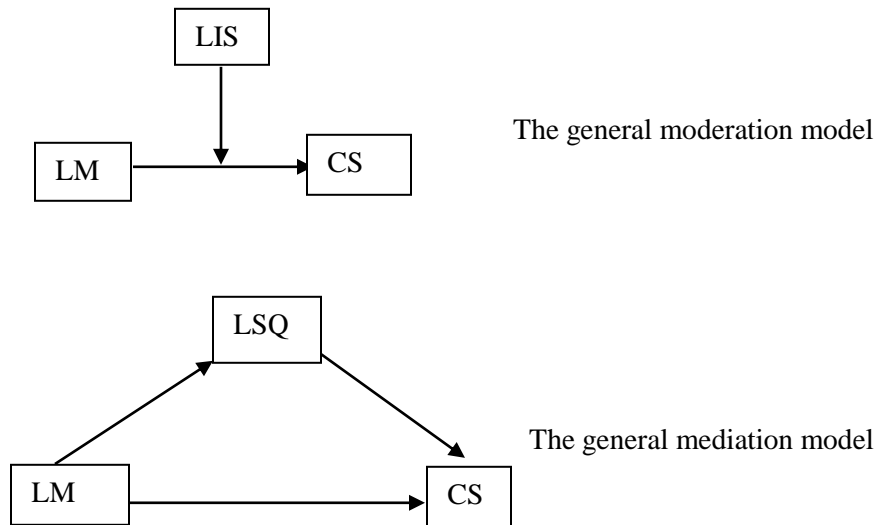
Figure 3.1: General Moderation and Mediation Models
(Source: Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology,* by the American Psychological Association, Inc. 51(6), 1173-1182)

Table 3.2: Summary of Statistical Test and Analytical Models

Objectives	Hypotheses	Analytical Technique	Interpretation
Assess the effect of LMPs on customer satisfaction of shippers in Kenya.	H_1: LMPs has no significant effect on customer satisfaction.	$Cs=\beta_0 +\beta_1 LMPs_1 + \ldots \beta_7 LMPs_7 + \mathcal{E}$ Test and comparison of paired or matched groups. $LMPs_1 \ldots LMPs_7$ represent seven variables; Cs is customer satisfaction LMPs is logistics management practices $\beta_1 \ldots \beta_7$ are parameters and $\mathcal{E}$ is error term	(i) Test for the significance of the correlation coefficient r (ii) Goodness of fit, using R^2 (iii) The overall significance tested using F-test (iv) For individual significance, t-test was used (v) Also marginal changes assessed.
Establish the effect of LISs on the relationship between LMPs and customer satisfaction of shippers in Kenya.	H_2: LISs has no moderating effect on the relationship between LMPs and customer satisfaction.	$Cs=\beta_0 +\beta_1 LMPs +\beta2 LISs + \beta_3 LMPs*\beta_3 LISs+ \mathcal{E}$ Hierarchical regression, where: Cs is customer satisfaction; LMPs is used as a composite; LISs is logistics information systems; $\beta_1 \ldots \beta_3$ are parameters; $\mathcal{E}$ is error term; and $LMP*\beta_3 LIS$=interaction term	(i)Test for the significance of the correlation coefficient, r & goodness of fit, using R^2 (ii) The moderator hypothesis is supported if the interaction term is significant.
Determine the effect of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya.	H_3: LSQ has no mediating effect on the relationship between LMPs and customer satisfaction.	Four-step path analysis (Baron & Kenny): 1: $Cs= \beta_0+ \beta_1 LMPs + \mathcal{E}$ 2: $LSQ= \beta_0+ \beta_1 LMPs + \mathcal{E}$ 3: $Cs=\beta_0+ \beta_3 LSQ + \mathcal{E}$ 4: $Cs =\beta_0 + \beta_1 LMPs + \beta_3 LSQ + \mathcal{E}$ Where: Cs is customer satisfaction; LSQ is logistics service quality and LMPs is used as a composite	(i)Test for the significance of the correlation coefficient, r & goodness of fit, using R^2 (ii) Partial mediation holds if the independent variable is significant in the fourth step. (iii) Full mediation holds if the independent variable has no effect when the mediator is added to the regression model.
Determine the joint effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya.	H_4: LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction.	$Cs =\beta_0 + \beta_1 LMPs + \beta_2 LISs + \beta_3 LSQ+ \mathcal{E}$ Joint effect where: Cs is customer satisfaction; LSQ is logistics service quality; LMPs is used as a composite and LISs is logistics information systems	(i)Test for the significance of the correlation coefficient, r (ii) Goodness of fit, using R^2 (iii) Test on f-significance; The overall significance tested using F-test (iv)For individual significance, t-test was used (v)Also marginal changes assessed

Source: Author, (2020)

3.10 Chapter Summary

The chapter displayed the study's research methodology that adopted positivism research philosophy, employed a descriptive cross-sectional survey design, and used a census of SCEA importers and/or exporters as the unit of analysis. Since collection of the primary data using semi-structured questionnaire coincided with COVID-19 pandemic, data was collected through emails. Operationalization of study variables, explanation of the conduct of the reliability and validity tests, and diagnostics tests that were conducted during data analysis are also contained in this chapter. The chapter ends with the tools that were used for the data analysis and a summary of the statistical test and analytical models that were employed in the study.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1   Introduction

This chapter displays the results after data analysis as informed by the objectives and respective hypotheses that guided the study. Additionally, a discussion of the study findings and interpretation from the data analyzed is stated. A chapter summary is also given. The main objective of this study was to establish the influence of LMPs, LISs and LSQ on customer satisfaction in the maritime sector of shippers in Kenya. The study had four specific objectives which were to assess the effect of LMPs on customer satisfaction of shippers in Kenya; establish the effect of LISs on the relationship between LMPs and customer satisfaction of shippers in Kenya; determine the effect of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya, and to determine the joint effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya.

These objectives resulted into the following four hypotheses that guided the study H_1: LMPs has no significant effect on customer satisfaction; H_2: LISs has no significant moderating effect on the relationship between LMPs and customer satisfaction; H_3: LSQ has no significant mediating effect on the relationship between LMPs and customer satisfaction; and H_4: LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction.

Thus, the specific objectives and the hypotheses guided the analysis of the findings as reported in this chapter. Further, the chapter contains the response rate, the analysis of the reliability and validity as well as the general information on the firms that were studied. The analysis of the objectives starts with the descriptive statistics followed by the diagnostic tests and the results of inferential statistics. Testing of the formulated hypotheses was conducted at 5 percent level of significance and the p-values less than or equal to 0.05 meant rejection of the null hypotheses.

4.2   Response Rate

The response rate was determined centered on the questionnaires issued to the respondents versus those duly returned as having been appropriately filled in. In this regard, the researcher administered 63 questionnaires to all the member firms of SCEA that were involved in importation and exportation of raw materials and goods for their various businesses. The questionnaires were administered to respondents through their emails (online) due to the health challenges that had been occasioned by COVID-19 pandemic. From the whole 63 questionnaires that were administered, 41 filled questionnaires were emailed back, which translated into a response rate of 65.1 percent. However, only 37 were usable as some were incomplete and thus were rejected. The summary is as specified in Table 4.1 below.

Table 4.1: Response Rate

	Frequency	Percent
Total issued questionnaires	63	100
Returned questionnaires	41	65
Unreturned questionnaires	22	35
Usable questionnaires	37	59

Source: Field data (2020)

Saunders et al. (2016) assert that a response rate of around 50 percent is acceptable, about 60 percent is good whereas a responses rate of around 70 percent is great. The study's response rate of 59 percent was therefore considered good for further analysis. Other researchers who used similar range of responses as being sufficient include Odock (2016) at 62 percent and Kariuki (2015) at 67 percent. The health challenges posed by the COVID-19 pandemic and the government directive of social distancing by the time this data was being collected could be among the factors attributed to this response rate.

4.3   Respondents Social Demographics

The study first required to find out the background information on the respondents and the organizations that were covered. Such information helps the researcher to understand how grounded the respondents are in as far as responding to the content of the study instrument. This information included the positions held in the organization, years of organizational operation, membership status with CILT, the category of operation, presence of logistic management department, the procurement of logistic services, years of membership with SCEA and the associated benefits.

On the positions that respondents held in their organizations, the study noted that respondents had different job titles which included logistic managers/directors/officers, clearing and forwarding managers, heads of imports and exports, supply chain managers, procurement managers, sales and marketing managers and one was head of finance. This means that the personnel in-charge of the logistics management department have diverse professional/academic qualifications.

It can thus further be deduced that there was diversity in the views shared by respondents of the study given the fact that they held different job titles in their respective organizations. For instance, the respondents working in logistic/supply chain/procurement offices were probably well versed with issues relating with logistics management, LISs and LSQ while the sales and marketing managers were probably well versed with issues relating with customer satisfaction which was the dependent variable of the study. Table 4.2 summarizes the socio-demographics of the respondents of the study.

Table 4.2: Respondents Social Demographics

Variables	Social Demographic	Frequency	Percent
Years of organizational operation	0 to 5	8	22
	5 to 10	6	16
	10 to 15	2	5
	15 to 20	3	8
	Over 20	18	49
	Total	37	100
Membership to Chartered Institute of Logistics Management	Yes	9	24
	No	28	76
	Total	37	100
Category of organizational operation	Importer only	5	14
	Exporter only	1	4
	Importer and exporter	24	65
	Importer and 3PL	3	8
	Exporter and 3PL	0	0
	Others	4	11
	Total	37	100
Presence of logistics management department	Yes	31	84
	No	6	16
	Total	37	100
Procurement of logistics service providers	Competitive bidding	30	81
	Reference	6	16
	Family	1	3
	Sister company	0	0
	Total	37	100
Length of engagement with current logistics service providers (years)	0 to 5	20	54.1
	5 to 10	8	21.6
	10 to 15	5	13.5
	More than 15	4	10.8
	Total	37	100
Period of membership with Shippers Council of Eastern Africa (years)	0 to 3	5	14
	3 to 6	15	41
	More than 6	17	46
	Total	37	100

Source: Field data, (2020)

As shown in Table 4.2 above, 49.0 percent of the respondents' organizations had been in operations for over 20 years. This meant that organizations covered by this study had been in operations for a lengthy period and thus probably had adopted different logistic management practices that this study sought to establish. The study noted that only 24.0

percent of the respondents were members of the CILT. By being members of CILT, showed how the field of logistics management as a profession has been embraced in the industry at large. This score of 24 percent was of concern and there was need for greater campaign by all relevant bodies since logistics and transportation management is a key cost center in all organizations.

Table 4.2 further showed that on the category of operation of the firms, majority of the firms operated as importers and exporters at 65 percent. This was crucial since it indicated that the majority of respondents had knowledge in the logistics management activities undertaken in and out of the port of Mombasa. The firms which operated under other categories shared that they were clearing and forwarding agents while others were importers, exporters as well as 3PL. The results showed that, 84 percent of the studied firms had in place a logistics management department which was a good indicator as it was the target department in the present study. The firms that had no logistics management department, (16 percent) confirmed that they relied on the clearing and forwarding, import and/or export department, or supply chain departments.

The study found that competitive bidding was one of the widely used methods of procuring logistics management services by the shippers with a score of 81 percent. On the length of engagement with the LSPs, it emerged that the number of years of current engagement was almost inversely proportional to percentage of years in operation. This probably meant that due to the sensitivity of the key goals of logistics management of place and time utility together with the role of logistics in wealth creation in a firm, the studied firms frequently changed any non performing logistics service providers.

The SCEA which advocates for the welfare of importers and exporters was used as the sampling frame of the study. Table 4.2 showed that a total of 87 percent of the respondents had been members of SCEA for more than 3 years, and had thus benefited from the mandates of the associated membership. These benefits included easy access to the key stakeholders like KRA, KEBS & KPA, promoting networking, growing the available knowledge with regard to the best practices in the industry, benchmarking while creating more awareness on the available challenges and trends in the market, organized seminars and trainings establishment of standards of operation, regulating the tariffs within the region and acting as a lobbying body on the issues facing the shippers.

4.4   Ports Operations and expected Integration and Coordination of Systems of Government Agencies

On the performance at the ports of Mombasa and Inland Container Depot (ICD), the respondents were asked to point out their experiences and interactions as it directly affects the performance of the logistics service providers/transporters. Additionally, the respondents were probed to specify their experience on the expected integration and coordination with government agencies for better services to the importers and exporters. Further, six government agencies (KRA, KPA, KMA, KEBs, KRC and KEPHIS) involved in the entire logistical process were identified by the researcher and the respondents indicated the one(s) that required most improvement for better logistics services and the key areas and aspects that require this improvement. This information contributed to making informed decisions and deductions on the performance of the

logistics service providers having understood the environment at the port of Mombasa

and ICD, under which they were operating to serve the shippers.

Table 4.3: Ports Operations and expected Integration and Coordination by key
Government Agencies

Operations at the Ports				
Category	Classification	Frequency	Percent	Mean (scale: 1 to 4)
Port of Mombasa	Least effective and efficient	9	24.3	
	Moderate effective and efficient	14	37.8	
	Highly effective and efficient	14	37.8	
	Very highly effective and efficient	0	0	
	Total	37	100	2.12
Inland Container Depot, ICD	Least effective and efficient	2	5.4	
	Moderate effective and efficient	16	43.2	
	Highly effective and efficient	19	51.3	
	Very highly effective and efficient	0	0	
	Total	37	100	2.46
Integration and Coordination of Systems of Government Agencies				
KRA	i. Difficulties in roll out of the Integrated Customs Management System, (iCMS) were causing port delays ii. Delays in passing of entries and verification iii. Some procedures are time wasting thus increasing costs iv. Staff at KRA were fairly interactive			
KPA	i. The procedures were slow with a lot of congestion ii. Very unpredictable and bureaucratic systems.			
KMA	i. Doing well as far as service delivery was concerned ii. Some delays with the Berth vessel.			
KEBs	i. Systems were working well ii. Paperwork ought to be reduced.			
KRC	i. There's need for a rise in carriage and tonnage by increasing the available wagons. ii. Transporting containers was a big problem due to delays even after paying duty			
The expected level of improvement and specific areas by the government agencies				
Government agencies	Level of expected improvement		Key areas that required improvement	
	Frequency	Percent		
KRA	32	86.4	i. More coordination with other government agencies and communication to importers and/or exporters ii. To improve on clearance timeliness to 4 days as earlier indicated iii. Verification process require a lot of improvement iv. Other areas for improvement were loading/offloading containers, placing containers for verification, releasing consignment, clearing procedure, custom clearance days and accountability.	

Table 4.3 Cont…

Operations at the Ports				
KPA	26	70.2	i.	Improve on loading of containers to ICD within 4 days of container discharge, discharging of vessels at port add 2 more days and upgrade the systems in place
			ii.	Improve on transparency in the system procedures and tracking tools, clearance period, electronic operations and verification process
			iii.	Tame rogue local shipping agents and consolidators
			iv.	Enhance cargo digital tracking, add more staff, open more gates in and out, improve system down time, automate most of the processes and build wider and deeper berth to allow for bigger vessels.
KEBS	23	62.1	i.	Clarity of requirements and rules and reduce bureaucracies
			ii.	Put in place tight inspection guidelines on quality aspects with strict adherence with standard specifications
			iii.	Work 24/7
			iv.	Timely information on location of containers
			v.	Arrange for workshops and come up with competitive tariffs acceptable in the market.
KMA	14	37.8	i.	Improve on berthing vessels, more coordination of the players, ensure regulation compliance, speed up issuance of local certificate of competence (CoC) and be customer friendly
			ii.	Increase capacity to inspect goods, facilitate efficiency across maritime sectors and increase the coordination with other organizations
			iii.	Negotiate for all the ICD containers to be dropped in ICD or Nairobi Depot
			iv.	Organize regular meetings with stakeholders.
KRC	14	37.8	i.	To have ownership of work done and proper traceability of their processes
			ii.	More wagons to transport containers to ICD and improve on transportation of the containers.
			iii.	Call for workshops, review of freight costs
			iv.	Share electronic CoC with KEBs as there was no need for importers to avail a physical copy.
KEPHIS	12	32.4	i.	Have its system incorporated for processing permits fully into Kentrade and avoid issuing of manual permits.
			ii.	Improve on delivery time to avoid unnecessary delays
			iii.	Add more staff.

Table 4.3 indicates that the percent of the respondents who viewed the operations at the

Port of Mombasa as moderately to highly efficient and effective was the same. None of

the respondents indicated that the operations were very high in efficiency and

effectiveness. The study thus concludes that the operations at the port of Mombasa were

average. Further the table showed that more than 50 percent of the respondents believed that the operations at the ICD were highly efficient and effective, and only 5 percent indicated that they were least effective and efficient. The study therefore denoted that operations at the ICD were better than the operations at the port of Mombasa.

Additionally, the respondents pointed out that KRA and KPA, followed by KEBs needed to improve on the way they conduct their operations in serving the shippers as highlighted by the percent on the level of expected improvements at 86.4 percent, 70.2 percent and 62.1 percent respectively, and areas of improvements in Table 4.3. KEPHIS was least in the list of expected level of improvement in its operations while serving the shippers.

4.5   Validity and Reliability Tests

This section shows the results on validity and reliability of the instrument of the study. Prior to determination of validity and reliability, a pilot study was conducted using respondents who were not incorporated in the final study.

4.5.1 Validity Results

The instruments of a study are regarded as valid when the results of the measurements are in line with what they were designed and developed to determine (Cooper & Schindler, 2011). In this study, Exploratory Factor Analysis (EFA) was used to establish the validity of the instruments. The EFA is a technique which is part of factor analysis whose aim is to establish the underlying relations amongst measured variables. The results generated

from the EFA include the values of total variance explained, communalities and the component matrix (Hamed, Shamsul & Neda, 2014; Stapleton, 1997).

The results of the total variance explained are shown in Appendix VI. A common rule of thumb is to select components whose Eigenvalue is at least 1 and from the results, all the 96 items covered by the study were reduced into 20 components that cumulatively explained 92.8 percent variation in the study. Component one explained the largest percentage of variation at 26.8 percent among the variables. The extent to which the 20 underlying factors explain the variance of the 96 input variables is given by the values in the communalities referred as extractions. Simply put, it shows the variables relate well to the field or discipline or the thematic area under discussion.

Communality refers to variance that is shared in common by factors covering a given variable. Communality can also be viewed as the degree to which an element is well related with all other elements in a given study (Hamed, Shamsul & Neda, 2014; Strickland, 2003). Higher values of communalities connote a better level of correlation in the variables and the values should be above 0.4. The values of communalities as computed in this study are indicated on Appendix V. From the results on Appendix V, all the items had values of communalities above 0.4, which implied that the items on each of the variables were well related with each other.

To show which items measure which factors, a component matrix which shows the correlations between the items and the components is extracted. A component matrix was used to determine factor loading of the items in the study. From the results shown in Appendix VII, most of the items loaded well on component one with other items loading on the rest of the components extracted. This can be interpreted to mean there was construct validity in the study variables, and thus the study instrument was fit to measure the concept it was envisioned to quantify.

4.5.2 Reliability Results

Reliability denotes the consistency and accuracy of the measurement instrument utilized in the study. The study assumed an internal measure of consistency called Cronbach Alpha coefficient to ascertain the reliability of the study instrument. The test shows the intensity to which research instrument elements are homogenous and measure the same underlying construct. In this regard, the questionnaires were cleaned and coded onto Statistical Package for Social Sciences (SPSS) software where the values of Cronbach alpha coefficient were generated. Tavakol and Dennick (2011) state that the acceptable alpha range is between 0.7 to 1.0. Therefore, any alpha that falls within this range was considered reliable.

This was followed by assessment of the factor loadings for all the elements of each construct in the study. The elements whose factor loadings were below 0.4 were plunged from further analysis. Additionally, the item-to-total correlation scores were used to check the reliability and internal consistency of the elements representative of every

construct for all the constructs in the study. In this regard, the elements whose item-to-total correlation values were above 0.3 were retained for further analysis (Hair et al., 2010).

4.5.2.1 Reliability Results for Logistics Management Practices

The LMPs was the independent variable of the study and it comprised of seven management practices namely transportation management, inventory management, order processing, information flow, packaging, material handling and warehousing management practices. The items of these sub variables were used to generate the composite value of Cronbach alpha coefficient on these LMPs. The results are presented in the following sections.

Table 4.4: Item Total Statistics of Transportation Management Practices

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Carrier evaluation	37	3.8108	.99549	.869	.736	.888
Carrier selection	37	3.9730	.83288	.901	.786	.884
Fleet management	37	4.0541	.88021	.947	.608	.892
Shipments scheduling	37	3.7838	1.00375	.943	.597	.896
Route planning	37	4.1892	.90792	.907	.567	.901
Adherence to maintenance schedule	37	3.8378	.83378	.945	.592	.900

Cronbach's Alpha=0.910   Source: Field data (2020)

As seen on Table 4.4 the alpha value was 0.910 which meant the scale used for transportation management practice was reliable. The mean of the items is between moderate to great extent of implementation. Most of the standard deviation values are below 1.0 meaning respondents shared similar views on implementation of transportation

management practice. Factor loadings and item-total correlation values of the items were

above 0.4 and 0.3 respectively, and thus were retained for further analysis.

Table 4.5: Item Total Statistics for Inventory Management Practice

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Inspection of goods before offloading at the premises	37	4.2162	.88616	.854	.707	.853
Acceptance/rejection of goods at the premises	37	3.9189	1.08981	.951	.508	.886
Quality control department in operation	37	3.8378	.98639	.893	.666	.858
Periodic stock counts and stocktaking	37	3.7838	1.29390	.951	.690	.860
Inventory control measurements practices	37	4.1081	.90627	.952	.820	.835
Adherence to inventory policy guidelines	37	3.8649	.91779	.931	.791	.839

Cronbach's Alpha=0.877   Source: Field data (2020)

As observed in Table 4.5 the Cronbach's alpha value was 0.877 which meant the scale

used for inventory management practice was reliable. The mean of the items is between

moderate to great extent of implementation. The standard deviation values are around 1.0

meaning respondents shared similar views on implementation of inventory management

practice. Factor loadings and item-total correlation values of the items were above 0.4

and 0.3 respectively, and thus were retained for further analysis.

Table 4.6: Item Total Statistics for Order Processing Management Practice

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Timely processing of electronic local purchase orders, LPOs	37	3.9459	1.07873	.955	.772	.900
Checks and balances at various levels of authorization	37	4.0000	.97183	.917	.768	.900
Functional interaction for order processing and payments	37	3.7838	1.00375	.941	.801	.893
An order processing cycle	37	3.8649	1.00449	.924	.824	.889
Scheduled order processing management	37	3.5676	1.06824	.853	.761	.902

Cronbach's Alpha=0.916   Source: Field data (2020)

As noted on Table 4.6 the Cronbach's alpha value was 0.916 which meant the scale used for order processing management practice was reliable. The mean of the items is between moderate to great extent of implementation. Most of the standard deviation values are around 1.0 meaning respondents shared relatively similar views on implementation of order processing management practice. Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were withheld for further analysis.

Table 4.7: Item Total Statistics for Information Flow Management Practice

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Achieving timely response to customer references	37	3.8333	.69693	.926	.740	.826
Decision making linked to accuracy in information shared amongst yourselves	37	3.7500	.73193	.777	.641	.834
Extranets are in use with all internal and external users to ensure seamless flow of information to all logistics functions	37	3.8611	1.12511	.902	.677	.827
Periodic storage and backup of data	37	3.7222	.88192	.834	.619	.842
Training for super users on confidentiality of information	37	3.7222	1.13669	.853	.714	.817

Cronbach's Alpha=0.854   Source: Field data (2020)

From Table 4.7 the Cronbach's alpha value was 0.854 which meant the scale used for information flow management practice was reliable. The Table 4.7 shows the mean of the items indicated moderate extent of implementation. Most of the standard deviation values are around 1.0 meaning respondents shared relatively similar views on implementation of information flow management practice. Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were retained for further analysis.

Table 4.8: Item Total Statistics for Packaging Management Practice

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Logistical packaging decisions	37	3.5676	1.16763	.934	.794	.885
Unitization in logistical packaging	37	3.5676	1.09394	.963	.821	.880
Eco-friendly packaging	37	3.1892	1.37109	.952	.700	.910
Logistical packaging cost implications	37	3.4595	1.14491	.964	.843	.875
Consultations with users on packaging decisions	37	3.4054	1.09188	.938	.729	.898

Cronbach's Alpha=0.910   Source: Field data (2020)

As shown in Table 4.8 the Cronbach's alpha value was 0.910 which meant the scale used for packaging management practice was reliable. From Table 4.8, the mean of the items is moderate extent of implementation. Most of the standard deviation values are above 1.0 meaning respondents shared divergent views on implementation of packaging management practice. Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were retained for further analysis.

Table 4.9: Item Total Statistics for Materials Handling Management Practice

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Material handling guidelines for systems and designs	37	3.5946	1.16763	.951	.631	.800
Hygiene and human safety	37	4.1081	1.09394	.944	.681	.804
Cost implications in materials handling	37	4.0270	1.37109	.909	.623	.803
Automated storage system and warehouse layout compatibility	37	3.4865	1.14491	.908	.688	.785
Value addition potential for goods being handled	37	3.4054	1.09188	.840	.638	.804

Cronbach's Alpha=0.833   Source: Field data (2020)

As shown in Table 4.9 the Cronbach's alpha value was 0.833 which meant the scale used for materials handling management practice was reliable. The mean of the items is between moderate to great extent of implementation. Most of the standard deviation values are above 1.0 meaning respondents had divergent views on implementation of materials handling management practice. Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were retained for further analysis.

Table 4.10: Item Total Statistics for Warehousing Management Practice

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Warehouse site selection	37	3.6757	1.02886	.922	.741	.905
Layout design considerations	37	3.9189	1.08981	.910	.840	.885
Warehousing performance measurements	37	3.8108	1.07595	.883	.858	.881
Warehouse documentation	37	4.1622	.89795	.907	.724	.909
Warehousing strategies	37	3.6486	1.03323	.884	.764	.901

Cronbach's Alpha=0.916   Source: Field data (2020)

As observed in Table 4.10 the Cronbach's alpha value was 0.916 which meant scale used for warehousing management practice was reliable. From Table 4.10, the mean of the items is between moderate to great extent of implementation. Most of the standard deviation values are above 1.0 meaning respondents had divergent views on implementation of transportation management practice. Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were retained for further analysis.

4.5.2.2 Reliability Results for Logistics Information Systems

The LISs was the moderating variable used in the study and it was represented by ERP, GPS, RFID, bar codes and ECTS. The results of the Cronbach Alpha coefficient and item total statistics is shown in table 4.11.

Table 4.11: Item total Statistics for Logistics Information Systems

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Enterprise Resource Planning, ERP	37	4.0000	1.02740	.933	.741	.905
Global Positioning System, GPS	37	4.0270	1.01342	.852	.840	.885
Radio Frequency Identification, RFID	37	3.2162	1.20497	.942	.858	.881
Bar codes	37	3.5676	1.42479	.895	.724	.909
Electronic Cargo Tracking system	37	3.8919	1.19684	.915	.764	.901

Cronbach's Alpha=0.669   Source: Field data (2020)

As seen in Table 4.11, the value of Cronbach alpha was close to 0.7 which implied that the scale used on LISs was reliable. From Table 4.11, the factor loadings for all the five items is above 0.4 and the item-total correlation above 0.3, and thus all the items were withheld for further analysis. Notably, the column on alpha if item is deleted showed that

the values are all above the 0.7 on the LISs. However, when the corresponding factor loadings and item-total correlation values are above 0.4 and 0.3 respectively, the items are held for further analysis.

4.5.2.3 Reliability Results for Logistics Service Quality

The LSQ was the mediating variable of the study and it was represented by functional quality and technical quality. The Cronbach's Alpha values, factor loadings and the respective item total statistics are shown in Table 4.12.

Table 4.12: Item Total Statistics for Functional Quality

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Timeliness of process in tax invoices receipt	37	4.3784	.63907	.885	.741	.704
Delivery with safety and road accidents	37	4.2432	.49472	.943	.840	.717
Delivery of requested appropriate items	37	4.0000	.66667	.874	.858	.679
Delivery with minimized claim	37	4.2162	.58382	.909	.724	.722
Delivery of damage free products	37	4.1081	.73725	.923	.764	.746
Delivery of well packaged products	37	3.9730	.76327	.831	.415	.692
Management of all costs from emergency orders	37	3.7568	.86299	.913	.669	.632
Guarantee lead time as requested	37	3.8649	.71345	.937	.547	.666
Kindness of staffs in order management	37	4.3784	.68115	.885	.484	.680

Cronbach's Alpha=0.720   Source: Field data (2020)

As observed in Table 4.12 the alpha value for functional quality was 0.720 which meant that the scale used was reliable. The mean of the items shows that the respondents were satisfied with the LSQ of their LSPs. The standard deviation values are below 1.0 meaning the respondents shared similar views on extent of satisfaction with quality of

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logistics service in the process of service delivery. The Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were held for further analysis.

Table 4.13: Item total Statistics for Technical Quality

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Delivery on schedule	37	3.9730	.79884	.890	.633	.877
Prompt response to delivery accidents	37	4.0000	.78174	.928	.625	.878
Actions aiming at avoiding future accidents undertaken	37	4.1081	.69856	.915	.700	.873
Any changes in quantities ordered are quickly tackled	37	4.0541	.88021	.966	.796	.863
Capability to handle emergent orders	37	4.0270	.79884	.905	.721	.870
Capability to negotiate with carriers	37	4.1081	.77401	.898	.251	.904
System synchronized through the supply chain	37	3.9730	.92756	.922	.703	.871
Real-time delivery tracking	37	4.0811	.86212	.859	.725	.869
Capability of research and development	37	3.4595	1.09531	.912	.676	.876

Cronbach's Alpha=0.889   Source: Field data (2020)

Table 4.13 indicated alpha value of 0.889 meaning scale used for technical quality was reliable. The mean of the items shows that the respondents were satisfied with the LSQ of their LSPs. Majority of the standard deviation values are below 1.0 meaning the respondents shared similar views on extent of satisfaction with capability and outcome of service delivery. The Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were retained for further analysis.

4.5.2.4 Reliability Results for Customer Satisfaction

Customer satisfaction was the dependent variable of the study and it had two sub variables namely loyalty and expectations met.

Table 4.14: Item total Statistics for Loyalty

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
How likely is your firm to switch to another logistics service providers	37	2.5405	1.12038	.883	-.066	.816
Is your firm likely to renew service contract with its logistics service providers	37	3.8108	.90792	.904	.449	.697
Is your firm likely to recommend their logistics service providers to other firms	37	4.0270	.89711	.822	.435	.700
How likely is your firm to purchase different solutions from their logistics service providers in the future	37	3.8108	1.22106	.933	.741	.609
Is your firm likely to expand the use of logistics service providers' products throughout the company	37	3.5405	1.09531	.961	.759	.611
Your firm's loyalty is likely to grow	37	3.9459	.88021	.904	.615	.663
Share information for mutual gain	37	3.9459	.97028	.944	.325	.724

Cronbach's Alpha=0.730   Source: Field data (2020)

The Cronbach's Alpha for the sub-construct loyalty was 0.730 (Table 4.14) and this meant the scale used to formulate and develop the items under loyalty was reliable. From Table 4.14, the item-total correlation of item 1 was less than 0.3 and it was dropped for further analysis. The Factor loadings and item-total correlation values of the other items were above 0.4 and 0.3 respectively, and thus were reserved for further analysis (Hair et al., 2010).

Table 4.15: Item total Statistics for Expectations Met

	N	Mean	Standard Deviation	Factor Loadings	Item-Total Correlation	Alpha if Item is Deleted
Consultations on internal policy matters that concern your firm	37	3.9730	.92756	.932	.444	.885
Delays caused by lengthy clearance procedures addressed	37	4.0000	.62361	.917	.583	.877
Constant communication on need basis	37	4.1351	.71345	.896	.525	.879
Timely interventions in operational issues that may affect service offered	37	4.0270	.68664	.951	.531	.879
Enactment of appropriate legislative charter	37	3.4865	1.01712	.951	.750	.864
Access to an interactive website with depository on key information	37	3.5135	1.19307	.963	.683	.871
Education and sensitization on existing regulations to enhance compliance	37	3.7838	.88616	.951	.767	.863
Optimization of 24/7 operations where necessary	37	3.8108	.84452	.930	.678	.869
Implementation of electronic cargo tracking systems	37	4.1622	.79977	.937	.472	.882
Stakeholder engagement mechanism to address policy issues on freight logistics	37	3.8649	.75138	.942	.757	.866
Overall expectation of quality of services	37	4.1622	.55345	.920	.517	.880

Cronbach's Alpha=0.885   Source: Field data (2020)

The Cronbach's alpha value as shown in Table 4.15 of 0.885 meant the scale used to formulate items under expectations met was reliable. From Table 4.15, the mean value of the items meant that the expectations of the respondents from their LSPs were met. Majority of the values of the standard deviation are below 1.0 meaning the respondents shared fairly similar views on expectations from the LSPs. The Factor loadings and item-total correlation values of the items were above 0.4 and 0.3 respectively, and thus were retained for further analysis.

4.6   Diagnostic Tests

The study conducted some diagnostics tests on the data collected which included linearity, normality, multicollinearity, heteroscedasticity, and autocorrelation. These tests are meant to show that the assumptions of regression analysis are not violated.

4.6.1. Linearity

To address the assumption of linearity of the data, the Pearson Correlation matrix was used. The rule of thumb for linearity is that values above or close to 0.5 depict a linear relationship between the values of the study. From Table 4.16 below, the first column on customer satisfaction shows that all the study variables had a moderate to high linear relationship with the dependent variable, as the values of Pearson Correlation were close to or above 0.5. This meant that the data was thus fit for regression analysis.

Table 4.16: Test for Linearity

Study Variables		Customer Satisfaction	Logistics Management Practices	Logistics Service Quality	Logistics Information System
Customer Satisfaction	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	37			
Logistics Management Practices	Pearson Correlation	.688**			
	Sig. (2-tailed)	.000			
	N	37	37		
Logistics Service Quality	Pearson Correlation	.584**	.763**		
	Sig. (2-tailed)	.000	.000		
	N	37	37	37	
Logistics Information System	Pearson Correlation	.359*	.381*	.167	
	Sig. (2-tailed)	.029	.020	.324	
	N	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Source: Field data (2020)

4.6.2 Normality Test

To establish the normality of the data, Shapiro-Wilk test was used. The Shapiro-Wilk

(1965) test is a common test for normality which was initially restricted for data whose

sample sizes were below 50 (Razali & Wah, 2011). The analysis results for Shapiro-Wilk

test are shown in Table 4.17 below.

Table 4.17: Shapiro-Wilk Tests for Normality

Objective	Variables	Model	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
			Statistic	df	Sig.	Statistic	df	Sig.
One (on IV and DV)	Customer satisfaction & LMPs	(Constant) LMPs	.080	37	.200*	.988	37	.948
Two (on moderating effect)	Step one	(Constant) LMPs	.080	37	.200*	.988	37	.948
	Step two	(Constant) LMPs, LISs	.087	37	.200*	.989	37	.966
	Step three	(Constant) LMPs, LISs, Interaction_Term _LMP_LIS	.092	37	.200*	.978	37	.677
Three (on mediating effect)	Step one	(Constant) LMPs	.080	37	.200*	.988	37	.948
	Step two (LSQ vs LMPs)	(Constant) LMPs	.090	37	.200*	.964	37	.261
	Step three (CS vs LSQ)	(Constant) LSQ	.106	37	.200*	.951	37	.105
	Step four	(Constant) LSQ, LMPs	.105	37	.200*	.982	37	.798
Four (on joint effect)	Customer satisfaction vs LMPs, LISs, & LSQ	(Constant) LSQ, LMPs, LISs	.105	37	.200*	.982	37	.798
*. This is a lower bound of the true significance.								
a. Lilliefors Significance Correction								

Source: Field data (2020)

In Shapiro-Wilk test for normality, if the p-value score is more than 0.05 (p-value > 0.05), it points out that the data are not different from normal (Razali & Wah, 2011; Yap & Sim, 2011). From Table 4.17 all the p-values were more than 0.05, meaning the data was not different from normal. Therefore the data was fit for regression analysis.

4.6.3 Multicollinearity

Multicollinearity arises where independent variables are highly correlated and was tested using VIF that generated the Tolerance and VIF values. Table 4.18 below shows these values.

Table 4.18: Variance Inflation Factor

Objectives	Model		Collinearity Statistics	
			Tolerance	VIF
To assess the effect of LMPs on customer satisfaction		(Constant) LMPs	1.000	1.000
To establish the effect of LISs on the relationship between LMPs and customer satisfaction	Step one	(Constant) LMPs	1.000	1.000
	Step two	(Constant) LMPs LISs	.855 .855	1.170 1.170
	Step three	(Constant) LMPs LISs Interaction_Term_LMP_LIS	.803 .707 .702	1.245 1.415 1.425
To determine the effect of LSQ on the relationship between LMPs and customer satisfaction	Step one	(Constant) LMPs	1.000	1.000
	Step two	(Constant) LMPs	1.000	1.000
	Step three	(Constant) LSQ	1.000	1.000
	Step four	(Constant) LSQ LMPs	.418 .418	2.390 2.390
To determine the joint effect of LMPs, LISs and LSQ on customer satisfaction		(Constant) LSQ LMPs LISs	.400 .352 .818	2.497 2.840 1.222

Source: Field data, (2020)

The results in Table 4.18 above showed that the tolerance values for all the independent variables were greater than 0.10 while VIF of all variables were less than 10. It was therefore deduced that there was no multicollinearity among the study variables, (Cooper & Schindler, 2011; Pallant, 2011). Thus, the data was fit for regression analysis.

4.6.4 Heteroskedasticity

Heteroskedasticity was tested using the Koenker test. Koenker (1981) noted that if the p-value is less than 0.05, the rule of thumb is that the null hypothesis of homoskedasticity is rejected and therefore heteroskedasticity presumed. Conversely when p-value is greater than 0.05, then null hypothesis is not rejected, and homoscedasticity is assumed. The results of the Koenker test for heteroskedasticity were presented in Table 4.19 below.

Table 4.19: Koenker Test for Heteroskedasticity

Hypotheses	Sub-Hypotheses	Sample Size	P-value
LMPs has no effect on customer satisfaction		37	0.5779
LISs has no moderating effect on relationship between LMPs and customer satisfaction	LMPS, LISs, interaction term and CS	37	0.9687
LSQ has no mediating effect on relationship between LMPs and customer satisfaction	LMPs and CS	37	0.5779
	LMPs and LSQ	37	0.3067
	LSQ and customer satisfaction	37	0.1018
	LMPs, LSQ and customer satisfaction	37	0.0854
LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction		37	0.0535

Source: Field data, (2020)

The Koenker test results presented in Table 4.19 above showed all p-values were greater than 0.05, an indication that homoscedasticity presumption was not violated since the data is homoscedastic; and thus data fit for regression analysis.

4.6.5 Autocorrelation

Autocorrelation is a test of independence which uses standardized residuals and in this study it was tested using Durbin Watson statistic. The rule of thumb when testing for autocorrelation is usually that values of Durbin-Watson statistics closer or equal to 2 indicate absence of serial correlation in the data (Garson, 2012; Öztuna, Elhan & Tüccar, 2006). The decision rule in testing for autocorrelation is that; if d (computed) > du (DW tables), fail to reject the null hypothesis implying that autocorrelation is absent.

Table 4.20: Durbin-Watson Test for Autocorrelation

No.	Hypothesis	Sub-hypothesis	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1.	LMPs has no effect on customer satisfaction		.688a	.474	.459	.37614	2.031
2.	LISs has no moderating effect on relationship between LMPs and customer satisfaction	LMPs and CS	.688a	.474	.459	.37614	2.031
		LIS, LMPs and CS	.696a	.485	.455	.37759	2.000
		Interaction term, LIS, LMPs and CS	.562a	.316	.253	.69232	1.901
3.	LSQ has no mediating effect on relationship between LMPs and customer satisfaction	LMPs and CS	.688a	.474	.459	.37614	2.031
		LMPs and LS	.763a	.582	.570	.31478	1.673
		LSQ and customer satisfaction	.584a	.342	.323	.42082	1.560
		LMPs, LSQ and customer satisfaction	.695a	.482	.452	.37856	1.901
4.	LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction		.706a	.498	.453	.37823	1.822

Source: Field data, (2020)

The results on Table 4.20 showed that the Durbin-Watson statistics values for all the models in the study ranged from 1.6 to 2.0 which therefore meant that the residues are not correlated, at n=37, with one, two or three independent variables as reflected on Durbin-Watson Tables (Levine, Krehbiel & Berenson, 2006). The decision therefore was: fail to reject the null hypotheses of the study. Hence, the study variables did not have serial correlation and thus was in line with the assumptions of regression analysis.

4.7   Descriptive Statistics of the Study Variables

The descriptive statistics of the study variables were based on Likert scale ranging from one (least or least preferred score) to five (highest or most preferred score) and means and standard deviations as well as skewness and kurtosis were calculated to describe the data as well as its distribution. The results of the descriptive statistics of all the study variables were shown in Table 4.21 below.

Table 4.21: Descriptive Statistics of the Study Variables

Sub-Variables	Sample Size	Mean	Standard Deviation	Skewness	Kurtosis
Transportation	37	3.94	0.76	-1.45	3.86
Inventory management	37	3.96	0.80	-1.52	3.87
Order processing	37	3.83	0.89	-1.13	1.69
Information flow maintenance	37	3.78	0.71	-0.66	-0.43
Packaging	37	3.44	1.01	-0.97	0.12
Materials handling	37	3.72	0.77	0.02	-0.65
Warehousing	37	3.84	0.89	-1.29	1.53
Functional quality	37	4.10	0.38	0.38	1.31
Technical quality	37	3.98	0.62	-1.13	4.39
Loyalty	37	3.66	0.63	-0.24	-0.75
Expectations met	37	3.90	0.57	-0.33	0.16
LISs	37	3.74	0.78	-0.46	-0.70

Source: Field data (2020)

From the results in Table 4.21 above, the mean of all the variables was above or close to 3.50. This meant that the studied firms were most likely in agreement with the indicators used to measure the variables of the study. The values of skewness and kurtosis were generated and used to describe the normality of the study variables. From the results, most of skewness and kurtosis values ranged between -2 and +2. Kothari (2004) argued that when the values of kurtosis and skewness were within the range of -2 and +2; it meant that the data was normally distributed; while Byrne (2010) and Chemingui and Lallouna (2012), noted that the values of skewness of -3 and +3 and kurtosis value of less than five indicated that the variable was normally distributed. It was therefore inferred that, the study variables were normally distributed.

The study also looked into the ranking of the LMPs so as to compare the extent of their implementation by the firms' logistics service providers. This was done by using the overall mean scores extracted from Table 4.21 above on descriptive statistics of the study variables and the results were presented in Table 4.22 below.

Table 4.22: Summary of Overall Ranking of Logistics Management Practices

Dimension of Logistic Management Practice	Overall Mean Score	Ranking
Inventory management	3.96	1
Transportation management	3.94	2
Warehousing	3.84	3
Order processing	3.83	4
Information flow maintenance	3.78	5
Material handling	3.72	6
Packaging	3.44	7
Composite score	3.79	-

Source: Field data (2020)

As shown in Table 4.22, the composite score on LMPs was 3.79; which implied that LMPs were implemented to a moderate/great extent among the studied firms. From the table therefore, the variables ranked 1, 2, 3 and 4 can be labelled as the best LMPs. From the ranking, materials handling and packaging were the least implemented LMP, yet these two activities are very crucial in logistics and transportation management. This, to some extent may explain why the firms had the least score of 24.3 percent (Table 4.2) on LSPs who had been engaged for more than 10 years, since poor packaging and materials handling can lead to damage during transportation. Further, the two practices were found to have high values of standard deviation above 1.0 on testing for reliability, meaning, respondents had divergent views on these LMPs.

Table 4.23 below shows, in order, the extent to which LISs had been implemented by the LSPs. Based on the overall mean score, ERP and GPS are the LISs that were implemented to a great extent, followed by ECTs and barcodes, whereas RFID was the least implemented LISs.

Table 4.23: Summary of Overall Ranking of Logistics Information Systems

Dimension of LISs	Overall Mean Score	Ranking
ERP	4.03	1
GPS	4.00	2
ECTS	3.89	3
Bar codes	3. 57	4
RFID	3.22	5

Source: Field data (2020)

Further, the study looked into the types of LISs that worked best for the organizations of the respondents in relation to their LSPs. The specific question attracted mixed reactions from the respondents where some noted that ERP was the best system in the organizations with some of the reasons advanced being enhanced efficiency and effectiveness and that it was unique to suit the specific needs of the users. Other respondents shared that ECTs worked best for their organization with some of the reasons advanced being that it helps to reduce theft of goods when in transit, and that it provides a real status on export/import which leads to on time delivery. There were other respondents who shared that GPS worked best for their organization since it helped them to track and route the vehicles while others shared that their organizations relied on intelligence closed-circuit television (CCTV) system to enhance safety and security of their warehouses. Respondents further noted that their organizations had implemented Systems Applications and Products (SAP) system that was well integrated with other department and the LSPs.

Additionally, the study sort to understand the benefits of the implementation of LISs by the respondents' LSPs to their firms and the findings were presented in Table 4.24 below.

Table 4.24: Summary of Overall Ranking of the Benefits of Logistics Information Systems

Dimensions of benefits of LISs	Overall mean score	Ranking
Enhanced service to customers	4.43	1
Improves vehicle routing and tracking	4.38	2
Reduces errors	4.30	3
Improves data control	4.30	4
Quick response and information accessibility	4.27	5
Enhances competitiveness	4.27	6
Streamlines logistics processes	4.27	7
Reduce delivery error	4.22	8
Standardizes programs and procedures	4.22	9
Facilitates reporting	4.19	10
Improves stock identification	4.14	11
Reduces paperwork	4.11	12
Enhances replenishment accuracy	4.11	13
Data re-entry is reduced and it may be used instantly	4.05	14
Able to make better decisions based on facts	4.05	15
Enhanced levels of interoperability	4.00	16
Tracks and controls different logistics functions	4.00	17
Reduces manpower	3.89	18
Mean score	4.17	

Source: Field data (2020)

Table 4.24 above revealed that the greatest number of the respondents believed that implementing LISs by the LSPs was a good benefit to the shippers' organization. From the study, the main benefits accrued from the implemented LISs included enhances service to customers (mean = 4.43), improves vehicle routing and tracking (mean = 4.38), reduces errors (mean = 4.30), improves data control (4.30), quick response and information accessibility (mean=4.27), enhances competitiveness (mean = 4.27), and streamlines logistics processes (mean = 4.27).

A summary on comparison of the implementation of LISs and the associated benefits based on overall mean scores is presented in Table 4.25 below.

Table 4.25: A Comparison of Extent of Implementation of the Logistics Information Systems and the Associated Benefits

Item	Mean	Rank
Benefits accrued from implementing LISs	4.17	1
Extent of implementation of LISs	3.74	2

Source: Field data (2020)

As shown in Table 4.25 above, the respondents were more concerned with the benefits derived from LISs implemented compared to the type of LISs. This implied that organizations should first assess the benefits of implementing a particular LISs before purchasing it, and further since that these LISs are very expensive.

Table 4.26 below indicates that respondents were slightly more satisfied with functional quality as compared to technical quality of their logistics service providers. This means that the nature of the relationship between the shippers and their LSP is crucial.

Table 4.26: Summary of Overall Mean Score of Logistic Service Quality

Logistics Service Quality Indicators	Overall Mean Score	Rank
Functional quality	4.10	1
Technical quality	3.98	2
Composite score	4.04	

Source: Field data (2020)

4.8 Relationship between Customer Satisfaction and the Study Variables

To evaluate the objectives of the study, four respective research hypotheses were tested and the findings are shown in this section. The study variables were LMPs, LISs, LSQ and Customer satisfaction. The dependent variable of the study was customer satisfaction. Linear regression analysis was used where three outputs including the model summary, ANOVA and the beta coefficients were obtained.

A relationship among study variables can be strong and yet not be significant, and equally, research has shown that a relationship can be weak but significant (Janda, 2001). In this regard the significance of the correlation coefficient r was tested using the formula for calculating the appropriate t value to test significance of a correlation coefficient which uses the t distribution. The formula employed was:

$t = r \sqrt{\dfrac{n-2}{1-r^2}}$, where the degrees of freedom (df) for inputting the t-distribution was

n-2. The study's df was 35 (n=37), at 0.05 significance level and aimed for one-tailed. The rule of thumb is that if the calculated t-value is above the critical t-value, then the null hypothesis of no relationship in the population (r = 0) can be rejected, confirming a significant relationship, and vice-versa. Appendix IX explains how to test for the significance of the correlation coefficient r.

4.8.1 Results for Customer Satisfaction against Logistics Management Practices

The study's first objective was to assess the effect of LMPs on customer satisfaction of shippers in Kenya. The LMPs was the independent variable of the study which comprised of seven LMPs and when linear regression was done, the results were presented in Table 4.27 below.

Table 4.27: Model Summary for Customer Satisfaction against Logistics Management Practices

Model	R	R Square	Adjusted R Square	Durbin-Watson	
1	.777[a]	.604	.509	1.848	
	Testing for significance of correlation coefficient, r				
	Critical value of t		Calculated t value		Conclusion
	1.697		7.305		Reject H_0
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.689	7	.813	6.329	.000[b]
	Residual	3.724	29	.128		
	Total	9.413	36			
		Unstandardized Coefficients		Standardized Coefficients		
Model		B		Beta	t-value	Sig.
(Constant)		1.343			3.113	.004
Transportation management		.122		.180	1.063	.296
Inventory management		.306		.481	2.173	.038
Order processing		-.100		-.173	-.902	.374
Information flow		.144		.199	1.163	.254
Packaging		-.030		-.060	-.422	.676
Materials handling		.192		.286	1.519	.140
Warehousing		-.006		-.010	-.055	.957

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), transportation management, inventory management, order processing, information flow, packaging, materials handling, warehousing
Source: Field data (2020)

The results of the test for significance of correlation coefficient r pointed out that the relation between customer satisfaction and individual LMPs was significant (Table 4.27

above). Further, the value of coefficient of determination (R square) reflected the goodness of fit of the regression model of the study. From the results, the value of R square was 0.604 meaning that 60.4 percent of the variation in customer satisfaction was explained by the variation in the individual LMPs.

With respect to overall significance from the ANOVA results, the overall model was significant as Table 4.27 above shows since the p-value was 0.000 which is lower than 0.05 significance level and at least one of LMPs had a significant effect on customer satisfaction of the shippers in Kenya. On individual significance, only the constant and inventory management practices were significant as the p-values were less than 0.05.

From the findings in Table 4.27, the null hypothesis (H_1) was rejected and concluded that LMPs had a significant positive effect on customer satisfaction, though only one LMP was significant. These findings were therefore found to be mixed and could not give a clear decision on whether to accept or reject the formulated hypothesis hence the need for a detailed analysis. In this regard, the LMPs was treated as a composite score and the details of linear regression scores were presented in Table 4.28 below.

Table 4.28: Model Summary for Customer Satisfaction against Logistics Management Practices as a composite

Model	R	R Square	Adjusted R Square		Durbin-Watson	
1	.688a	.474	.459		2.031	
	Testing for significance of correlation coefficient, r					
	Critical value of t		Calculated t value		Conclusion	
	1.697		5.609		Reject H_0	
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.461	1	4.461	31.535	.000b
	Residual	4.952	35	.141		
	Total	9.413	36			
Model		Unstandardized Coefficients		Standardized Coefficients		
		B		Beta	t-value	Sig.
(Constant)		1.610			4.111	.000
Logistics management practices		.573		.688	5.616	.000

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), Logistics Management Practices
Source: Field data (2020)

The results of the test for significance of correlation coefficient r indicated that the relationship between customer satisfaction and LMPs as a composite was significant. Table 4.28 above therefore showed that customer satisfaction had a strong and positive relation with LMPs as a composite. The value of coefficient of determination (R square) was used to determine the goodness of fit of the regression model of the study. From the results, the value of R square was 0.474 meaning that 47.4 percent of the variation in customer satisfaction was explained by the LMPs as a composite. The calculation for test of significance of r showed that the relation between customer satisfaction and LMPs was significant.

With respect to overall significance from the ANOVA results, the overall model was significant as Table 4.28 above shows since the p-value was 0.000 which is lower than 0.05 level of significance, meaning LMPs as a composite had significant effect on customer satisfaction of the shippers in Kenya. From the regression beta coefficients results, (β=0.573, p=0.000), it can deduced that LMPs has a significant effect on customer satisfaction. This leads to rejection of the null hypothesis (H_1) and conclusion that LMPs has a significant effect on customer satisfaction. Thus, this study rejects the null hypothesis H_1 and asserts that LMPs has a significant effect on customer satisfaction of shippers in Kenya.

4.8.2 Results for Customer Satisfaction, Logistics Management Practices and Logistics Information Systems

The study's second objective was to establish the effect of LISs on the relationship between LMPs and customer satisfaction of shippers in Kenya. The LISs was the moderating variable of the study and it was represented by the types of LISs, namely ERP, GPS, RFID, bar codes, and ECTS. The second research hypothesis H_2 was: logistics information systems has no significant moderating effect on the relationship between logistics management practices and customer satisfaction. Hierarchical regression analysis with three models was used to test for LISs as a moderator variable of the study and the results were presented on Tables 4.29, 4.30 and 4.31 below.
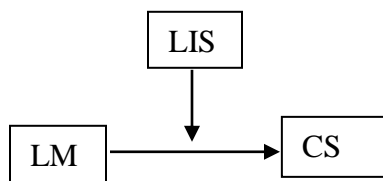
The general moderation model

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Step 1: Customer Satisfaction and Logistics Management

Table 4.29: Model Summary for Step One in Test for Moderation

Model	R	R Square	Adjusted R Square		Durbin-Watson	
1	.688a	.474	.459		2.031	
	Testing for significance of correlation coefficient, r					
	Critical value of t		Calculated t value		Conclusion	
	1.697		5.609		Reject H_0	
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.461	1	4.461	31.535	.000b
	Residual	4.952	35	.141		
	Total	9.413	36			
		Unstandardized Coefficients		Standardized Coefficients		
Model		B		Beta	t-value	Sig.
(Constant)		1.610			4.111	.000
Logistics management practices		.573		.688	5.616	.000

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), Logistics Management Practices
Source: Field data (2020)

Step 2: Customer Satisfaction, Logistics Management and Logistics Information Systems

Table 4.30: Model Summary for Step Two in Test for Moderation

Model	R	R Square	Adjusted R Square		Durbin-Watson	
1	.696a	.485	.455		2.000	
	Testing for significance of correlation coefficient, r					
	Critical value of t		Calculated t value		Conclusion	
	1.697		5.734		Reject H_0	
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.566	2	2.283	16.011	.000b
	Residual	4.848	34	.143		
	Total	9.413	36			
		Unstandardized Coefficients		Standardized Coefficients		
Model		B		Beta	t-value	Sig.
(Constant)		1.466			3.429	.002
Logistics management practices		.537		.645	4.847	.000
Logistics Information Systems		.075		.114	.855	.399

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), Logistics Management Practices, Logistics Information Systems
Source: Field data (2020)

Step Three: Customer Satisfaction, Logistics Management Practices, Logistics

Information Systems and the InteractionTerm_LMPs_LISs

Table 4.31: Model Summary for Step Three in Test for Moderation

Model	R	R Square	Adjusted R Square	Durbin-Watson	
1	.562a	.316	.253	1.901	
	Testing for significance of correlation coefficient, *r*				
	Critical value of t		Calculated t value	Conclusion	
	1.697		5.982	Reject H_0	
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.293	3	2.431	5.072	.005b
	Residual	15.817	33	.479		
	Total	23.110	36			

Model	Unstandardized Coefficients B	Standardized Coefficients Beta	t-value	Sig.
(Constant)	2.178		3.776	.001
Logistics management practices	.349	.395	1.936	.062
Logistics Information Systems	-.387	-.646	-1.213	.234
InteractionTerm_LMPs_LISs	.106	.725	1.223	.230

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), InteractionTerm_LMPs_LIS, Logistics Management Practices, Logistics Information System

Source: Field data (2020)

The test of significance of correlation coefficient, r on all the three models showed a positive significant relation amongst the variables, LMPs, LISs, interaction term and customer satisfaction. The results of the step one test for moderation (Table 4.29) showed a positive significant relation between customer satisfaction and LMPs. The second progressive step involved adding LISs as a predictor variable to variables in step one. The results (Table 4.30) further revealed a positive significant relationship between customer satisfaction, LMPs and LISs. The result of the third progressive step in testing for

moderation was to determine if the variable (LISs) had a moderating effect or not. The rule of thumb in testing for moderation requires that the interaction term be significant, p-value less than 0.05, in the third progressive step for the variable to be considered as having a moderating effect, in addition to the model being significant (Baron & Kenny, 1986). However, the p-value for the interaction term was p=0.230, which was more than 0.05 (Table 4.31).

Further, the value of R-square is expected to increase on adding a new variable to a model, if the variable is significant. In this step 3 however, the value of R-square decreased from value in step 2, from .483 to .316, which was the first signal on the effect of the interaction term. This meant that adding the interaction term to the model did not improve the model ability to predict the criterion variable and/or to investigate a moderating effect of a variable.

This resulted into failing to reject the null hypothesis H_2 and thus the study deduced that LISs had no significant moderating effect on the relationship between LMPs and customer satisfaction of shippers in Kenya.

4.8.3 Results for Customer Satisfaction, Logistics Management Practices and Logistics Service Quality

The third specific objective was to determine the effect of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya. The LSQ was the mediating variable used in the study. It was operationalized into functional quality and technical quality. The study conducted a stepwise regression analysis guided by the Four-

step Path analysis (Baron & Kenny, 1986). The third research hypothesis was **H₃**: LSQ has no significant mediating effect on the relation between LMPs and customer satisfaction.

The general mediation model
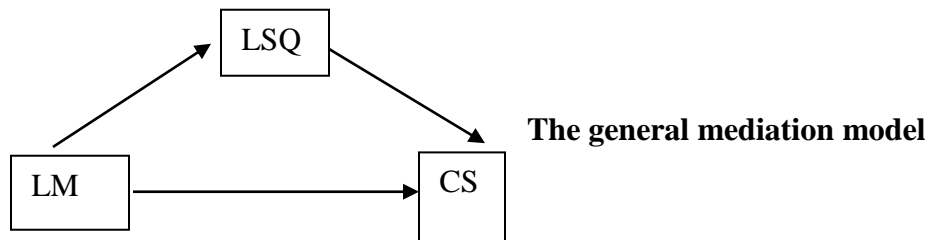
The first model entailed tested customer satisfaction against LMPs, the second model tested LSQ against LMPs, the third model tested customer satisfaction against LSQ and the fourth model tested customer satisfaction against LMPs and LSQ. The regression results are displayed on Tables 4.32, 4.33, 4.34 and 4.35 below.

Table 4.32: Model Summary for Step One in Test for Mediation

Model	**R**	**R Square**	**Adjusted R Square**		**Durbin-Watson**	
1	.688a	.474	.459		2.031	
	Testing for significance of correlation coefficient, *r*					
	Critical value of t		Calculated t value		Conclusion	
	1.697		5.609		Reject H₀	
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.461	1	4.461	31.535	.000b
	Residual	4.952	35	.141		
	Total	9.413	36			
Model		Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
		B		Beta		
(Constant)		1.610			4.111	.000
Logistics management practices		.573		.688	5.616	.000

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), Logistics Management Practices
Source: Field data (2020)

Table 4.33: Model Summary for Step Two in Test for Mediation

Model	R	R Square	Adjusted R Square	Durbin-Watson	
1	.763a	.582	.570	1.673	
	Testing for significance of correlation coefficient, *r*				
	Critical value of t		Calculated t value		Conclusion
	1.697		6.983		Reject H_0
Model	Sum of Squares		df	Mean Square	F	Sig.
1	Regression	3.215	1	3.215	18.156	.000b
	Residual	6.198	35	.177		
	Total	9.413	36			
	Unstandardized Coefficients		Standardized Coefficients			
Model	B		Beta		t-value	Sig.
(Constant)	1.266				5.434	.000
Logistics management practices	.623		.763		6.976	.000

a. Dependent Variable: Logistics service quality
 b. Predictors: (Constant), Logistics management practices
Source: Field data (2020)

Table 4.34: Model Summary for Step Three in Test for Mediation

Model	R	R Square	Adjusted R Square	Durbin-Watson		
1	.584a	.342	.323	1.560		
	Testing for significance of correlation coefficient, r					
	Critical value t		Calculated t value	Conclusion		
	1.697		4.256	Reject H_0		
Model		Sum of squares	Df	Mean Square	F	Sig.
1	Regression	7.293	3	2.431	5.072	.005b
	Residual	15.817	33	.479		
	Total	23.110	36			
Model		Unstandardized Coefficients	Standard Coefficients			
		B	Beta		t-value	Sig.
(Constant)		1.266	.584		2.131	.040
Logistics service quality					4.261	.000

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), logistics service quality
Source: Field data (2020)

Table 4.35: Model Summary for Step Four in Test for Mediation

Model	R	R Square	Adjusted R Square	Durbin-Watson		
1	.695a	.482	.452	1.901		
	Testing for significance of correlation coefficient, r					
	Critical value of t		Calculated t value	Conclusion		
	1.697		5.719	Reject H_0		
Model	Sum of Squares		df	Mean Square	F	Sig.
1	Regression	4.541	2	2.270	15.843	.000b
	Residual	4.872	34	.143		
	Total	9.413	36			
	Unstandardized Coefficients		Standardized Coefficients			
Model	B		Beta	t-value	Sig.	
(Constant)	1.341			2.505	.017	
Logistics service quality	.151		.142	.744	.462	
Logistics management practices	.483		.580	3.041	.005	

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), LSQ, LMPs
Source: Field data (2020)

The test of significance of correlation coefficient r for all the four models showed a positive significant relationship among the variables in objective three of the study. The tables on the Four-step Path analysis for mediation tests showed that the models were statistically significant as shown from the ANOVA results. From Table 4.32, the value of R square was 0.474; which means that 47.4 percent change in customer satisfaction was explained by the LMPs of their logistics service providers. The test of significance of correlation coefficient r (r=0.688) confirmed that LMPs had a significant positive effect on customer satisfaction of shippers in Kenya. The results of Table 4.33 on the step two test for mediation showed a significant positive relation between LSQ and LMPs. Likewise Table 4.34 reflected a positive significant relation between customer

satisfaction and LSQ. The last step in testing for mediation (Table 4.35) showed that there was a positive significant relationship between the variables, namely LMPs, LSQ and customer satisfaction and further the independent variable was significant (p=0.005) which is less than 0.05.

The rule of thumb for testing for mediation effect is that if the independent variable is significant in the fourth path analysis step, then the proposed mediating variable has partial mediation effect. Full mediation holds if the independent variable has no effect when the mediator is added to the regression model (Kenny, 2019; Baron & Kenny, 1986). From the findings in Table 4.35, the study denotes that there was partial mediation since the independent variable was significant in the fourth path analysis step, and the model was significant. Thus, the study rejects the null hypothesis H_3 and infers that LSQ has a significant mediating effect on the relationship between LMPs and customer satisfaction of shippers in Kenya.

4.8.4 Results for Customer Satisfaction against Logistics Management Practices, Logistics Information Systems and Logistics Service Quality

The study's forth and last objective was to determine the joint effect of LMPs, LISs, and LSQ on customer satisfaction of shippers in Kenya. The results of the regression analysis which was conducted to determine the joint effect of the study variables is displayed in Table 4.36 below.

Table 4.36: Model Summary for Customer Satisfaction against Logistics Management Practices, Logistics Information Systems and Logistics Service Quality

Model	R	R Square	Adjusted R Square		Durbin-Watson	
1	.706a	.498	.453		1.822	
	Change Statistics					
	R Square Change	F Change	df1	df2	Sig. F Change	
	.498	10.934	3	33	.000	
	Testing for significance of correlation coefficient, r					
	Critical value of t		Calculated t value		Conclusion	
	1.697		5.898		Reject H_0	
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.692	3	1.564	10.934	.000b
	Residual	4.721	33	.143		
	Total	9.413	36			
		Unstandardized Coefficients		Standardized Coefficients		
Model		B		Beta	t-value	Sig.
(Constant)		1.085			1.839	.075
Logistic Management Practices		.412		.495	2.384	.023
Logistics Service Quality		.195		.183	.941	.353
Logistics Information Systems		.092		.140	1.029	.311

a. Dependent Variable: Customer Satisfaction
b. Predictors: (Constant), Logistics Information Systems, Logistics Service Quality, Logistics Management Practices

Source: Field data (2020)

From table 4.36, the value of adjusted R-square was found to decrease on adding LIS and LSQ to the model with LMPs and customer satisfaction in comparison to the value in first objective. Adjusted R-square is said to decrease when a predictor improves the model by less than expected. To help make concrete decisions on the joint effect hypothesis of the study, more tests were conducted on the model. As shown in Table 4.36 above, the test for significance of the correlation coefficient, r showed a positive significant relationship among the variables in objective four of the study. The value of

the coefficient of determination R square, which increased progressively from .474 in the relationships in first objective with LMPs and customer satisfaction, to .485 and .482 respectively in the second and third objectives, on adding LISs and LSQ, was 0.498 in the joint effect. This meant that 49.8 percent change in customer satisfaction of shippers in Kenya was jointly explained by the LSQ, LISs and LMPs implemented by their logistics service providers. The table further showed that the overall joint effect regression model of the study was statistically significant.

Additionally, from the results in Table 4.36, at least one of the predictor variables had a p-value less than 0.05, this meant that the relationship was statistically significant (Levine et al., 2006). Further, a test on f-significance which aids to compare the joint effect of all the variables together, was done on the model for joint effect to help in making the right judgment on the fourth null hypothesis H_4. The results are as shown under the change statistics figures where the model was further observed to be significant. From the various tests, namely test for significance of the correlation coefficient r, the value of the coefficient of determination r-square, the ANOVA results, beta coefficients and finally test for f-significance, it can be deduced that LMPs, LISs and LSQ had a significant positive joint effect on customer satisfaction of shippers in Kenya. Thus, the study rejected the null hypothesis H_4 and deduced that LMPs, LISs and LSQ do have a positive significant joint effect on customer satisfaction of shippers in Kenya.

4.9   Discussion of Findings

This section examined the findings in connection to the study objectives and corresponding hypotheses. The section also related the findings to theoretical assumptions and empirical studies. The discussion of findings additionally made reference to the conceptual, contextual and methodological gaps identified in literature.

The first objective of the study sought to assess the effect of LMPs on customer satisfaction of shippers in Kenya. From the descriptive statistics undertaken, it emerged that majority of the logistics service providers had implemented LMPs ranging from moderate to a great extent. Emil et al. (2010) noted that logistics activities ensure smooth flow of raw materials and finished products when well integrated from source to destination. The seven LMPs used in the study were inventory management, transportation management, warehousing, packaging, materials handling, order processing and information flow processing (Swink et al., 2011; Stock & Lambert, 2001; Panda, 2008; Sople, 2010).

The study formulated and tested the hypothesis on the LMPs and customer satisfaction of the shippers in Kenya. When customer satisfaction was modeled and regressed against all the seven LMPs individually, the value of correlation coefficient r which was 0.777 was tested and found to be significant and the coefficient of determination R square was 0.604. This meant that 60.4 percent of variation in customer satisfaction was explained by the seven LMPs. It was also noted that out of the seven LMPs, only inventory management practice (β=.306, p=0.038<0.05), was found to be significant when the variables were regressed individually. This supports the findings by Takwi and Mavis

(2020) on the effects of logistic management on enterprise performance who reported inventory as the most significant predictor. Further, the impact of inventory management on level of customer satisfaction was emphasized by Thogori and Gathenya (2014) who noted that poor management of inventory had a strong significant negative relationship with customer satisfaction at Delmonte Company in Kenya.

The researcher went further and obtained a composite score of the seven LMPs. When customer satisfaction was regressed against the LMPs composite score it emerged that the value of correlation coefficient r was significant at 0.688, and coefficient of determination R square was 0.474 which meant that 47.4 percent change in customer satisfaction of shippers in Kenya was explained by the LMPs. The study noted that the p-value of LMPs was less than 0.05 ($\beta=0.573$, p=0.000), and together with the test for significance of correlation coefficient r, confirmed and deduced that LMPs had a significant positive effect on customer satisfaction. The study therefore rejected the null hypothesis H_1 and asserted that LMPs had a significant positive effect on customer satisfaction of shippers in Kenya.

The above results are in line with those of Irene et al. (2008) and Bouzaabia et al. (2013) who noted that when these LMPs also referred to as the customer logistics activities and functions are well-coordinated, they contributed to the loyalty and perception of customers. Harriet et al. (2013) study on urban transportation and customer satisfaction also found that inadequate logistics infrastructure affected customer satisfaction. Further, Ghoumrasi and Tigu (2017) studied LMPs and customer satisfaction of SMEs in Algiers

and affirmed that sharing ICTs, logistical skills and knowledge impacted on customer satisfaction.

The second objective of the study was to establish the moderating effect of LISs on the relationship between LMPs and customer satisfaction of shippers in Kenya. A moderator variable explains the strength of the relationship between the dependent variable and independent variable. The composite mean score on LISs was 3.74; which meant that most of the logistics service providers had implemented LISs to a great extent and the shippers thus derived good benefits (average mean score of LISs benefits was 4.17). Arunkumar (2016) and Danilo and Marcel (2010) noted that the coordination of all logistics activities and processes, like inventory replenishment and planning of material flow was entirely supported by the LISs.

The study further found that most of the logistics service providers had implemented more than one LIS. In terms of performance with LMPs, majority of the respondents ranked GPS at the top followed by ERP and ECTS. The most prominent LISs are: ERP, GPS, EDI, RFID and bar code (Helo & Szekely, 2005; Danilo & Marcel, 2010).

Upon testing if LISs moderated the relationship between LMPs and customer satisfaction, the study noted in the third step of the hierarchical regression that, the p-value of the interaction term (p=0.230) was more than 0.05. This contradicted the rule of thumb by Baron and Kenny (1986) which indicated that the p-value of the interaction term in the third progressive step must be less than 0.05 to affirm a moderating effect of the proposed

variable on the relationship. Additionally, it was noted that the value of coefficient of determination R-square decreased in the third step, which meant that adding the interaction term as a variable to the model did not improve the model.

The study accordingly failed to reject the null hypothesis **H₂** and established that LISs did not have a significant moderating effect on the relationship between LMPs and customer satisfaction of shippers in Kenya. Closely related to this finding is the research by Zakaria et al. (2010) which found that logistics information technology had no moderating effect on logistics relationships and logistics service quality of registered logistics companies in Penang, Malaysia. The study findings however contradict the results by Mwangangi (2016) and Bae (2016) who suggested that LISs had a moderating effect. The differing findings on the moderating role of LIS could be associated to several factors.

First, implementation of the LISs is meant to bring more visibility in the entire logistics management process. The logistics service providers are likely to resist this implementation as it can expose them to their customers in case of unnecessary delays thus affecting customer satisfaction of the shippers. Gabba (2019), Nikolay (2016) and Azmin, Aziz, and Kader (2013) noted that the implementation problem becomes greater when the emphasis is on the logistics function in the context of the supply chain management since it is beyond intra-organisation. Additionally, the LISs implementation relates to the adoption of the new information system by the users, which involves a change of habits in the organization, thus calling for further resistance. Gabba (2019)

noted that a system may be rejected by its users and this will make it useless, regardless of the cost of its installation, thus failing to achieve the intended benefits.

Further, expertise skills are required to efficiently and effectively run the LISs, and the associated costs may be passed to the shippers which may affect customer satisfaction. This is echoed by Young, Oparanma, and Ejo-Orusa (2018) who noted that information systems can be complex and delicate calling for management to carefully select experts who are placed to control the systems. In addition, the LISs are expensive in both the procurement of the system and installation. Gabba (2019) noted that the exorbitant cost of installing these LISs, poor and relaxed management support, and data security risks are some of the challenges that counter the intended benefits of LISs to help contribute to customer satisfaction.

The study's third objective was to determine the mediating effect of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya. A mediating variable helps to explain the relationship between the variables; that is, the how and why of the relationship between the independent and dependent variables. The sub-constructs for LSQ were functional and technical quality (Fiala, 2012; Kum & Vinh, 2015). The findings indicated that the respondents were more satisfied with functional quality as compared to technical quality of their logistic service providers. This finding was comparable to that of Jang et al. (2013) who noted that shippers' loyalty could be improved by developing higher levels of LSQ via improving relationship quality. The

quality of the service offered is experienced both during a service and on completion, known respectively as functional and technical quality (Sze, Keng & Wai, 2013).

From the results of the Baron and Kenny (1986) four-step path analysis, 58.2 percent change in LSQ was explained by LMPs of the logistics service providers. From the results, the p-value of LMPs was less than 0.05 which meant that LMPs had a significant effect on the LSQ. The findings are similar to studies by Yannis et al. (2014), Richey et al. (2007) and Liu et al. (2010) who observed that logistics capabilities influenced LSQ provided. The LSQ strategically influences the economy at both firm and national levels, having a strong market influence and thereby increasing overall customer satisfaction (Juga et al., 2010; Saura et al., 2008).

The study further noted that 34.2 percent change in customer satisfaction was explained by LSQ. The LSQ (p-value <0.05) had a significant effect on customer satisfaction. The result was in line with Sterline and Lambert (1989) who linked customer satisfaction and firm's future sales to level of logistics customer service and that LSQ contributed to customer satisfaction and further loyalty as it was referred to as a basis for firms' competitive advantage. The study results were consistent with the works of Adebayo (2017), Jea-II et al. (2017), and Lisińska-Kuśnierz1 and Gajewska (2014) who established a significant positive relation between customer satisfaction levels and the LSQ. Additionally, the study indicated that 48.2 percent change in customer satisfaction of shippers in Kenya was explained by LMPs and LSQ of their logistics service providers. From the findings of the fourth step in the path analysis, the study noted that

LMPs, the independent variable had a p-value less than 0.05, a criterion used to define a partial mediating variable (Baron & Kenny, 1986).

Thus, the study rejected the null hypothesis **H₃** and inferred that LSQ mediates the relationship between LMPs and customer satisfaction of shippers in Kenya, however, the mediation is partial. Daniel et al. (2018) found that LSQ fully mediated the relationship between logistics capabilities and customer satisfaction for lubricant oil companies in Brazil. Similarly, King et al. (2014) explained the mediating effect of service quality in the relation between ICT and competitive advantage of logistics firms in Hong Kong and Pearl Delta region.

The fourth and last objective of the study was to determine the joint effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya. Various data analysis were conducted on this objective, which included test of significance of the correlation coefficient r and test of significance of F, both of which were found to be significant; and the results of R-square which showed that 49.8 percent change in customer satisfaction was jointly explained by LSQ, LISs and LMPs. Further the value of coefficient of determination R square conformed to the rule of thumb since it was observed to increase as each of the variables, namely LMPs, LIS and LSQ, were added to the regression model. The value of coefficient of determination R square with two variables LMPs and customer satisfaction was .474; with three variables, LISs, LMPs and customer satisfaction was .485, and .482 with LSQ, LMPs and customer satisfaction. Therefore a value of R square, .498 with the joint variables, LMPs, LISs, LSQ and customer satisfaction, was a positive signal on the joint effect. Additionally, the model used for the

joint effect was found to be significant (p=0.000) with at least one of the predictor variables having a p-value less than 0.05. These results informed the decision where the study rejected the null hypothesis **H_4** and concluded that LMPs, LISs and LSQ had a significant positive joint effect on customer satisfaction of shippers in Kenya.

4.10   Summary of the Results

Table 4.37: Summary of the Results

Objectives	Hypotheses	Decision
Assess the effect of LMPs on customer satisfaction of shippers in Kenya	LMPs has no significant effect on customer satisfaction	Reject the null hypothesis H_1 and deduce that LMPs has a significant effect on customer satisfaction
Establish the effect of LISs on the relationship between LMPs and customer satisfaction of shippers in Kenya	LISs has no significant moderating effect on the relationship between LMPs and customer satisfaction	Fail to reject the null hypothesis H_2 and deduce that LISs does not have a significant moderating effect on the relationship between LMPs and customer satisfaction
Determine the effect of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya	LSQ has no significant mediating effect on the relationship between LMPs and customer satisfaction	Reject the null hypothesis H_3 and deduce that LSQ has a significant mediating effect on the relationship between LMPs and customer satisfaction
Determine the joint effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya	LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction	Reject the null hypothesis H_4 and deduce that LMPs, LISs and LSQ have a significant joint effect on customer satisfaction

Source: Researcher, (2020)

4.11 Revised Conceptual Framework

From the results outlined in this chapter, a revised conceptual framework (figure 4.1) was drawn with the findings that were used to make decisions on H_1, H_3, and H_4.
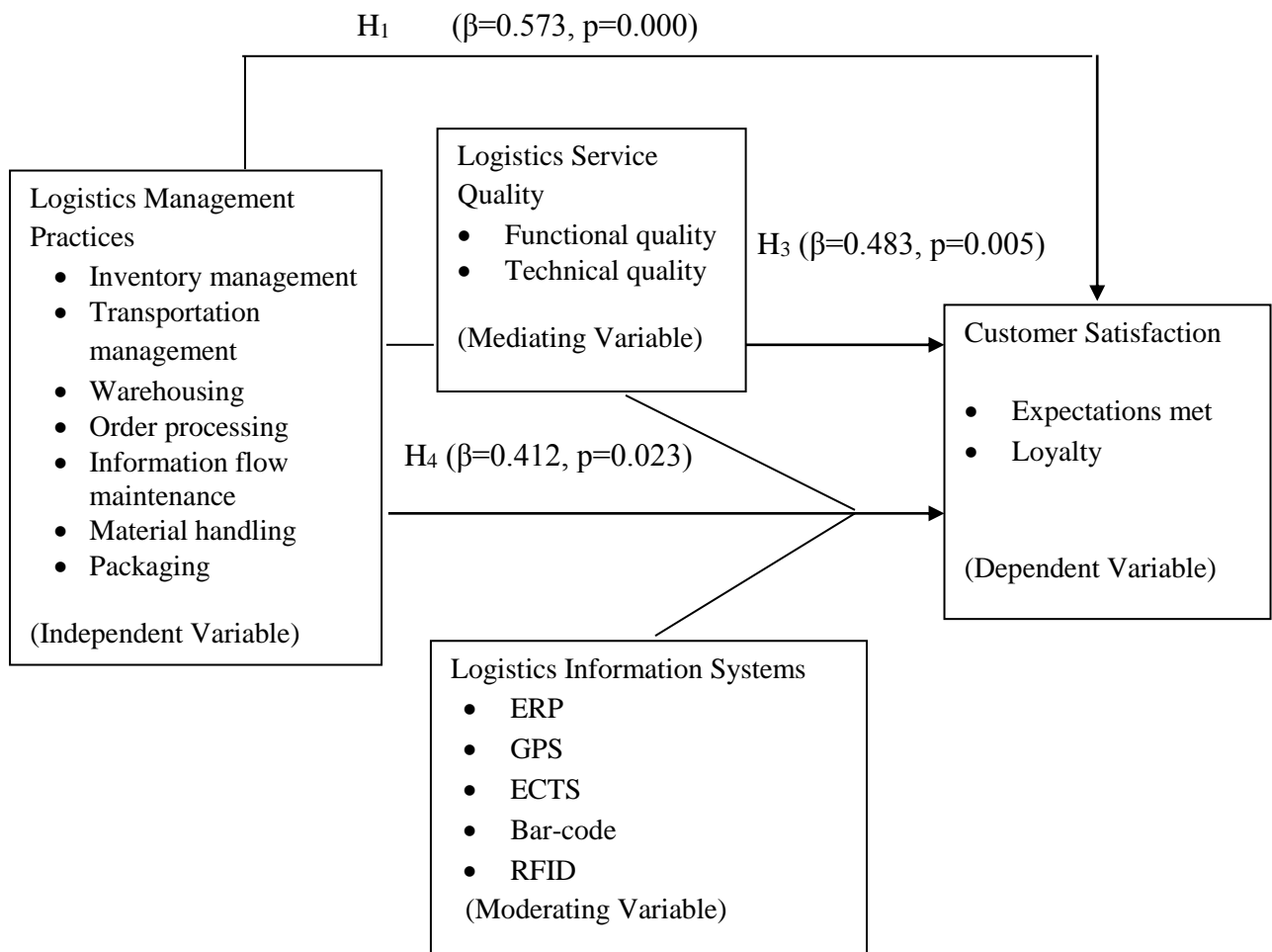
Source: Author, (2020)

Figure 4.1: Revised Conceptual Framework

The above revised conceptual framework shows the variables in the flow of ranking from the findings of the study. The sub-construct of the independent variable LMPS, were ranked in order as: inventory management, transportation management, warehousing, order processing, information flow maintenance, materials handling and packing. From

this ranking, it can be presumed that the best LMPS are: inventory management practices, transportation management practices, warehousing management practices and order processing management practices. The sub-constructs of the mediating variable LSQ, were ranked in order as: functional quality and technical quality; while the sub-constructs of the dependent variable customer satisfaction were ranked in order as: expectations met and loyalty. Since the proposed moderating variable LISs was found not to have a significant moderating effect on the relationship between the LMPs and customer satisfaction of shippers in Kenya, it was expunged from the conceptual framework.

4.12 Chapter Summary

Chapter four started with sections detailing the data analysis. The response rate by the respondents was 59 percent and was found fit for analysis. The validity and reliability tests, respondents' social demographics, then the diagnostics tests and the descriptive statistics of the study were then outlined. The relationships among all the study variables was then presented, followed by a brief analysis of the operations at the ports vis-a-vis the relevant government agencies. Finally, a discussion on the results, a summary of the hypotheses results and a revised conceptual framework were given.

CHAPTER FIVE: SUMMARY, CONCLUSION, RECOMMENDATIONS AND CONTRIBUTIONS OF THE STUDY

5.1 Introduction

This chapter starts by presenting a summary of the study findings guided by the four research objectives and the respective conceptual hypotheses; then conclusions and recommendations. This is followed by a section that discusses the contribution of the study to knowledge, theory, policy and practice. In addition, the chapter presents the limitations of the study. The chapter ends by stating the suggestions for possible areas of future research.

5.2 Summary of Findings

This research contributed to the theoretical advancement by providing new and unique empirical data on several dimensions of LMPs, LISs, LSQ and customer satisfaction which have not been explored under the continuum of the shippers in Kenya in previous studies. The general objective of the study was to establish the influence of LMPs, LISs and LSQ on customer satisfaction in the maritime sector of shippers in Kenya.   The study contributed to knowledge in the current literature by taking an all-inclusive view of the LMPs construct. Past studies as noted from literature focused on some components of LMPs (Mwangangi, 2006; Ristovska et al.; Ghoumrasi & Tigu, 2017; Mulokwe & Wanyoike, 2015; Thogori & Gathenya, 2014).

The sampling frame for the study was the SCEA which is a membership body of shippers in Eastern Africa. The SCEA advocates for the welfare of importers and exporters for appropriate freight transport regulations and policies that can spur an efficient and economical freight logistics system in the region. Primary data was collected from the firms, analysed using SPSS and results presented as detailed in chapter four. The first hypothesis tested the relationship between LMPs and customer satisfaction. The second hypothesis tested the moderating effect of LISs on the relationship between LMPs and customer satisfaction. The third hypothesis tested the mediating effect of LSQ on the relationship between LMPs and customer satisfaction, while the last hypothesis tested the joint effect of LMPs, LISs and LSQ on customer satisfaction. A summary of the findings is explained below.

The dependent variable of the study, customer satisfaction was operationalized by two sub-constructs, namely loyalty and expectations met. From the findings, the sub-construct expectations met was found to have a higher ranking than loyalty. This is consistent with EDT which denotes that customers buy products with prior expectations regarding the expected outcome. Similarly, the works of Salam et al. (2018) and Serenko and Stach (2009) noted that being able to meet customer expectations was crucial as satisfaction was the antecedent of positive post-purchase behavioural intention.

The first hypothesis was that LMPs has no significant effect on customer satisfaction. The study established a statistically positive significant relationship between LMPs, as a composite, and customer satisfaction (R square= 0.474, β=0.573, p=0.000). Thus the

results led to the grounded conclusion that LMPs has a significant effect on customer satisfaction of shippers in Kenya; therefore rejecting the null hypothesis, H_1. The results therefore addressed the conceptual gap which hypothesized that use of all the seven LMPs in the study would enable firms identify those LMPs that have greater impact on customer satisfaction in their organization. Further, this was crucial since logistics management is capital intensive and investment in the right logistics activities contributes to both the effectiveness and efficiency of the firms. The seven sub-constructs that were used to operationalize LMPs, were ranked in order as follows: inventory management, transportation management, warehousing, order processing, information flow maintence, materials handling and packaging management practice; as implemented by the logistic service providers of the members of the SCEA. The fact that materials handling management practice and packaging management practice were the least implemented raised concern as these two LMPs are crucial to the logistics' ability to effectively and efficiently manage time and place utility.

The second hypothesis was stated as: LISs has no significant moderating effect on the relationship between LMPs and customer satisfaction. From the results of the hierarchical regression model and grounded on Baron and Kenny (1986) analysis, since the interaction term variable was not significant (p=0.230) in the third step of the hierarchical regression, it was concluded that LISs does not have a moderating effect on the relationship between LMPs and customer satisfaction of shippers in Kenya. Thus the study failed to reject the null hypothesis H_2. The firms' logistics service providers implemented GPS and ERP to a great extent while ECTS, bar codes and RFID were

implemented to a moderate extent among the LISs sub-constructs used in the study. The study further found that the members of the SCEA were more concerned with the benefits accrued from the implemented LISs than the types of LISs implemented.

The third hypothesis was stated as: LSQ has no significant mediating effect on the relationship between LMPs and customer satisfaction. From the results where the Baron and Kenny (1986) mediation test was used, the independent variable, LMPs was established to be significant (R square=.482, β=.483, p=0.005) in the fourth step of the path analysis. The model used was also found to be significant. Thus the study rejected the null hypothesis H_3. This led to the conclusion that LSQ had a significant mediating effect on the relationship between LMPs and customer satisfaction of shippers in Kenya, however, the mediation is partial. The LSQ was operationalized by functional quality and technical quality. The study further found that the shippers in Kenya were more satisfied with the functional quality, which is used to explain the relationship in the process of logistics delivery, compared to the technical quality from their logistics service providers.

The last hypothesis was that the LMPs, LISs and LSQ do not have a significant joint effect on customer satisfaction. The findings noted a moderate positive and significant (R square=.498, tests of r and f significant) relation of the study variables with the dependent variable and the model used being significant. The regression coefficients further indicated that at least one of the predictor variables was significant. The findings

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thus resulted to rejection of the null hypothesis H$_4$ and the study inferred that LMPs, LISs and LSQ had a significant joint effect on customer satisfaction of shippers in Kenya.

Logistics movements need to be seamless for effective and efficient time and place utility. For shippers in Kenya to enjoy better services for improved customer satisfaction from their logistics service providers, all the supply chains in the entire logistics concept should be flawless. It is on this basis that the researcher went a step further in the study to assess the level of integration and coordination of logistics service providers with the government agencies involved in shipping activities at the port of Mombasa and ICD. These agencies include: KPA, KMA. KRA, KEPHIS, KEBs and Kenya railways.

The study further sort to assess the performance and areas of improvements of the various government agencies involved directly with the shipping, clearing and forwarding of raw materials and goods for the shippers at both the port of Mombasa and ICD. The study findings revealed that most of the government agencies required substantial improvements for better services to the shippers. In order of ranking, KRA, KPA and KEBS required most improvements in that order followed by KRC, KMA and last KEPHIS was noted as requiring the least improvements. Among the areas highlighted for superior services are better integration and coordination, shorter clearance timelines, faster joint inspections, quicker loading of containers to ICD, upgrade systems, better customer care services, regular meetings with stakeholders, better and clearly documented rules and regulations, and better tracking systems. Additionally, the shippers noted that one way to help improve the economy of the country was to have a one-stop

shopping with all these government agencies at the ports since the associated costs are further passed on to the final consumers.

5.3 Conclusions of the Study

The results of this empirical research show that implementation of LMPs by logistics service providers influence the customer satisfaction of shippers in Kenya. In particular, inventory management, transportation management and warehousing management practices, were found to be the most implemented LMPs. Of concern was the low levels of implementation of materials handling management practice and packaging management practice given their role in the movement of products through the supply chain. The shippers were slightly keener on their expectations being met than being loyal to their logistics services providers. This was regardless of the duration the firms were in operation or the category of logistics operations they were engaged in. Further, ensuring an effective and efficient logistics system, impacts on working capital requirements which can be minimized via time compression in the logistics chain and the associated improvement in the cash-to-cash cycle times. This therefore means that when goods are delivered to customers when and where, the resultant effect is improved levels of customer satisfaction, resulting from reduced inventory carrying costs, and these benefits that will be passed on to all the members in that logistics chain.

Logistics service providers need to keenly assess the benefits of any LISs that they wish to implement before they install as these LISs are expensive which may not directly interpret to their usefulness. Further, LSQ needs to be emphasized through the entire

logistics process from point of origin to the point of final consumption of the desired commodities. Constant communication, implementation of electronic cargo tracking systems, timely interventions in operational issues that may affect services offered and consultations on internal matters that concerned the firms, were some of the expectations valued highly by the shippers in Kenya. Among the reasons why firms should strive to keep their customers satisfied was that a loyal customer gives referrals, does repeat purchase and gives a positive word of mouth, resulting into business growth, competitiveness and finally wealth creation through logistics.

5.4 Recommendations

From the study findings, a number of recommendations to the key beneficiaries of the research were highlighted. First, the study recommends that the governments in Eastern Africa region to work closely with the institutions advocating for the interests of shippers. More specifically, the Kenya government should accommodate the SCEA more as their collaboration will directly boost the economy of the country and help sort out the many challenges facing the shippers which include delays due to lengthy clearance procedures, port congestion, lack of clear policies and legal framework.

Secondly, the study recommends that the logistics service providers should work in more close collaboration with their customers to ensure maximization of benefits in the relationships. The study established that the shippers were for example more interested with the benefits accrued from the LISs implemented by the logistics service providers than the type of LISs. Third, the government bodies involved with the activities at the

port of Mombasa and ICD, should deliberately flex the restrictions at the ports for both the shippers and the logistics service providers. The study noted that government agencies like KRA, KPA, KMA, KEBs, and KRC need to coordinate and integrate their systems for better services to the importers and exporters.

The fourth recommendation from the study findings is on the implementation of LMPs as the findings established that of the seven practices, materials handling and packaging were the least implemented. The role of these two practices almost surpasses the quality of a product since when a high quality product is not well handled and packaged well it will be damaged (Sople, 2010; Pienaar & Vogt, 2009; Harrison & Hoek, 2008), thus the need for the emphasis on the implementation of these two least implemented LMPs.

The study further established that customers were very concerned with their expectations being met. The study therefore recommends that the logistics service providers should be focused with delivering their promises noting that customer tastes and preferences change over time. On the LSQ which was noted to have a mediating effect on the relationship between LMPs and customer satisfaction of shippers in Kenya, the study recommends the logistics service providers to focus on both the functional and technical quality as they promote customer satisfaction of the shippers.

Finally, the study established a significant positive joint effect of LMPs, LISs and LSQ on customer satisfaction in the maritime sector in Kenya. This lead to the recommendation that all players in the maritime sector to relook and improve their levels

of implementation of LMPs, LIS, and LSQ in their various institutions. This will echo the sentiments by Ki-Moon (2016) and World Bank (2005) that the performance of global trade and global economy has been anchored on the success of maritime transport, and that all countries world over rely on maritime trade since no country is entirely self-sufficient for their import and export requirements. Further, it will help the government of Kenya to eliminate or minimize on losses on customs duty as reported by Bwana, (2018) and Sanga et al. (2018).

5.5 Implications of the Study

The findings of the study expand the frontiers of knowledge, adding to existing literature on LMPs, customer satisfaction, LISs and LSQ. Further it gives insights to the members of the SCEA, the government agencies involved in importation and exportation of goods through the port of Mombasa and ICD on practices that can aid in organizational wealth creation through logistics; that can only arise from improved levels of customer satisfaction. The following subsections therefore looks at the contributions that the study made to theory, knowledge, policy and practice.

5.5.1 Contribution to Theory

This study was grounded on four theories, namely material flow theory, the expectancy disconfirmation theory, network design theory and finally the systems theory. The anchoring theory of the study was the material flow theory. The research findings confirmed the views of the study's anchoring theory, the material flow theory. The ranking of the LMPs based on the extent to which the logistics service providers had

implemented them reflected a sequence of flow of materials. The findings show top on the list as inventory management practice and transportation management practice, followed by warehousing management practice, which are crucial to ensure materials are available when and where they are needed. This further confirmed the argument that the logic initial point of flow of materials was the structural relationship of place-time, also referred to as the when-and-where of material flow system.

The study findings further supported the expectancy disconfirmation theory, which was first proposed by Oliver in 1980. This was realized from the results where the scores on expectations met were higher than the scores on loyalty, which were the two sub-constructs of customer satisfaction. The theory denoted that customers buy products with prior expectations regarding the expected outcome. The study assessed the extent to which shippers' expectations were met by their logistics service providers. It is expected that the shippers procure the services of the LSPs based on their expectations before and after they engage them. The findings of the study confirmed the notion that disconfirmation arises when there is dissimilarity between expectations and outcomes, in this case from the logistics service providers.

The study findings were also consistent with the arguments of both the network design theory and systems theory. These two theories based their arguments on the ability of firms to coordinate their activities and functions well to achieve expected goals. The study found a significant joint effect of LMPs, LISs and LSQ on the customer satisfaction of shippers in Kenya. This joint effect (R square was .498, close to 50 percent) could be

interpreted to mean that the shippers work closely with their logistics service providers, for example on the benefits of installing a particular LISs way before they implement the system since it must be compatible both ways. The study also found that 46 percent of the shippers had engaged their logistics service providers for more than five years, with more than 10 percent who had engaged them for more than 15 years. These results therefore put the criticism of the system theory by Vipin and Richard (2015) to question, as they argued that the main feature of a system was the coordination of its elements overtime. The study further supports the theories by emphasizing on the need for coordination among the shippers, government agencies, LSPs, and the logistics advocacy and certifying bodies.

Studies by Yen et al. (2017) and John et al. (2004) indicated a growing concern towards the contribution of LMPs to the overall competitiveness of an organization by creating customer value continuously. Since a customer's satisfaction can be seen through their loyalty or when their expectations are met, as explained in the expectancy disconfirmation theory, the study findings were therefore in support of the works of John et al. (2004) who argued towards a unified theory of logistics. The components of the unified theory of logistics, (appendix II), also seen in this study, together with the arguments of the systems theory and network design theory, were in support of the fact that the survival of a firm is directly linked to customer satisfaction through continuous creation of customer value. The end result of time and place utility, the key goals in LMPs, is creation of customer value by ensuring goods are available when and where they are needed by the customer.

5.5.2 Contribution to Knowledge

The study contributed to the body of knowledge in that, previous studies mainly used a maximum of three LMPs sub-constructs mainly inventory management, transportation management and information flow maintenance management practices. This study thus filled this conceptual gap by addressing all the seven LMPs. This has further enabled the ranking of the variables as implemented by the logistics service providers; which consequently lead to recommendation by the researcher on the need to focus on the less implemented practices, namely materials handling management practice and packaging management practice, as they highly contribute to both functional and technical service quality in the fields of logistics and transportation management. The ranking could also lead to the conclusion that the best logistics management practices are inventory management practice, transportation management practice and warehouse management practice.

The study found that LIS does not moderate the relationship between LMPs and customer satisfaction of shippers in Kenya. The findings that LIS does not have a significant moderating effect contributed to knowledge as it supported the study by Zakaria, et al. (2010). Further, since these studies contradict the findings by Mwangangi (2016) and Bae (2016) whose studies indicated that LIS has a moderating role, this adds to body of knowledge as it opens up more room for further studies on what characterizes and defines LIS as a moderating variable. Indicators like assessing factors that can help reduce resistance on implementation of LISs by logistics service providers and how/where to efficiently train LISs experts would help guide the industry and future researchers.

The results on the mediating role of LSQ on the relationship between LMPs and customer satisfaction of shippers in Kenya add to the existing literature in that it supports the works of Daniel et al. (2018) who affirmed that LSQ fully mediates the relation between logistics capabilities and customer satisfaction for lubricant oil companies in Brazil. In support was also the study by King et al. (2014) who explained the mediating effect of service quality in the relation of ICT and competitive advantage of logistics firms. The study further adds to the body of knowledge from the results that indicated that functional quality was ranked higher than technical quality. This further strengthens the support of the application of both the network design theory and system theory as they emphasized on the need for appropriate coordination and relationships among firm sub-systems. The body of knowledge was equally boosted by the fact LSQ was empirically seen as having both partial and full mediation effect; which opens room for future research to confirm these findings in different set-ups.

The findings on the joint effect that sought to determine the effect of LMPs, LISs and LSQ on customer satisfaction of shippers in Kenya contributed to further knowledge as none of the previous studies had combined these variables. Additionally, the results of the joint effect add to the literature of not only in the areas of study variables, but also to institutions of learning, the SCEA, the CILT, among others. Further and special contribution to literature was the aspect of wealth creation through logistics since a satisfied customer contributes to revenue growth, and especially so in the maritime sector. Moreover, the study contributed to knowledge by creation of various gaps for

further research in diverse fields related to this study's variables under different contexts and concepts.

5.5.3 Contribution to Policy and Practice

Studies by Ki-Moon (2016) and World Bank (2005) noted that the performance of global trade and economy had been anchored on the success of maritime transport, and that all countries world over rely on maritime trade since no country is entirely self-sufficient for their import and export needs. Unfortunately a research conducted by SCEA (2016) indicated that the maritime freight sector in Kenya is facing a number of challenges ranging from government policies, infrastructure, many government bodies managing the port of Mombasa, poor support of lobbying bodies, among others. This has been echoed by the shippers, who were the respondents in this study complaining of similar challenges. There is therefore need for the government of Kenya, private and public institutions, and all stakeholders at the port of Mombasa to relook at maritime transport in Kenya, and especially the mission, vision and performance of Kenya maritime authority whose mandate is to regulate, organize and manage maritime affairs in Kenya.

Further, the Kenyan government needs to urgently collaborate with Kenya Institute of Curriculum Development to support the CILT in Kenya to train logistics management professionals. This was shown by the fact that although 49 percent of the respondents' firms were in operation for more than 20 years, 54 percent of the firms interviewed had not engaged their current logistics service providers for more than 5 years. This may be associated partly among other factors by the fact that only 24 percent of the respondents

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had a professional qualification in logistics management, which was assessed by membership with CILT. This further meant that the 84 percent who reported as having a logistics management department, had personnel in this department with other qualifications, and thus not able partly, to give the shippers the logistics services required. There is thus need to have qualified top managerial team in logistics management to help make crucial strategic, tactical and operational decisions pertaining to logistics and transportation management.

The study further contributed to policy and practice by recommending that the SCEA, in addition to their advocacy role, to work more closely with the various government agencies especially the KRA, KPA, KMA and KEBs to streamline policy issues on importation and exportation of all goods at the port of Mombasa and the ICDS. Anchoring on the study findings, the shippers experience unnecessary delays at the ports, which they associated with poor coordination among the various government agencies, and sometimes incompatible information systems among the various stakeholders. Additionally, the ministry of trade and industrialization should have clear policies, on imports/exports, which should be drafted in consultation with all stakeholders, especially advocacy bodies like SCEA. This was informed by recommendations from shippers that in most cases, the private sector is left out of such deliberations.

Customer satisfaction is the goal of all organizations as it interprets to improved performance. The SCEA should organize short courses for all their members on attributes of customer satisfaction, and its relationship with LMPs, LISs and LSQ for greater

organizational performance. Likewise, individual importers/exporters' organizations should take the initiative to understand the implication of implementation of this study's findings and recommendations, since the aim of their businesses is to ensure goods arrive when and where they are required, which is the secret behind customer satisfaction, which was the dependent variable of this study.

5.6 Limitations of the Study

The primary motivation of this study was to establish the influence of LMPs, LISs and LSQ on customer satisfaction in the maritime sector of shippers in Kenya. The study had a few limitations that would point out areas of consideration for future studies. First, the study only concentrated on shippers who were members of the SCEA leaving out all other shippers in the region, whose input and experiences could enrich the study findings. Thus, to increase generalizability of the research findings, other shippers not registered under SCEA or around the world should be studied.

Secondly, the study's data collection coincided with the outbreak of the Covid-19 pandemic in Kenya. This was followed by the GOK issuing travel restrictions which found most people working from their homes. The researcher was thus restricted to collect data via emails, which highly contributed to a lower response rate than would be in normal times and more so using the drop and pick method. Further, since the respondents depended therefore on availability of network connections, the data collection took a much longer period with the researcher sending constant reminders via emails and phone calls.

Third, the study adopted descriptive cross-sectional research design which has some limitations. Among the limitations of using descriptive cross-sectional research design is the inability to assess incidence and to make a causal inference. The research design also only tells the researchers about the differences, not true changes, as it is conducted at one point in time. Additionally, in some instances the associations identified using the research design may be challenging to deduce and inclined to biases from respondent or the interviewer and also societal acceptability bias.

Fourth, the researcher restricted the study to use of LISs as the moderating variable and LSQ as the mediating variable. There just may be other variables that can fit in well as either moderating or mediating the relationship between LMPs and customer satisfaction, especially now that from the findings, LISs does not moderate the relation. The study further restricted LISs to specific types, and with the fast changing world of information systems, other or more information systems and attributes of LISs could reflect different study outcomes.

5.7 Suggestion for Further Research

With customer satisfaction as the dependent variable, a similar future study should employ longitudinal research design which might give different and /or better results since consumer tastes and preferences change over time. A time-series longitudinal study could also enable the researcher to change or alternate the mediating and moderating

factors and assess their significance in relation to the independent and dependent variables.

The materials handling and packaging management practices where the least implemented LMPs by the logistics service providers. There is need for future research to establish their role in wealth creation through logistics which arises from satisfied customers, since they are crucial practices especially during transportation. While Mwangangi (2016) and Bae (2016) noted that LISs has a moderating effect, this study however established that LISs does not have a moderating effect on the relationship between LMPs and customer satisfaction of shipper in Kenya. This study thus opens up room for more research in assessing the moderating effect of LISs in diverse fields. The study suggests more research to be done to confirm further the mediating role of LSQ in different concepts and contexts.

Future researchers should also seek to generalize the findings beyond the context of East African region by empirically testing the model in this study in other contexts, like other regions within and out of Africa. Further a comparable research can be conducted in the world class marine ports like port of Shanghai, port of Singapore, port of Tianjini and the port of Guangzhou, (Appendix XI shows a list of world's top container ports that the WSC has quoted as the hub that keep the world trade moving) and assess the relationship of the variables as a comparison to this study that focused on the port of Mombasa, Kenya.

5.8 Chapter Summary

Chapter Five started with a summary of study findings, where all the four research hypotheses were outlined in relation to the study objectives, and a discussion on the relationships between the study findings and literature outlined. This was followed by a section on the implications of the study, where study's contribution to theory, knowledge, policy and practice was discussed. The chapter ends with a section on limitations of the study, followed by suggestions for further research and a conclusion of the study.

REFERENCES

Adebayo, I. T. (2017). An evaluation of the impact of business-to-customer (B2C) logistics service quality (LSQ) on customer satisfaction in Nigeria. *IOSR Journal of Business & Management*, *4II* (19), 111-115.

Aigbavboa, C., & Thwala, W. (2013). A theoretical framework of users' satisfaction/ dissatisfaction theories and models. *2ⁿᵈ International Conference on Arts. Behavioural Sciences and Economics Issues (ICABSEI'2013), Pattaya Thailand.*

Airahuobhor, A. (2011). Controversy trails FG plan to establish new maritime training institutions. *The Daily Independent (Lagos).*

Arunkumar, D. (2016). Designing logistics information system: Theoretical background and literature review. *International Journal for Research in Applied Science & Engineering Technology*. 4*(IV)*

Azmin, S. M., Aziz, A., & Kader, M.A., (2013). Explaining the successful implementation of logistics information technology: An empirical study. *Australian Journal of Business and Management Research*, 3(8),11.

Bae, H-S. (2016). The moderating effect of logistics information systems on interorganizational collaboration and performance of Korean shipping and logistics firms. *International Journal of E-Navigation and Maritime Economy* 5, 085 – 096

Baron, R. M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology,* 51(6), 1173-1182

Berg, D., & Hauer, M. (2015). Digitalization in shipping and logistics. *Asia Insurance Review*, 52.

Bluman, A.G. (2018). *Elementary Statistics, a Step by Step Approach*. 10ᵗʰ Edition. McGraw-Hill Education International Edition.

Blumberg, B., Cooper, D. R., & Schindler, P. S. (2005). *Business research methods*. The McGraw Hill Companies. London.

Bouzaabia, R., Bouzaabia, O., & Capatina, A. (2013). Retail logistics service quality: A cross-cultural survey on customer perceptions. *International Journal of Retail & Distribution Management*, *41*(8), 627-647.

Bwana, J. (2018). KRA and KPA trade accusations over the illegal release of 124 containers. *Standard Digital. Business News. Mombasa*

Carman, J. M. (1990). Consumer perceptions of service quality: An assessment of the SERVQUAL Dimensions. *Journal of Retailing,* 66, 35-55.

Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (2001). *Qualitative marketing research*. Sage Publications. London.

Chikere, C. I., & Nwoka, J. (2015). The systems theory of management in modern day organizations - A study of Aldgate congress Resort Limited Port Harcourt. *International Journal of Scientific and Research Publications, 5*(9).

Christian, N., Jose, L. R., & Gabriel, C. (2016). Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models. *Industrial Management & Data Systems*, 116(9), 1849-1864.

Christopher, M. (2016). *Logistics and supply chain management*. 5th Edition. FT, Prentice Hall.

Cho, W. K. T., & Judge, G. (2015). An information theoretic approach to network tomography, *Applied Economics Letters,* 22(1), 1-6.

Closs, D.J. & Xu, K. (2000). Logistics information technology practice in manufacturing and merchandising firms – An international benchmarking study versus world class logistics firms. *International Journal of Physical Distribution & Logistics Management*

Cooper, D. R., & Schindler, P. S. (2011). *Business research methods*. 11th edition. McGraw Hill, New Delhi.

Cordon, C. P. (2013). System theories: An overview of various system theories and its application in Healthcare. Collaborative Academic Practice, Nursing-New Knowledge and Innovation, *University Health Network, Toronto. American Journal of Systems Science, 2*(1), 13-22.

Corlett, J. (2005). *Systems theory applied to organizations.* Retrieved from htpp//: www.I.purceco.ResearchPapers.Unpublished.Organization –JC-SB.

Creswell, W. J. (2012). *Research design: Qualitative, quantitative and mixed method approaches*. 3rd edition. Sage Publications, India.

Daniel, W. F., Roberto, G. M., & Valdir, A. V. F. (2018). Logistic service quality as a mediator between logistics capabilities and customer satisfaction. *Revista de Gestão*, 25(4), 358-372

Danilo, H. B., & Marcel A. M. (2010). Logistics information systems adoption: An empirical investigation in Brazil. *Industrial Management & Data Systems,* 110(6), 787-804.

Ding J (2004). On work of China material flow Association and academic research on China material flow. In: *Speech on the 3rd annual meeting of China MF academic study and the 2nd session of 1st board of directors of China MF Association*, October 15, 2004.

Ding, J.D., Jie, F., Parton, K.A., & Matanda, M.J. (2014). Relationship between quality of information sharing and supply chain food quality in the Australian beef processing industry. *The International Journal of Logistics Management*, 25(1), 85-108.

Easterby, S.M., Thorpe, R., & Lowe, A. (2002). *Management research: An introduction*. Sage Publication.

Edman, B.D., & Neuman, K. A. L. (2014). Systems Theory. *Researchgate.*

Emil, C., Liviu I., & Irina S. (2010). Management best practices used in Romanian logistics customer service planning. *Amfiteatru Economic*, *XIII* (27).

Emrah, C. (2010). Measuring customer satisfaction: must or not? *Journal of Naval Science and Engineering,* 6(2), 76-88.

Ennew, T. C., Reed, V. G., & Binks, R. M. (1993) Importance-performance analysis and the measurement of service quality. *European Journal of Marketing*, 27(2), 59-70.

Ernest, E. I., & Ike-Elechi, O. (2015). Service quality, customer satisfaction and loyalty in automobile repair services sector. *International Journal of Quality & Reliability Management*, 32(3), 250-269.

Evert, G. (2007). Case study research and network theory: Birds of a feather. Qualitative Research in Organizations and Management. *An International Journal*, 2(3), 226-248.

Fairchild, A. J., & Mackinnon, D. (2009). A general model for testing mediation and moderation effects. *Prevention Science*, *10*(2), 87-99.

Fiala, T.G. (2012). What do patients want? Technical quality versus functional quality: A literature review for plastic surgeons. *The American Society for Aesthetic Plastic Surgery, Inc. Aesthetic Surgery Journal.* 32(6) 751–759.

Fransman, L., Salamo, E.N., & Savage, C.J. (2014). *Customer service in the Namibian logistics industry: Benchmarking for the future.* The Polytechnic of Namibia, Windhoek, Namibia.

Fruth, M., & Teuteberg, F. (2017). Digitization in maritime logistics — what is there and what is missing? Operations, information & technology. *Research Article. Cogent Business & Management, 4.*

Gabba, Y. (2019). *Challenges faced in implementing information technology in supply chain management*. Docx. Academia, https://www.academia.edu/28462991.

Garrouch K., et al. (2011). An investigation into the consumers' sensitivity of the logistics efficiency. *International journal of Business Administration*, *2*(2), 114-128.

Garson, G. D. (2012). *Testing statistical assumptions.* Asheboro, NC: Statistical Associates Publishing.

Ghoumrassi, A., & Tigu, G. (2017). The impact of the logistics management in customer satisfaction. *DE G. De Gruyter Open*. 0031.

Giannopoulos G.A., (2004). The application of information and communication technologies in transport. *European Journal of Operation Research*. *152*,302-320.

Gliem, J.A., & Gliem, R.R. (2003). Calculating, interpreting and reporting Cronbach's alpha reliability coefficient for Likert type scales. *Research paper presented at MidWest Research to Practice Conference in Adult, Continuing and Community Education.*

Grote, M., Mazurek, N., Gräbsch, C., Zeilinger, J., le Floch, S., Wahrendorf, D. S., & Höfer, T. (2016). Dry bulk cargo shipping– An overlooked threat to the Marine Environment? *Marine Pollution Bulletin*.

Graham, R.L., & Hell, P. (1985). On the history of the minimum spanning tree problem. *Ann. Hist. Comput*, *7*(1), 43–57.

Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). *Research methods for business*. West Sussex, England: John Wiley and Sons.

Hair Jr., J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. (7th ed.). Upper Saddle River, New Jersey, USA: Pearson Education, Inc.

Hamed, T., Shamsul, S., Neda, J. (2014). Exploratory factor analysis; concepts and theory. *Jerzy Balicki. Advances in Applied and Pure Mathematics*; *Mathematics and Computers in Science and Engineering Series,* 27(375- 382).

Harriet, T., Poku, K., & Anin, E. K. (2013). Logistics inefficiencies of urban transportation system in Ghana. *International Journal of Humanities and Social Science*; *3*(6), 308- 314.

Hayajneh, Y. (2007). Management for Health Care Professionals Series. *Systems & Systems Theory*, 1, 1-5.

Helo, P., & Szekely, B. (2005). Logistic information system: an analysis of software solutions for supply chain coordination. *Industrial Management & Data Systems*, 105(1), 5-18.

Ho, J.S.Y., Teik, D.O.L., Tiffany, F., Kolk, L.F., & Teh, T.Y. (2012). Logistic service quality among courier services in Malaysia. *Proceedings of the International Conference on Economics, Business Innovation, Singapore.*

Hou H., Chaudhry S., Chen Y., & Hu, M. (2015). Physical distribution, logistics, supply chain management, and the material flow theory: *A historical Perspective. New York. CrossMark.*

Hou, h., Xu, S., & Wang, H. (2007). A study on X party material flow: The theory and applications. *Enterprise Information Systems, 1*(3), 287-299.

Hu, M., Huang, F., & Hou, H. (2015). Customized logistics service and online shoppers' satisfaction: An empirical study. *Internet Research*, *26*(2), 484-497.

Imrie, B.C., Durden, G., Cadogan, J.W., & Mcnaughton, R. (2002). The service quality construct on a global stage. *Managing Service Quality*, 12(1), 10-9.

Irene, G. S., David, S.F., Gloria, B. C., & María, F. B. (2008). Logistics service quality: A new way to loyalty. *Industrial Management & Data Systems*, 108(5), 650-668.

Isac, F. L., & Rusu, S. (2014). Theories of consumer's satisfaction and the operationalization of the expectation disconfirmation paradigm. *Annals of the Constantin Brancusi University of TarguJiu, Economy Series,* (2).

Işık, Ö. Y. H., Metehan, F. S. & Gülmüş, B. (2018). Revealing the impact of operational logistics service quality on Omni-channel capability. *Asia Pacific Journal of Marketing and Logistics, 30*(5), 1200-1221.

Jang, H.M., Marlow, P.B., & Miroussi, K. (2013). The effects of logistics service quality on customer through relationship quality in the container shipping context. *Transportation Journal, 52*(4), 493-521.

Jaradat, R., Adams, F., Abutabenjeh, S., & Keating, C. (2017). The complementary perspective of system of systems in collaboration, integration, and logistics: A value-chain based paradigm of supply chain management. *Systems 5*(50).

Jayawant, P., & Glavin, G. (2009). Minimum spanning trees. *INVOLVE 2*(4).

Jea-Il, S., Su-Han, W., & Taek-Won, K. (2017). Assessment of logistics service quality using the Kano model in a logistics-triadic relationship. *The International Journal of Logistics Management,* 28(2), 680-698.

John, T. M., Soonhong, M., & Michelle, B.L. (2004). Toward a unified theory of logistics. *International Journal of Physical Distribution & Logistics Management*, 34(8), 606-627.

Johnson, T., Nketia S., & Quaye W., (2015). Appraisal of logistics management issues in the agrofood industry sector in China. *Journal of Agricultural Science, Canadian Center of Science and Education, 7*(3).

Jose, A. B., Xavier, R. M. & Francisco, M. (2011). Clustering and internal resources: Moderation and mediation effects. *Journal of Knowledge Management*, 15(5), 738-758.

Jose, M. C. de C. (2004). Systems theory, complexity and supply organizational models to enrich city logistics: An approach, in Eiichi Taniguchi, Russell G. Thompson (ed.) *Logistics Systems for Sustainable Cities*, 179-189.

Juga, J., Juntunen, J., & Grant, D. B. (2010). Service quality and its relation to satisfaction and loyalty in logistics outsourcing relationships. *Managing Service Quality: An International Journal*, *20(6), 496-510.*

Kariuki, J. T. (2015). *Project manager leadership style, teamwork, project characteristics and performance of water projects in Kenya*. Doctoral Thesis, School of Business, University of Nairobi.

Kenny, D. A. (2019). Award for Distinguished Scientific Contributions. *American Psychologist*, 74 (9): 1015–1017.

Kenya Maritime Authority, KMA, Five Year Strategic Plan. 2013-2018.

Kenya Revenue Authority (2019). Implementation of integrated customs management system (icms) for cargo clearance. *Public Notices 13/06/2019. KRA Commissioner for Customs and Border Control.*

Kerre, D.A. (2018). *The effect of marketing mix practices, consumer demographics and attitudes on usage of credit cards by customers of commercial banks in Nairobi, Kenya.* Unpublished Phd Thesis, University of Nairobi.

Ki-moon, B. (2016). *Maritime transport is 'backbone of global trade and the global economy'. World maritime international day*. Meetings coverage & press releases, United Nations.

King, et al. (2014). Impact of information technology on the performance of logistics industry: The case of Hong Kong and Pearl Delta region. *Journal of the Operational Research Society, 65(6), 904-916.*

King'oriah, G.K. (2013). *Fundamentals of Applied Statistics*. The Jomo Kenyatta Foundation. Icons Printers limited.

Koenker, R. (1981). "A note on studentizing a test for heteroscedasticity." *Journal of Econometrics,* 17(1): 107-112.

Kothari, C.R. (2005). *Research methodology. Methods & techniques*. 2nd edition. New age International Publishers.

König, A., & Spinler, S. (2016). The effect of logistics outsourcing on the supply chain vulnerability of shippers: development of a conceptual risk management framework. *The International Journal of Logistics Management,* 27(1), 122-141.

Kurokawa, M., Schweber, L., & Hughes, W. (2017). Client engagement and building design: The view from actor–network theory. *Building Research & Information, 45*(8), 910-925.

Lai, K-H., Ngai, E.W.T. & Cheng, T.C.E. (2005). Information technology adoption in Hong Kong's logistics industry. *Transportation Journal*, 44(4)1-9.

Lan, S., Zhang, H., Zhong, R.Y., & Huang, G. Q. (2016). A customer satisfaction evaluation model for logistics services using fuzzy analytic hierarchy process. *Industrial Management & Data Systems*, *116*(5), 1024-1042.

Laurikkala, H., Vilkman, H., Mikko E., Koivisto, H., & Xiong, G. (2010). Modelling and control of supply chain with systems theory. *Study at Finnish.*

Leuschner, R., & Lambert, D.M. (2016). Establishing logistics service strategies that increase sales. *Journal of Business Logistics, Strategic Supply Chain Research*, *37*(3) 247-270.

Levine, D.M., Krehbiel, T.C., & Berenson, M.L. (2006). *Business Statistics*: *A first course*. 4th Edition. Pearson Education International.

Levinson, D., & Huang, A. (2012). A positive theory of network connectivity; environment and planning. *Planning and Design,* 39, 308-325.

Lin, C.Y., Durden, G.R., Imrie, B.C., & Cadogan, J.W. (2000). Towards the reconceptualization of service quality in an Asian context: a confirmatory study, proceedings of ANZMAC 2000: Visionary marketing for the 21st Century: Facing the challenge.

Lisińska-Kuśnierz1, M., & Gajewska T. (2014). Customer satisfaction with the quality of the logistic services. *Scientific Journal of Logistics*, *10*(1), 13-19.

Liu, X., Grant, D.B., Alan, C.M. & Feng, Y. (2010). An empirical examination of the contribution of capabilities to the competitiveness of logistics service providers: a perspective from China. *International Journal of Physical Distribution & Logistics Management,* 40(10), 847-866.

Mahnke, R., Benlian, A., & Hess, H. (2015). A grounded theory of online shopping flow, *International Journal of Electronic Commerce*, *19*(3), 54-89.

Mari, S.I., Lee, Y.H., & Memon, M. S. (2015). Complex network theory-based approach for designing resilient supply chain networks. *International Journal of Logistics Systems and Management, 21*(3), 365-384.

McGill, L. A. & Iacobucci, D. (1992). The role of post-experience comparison standards in the evaluation of unfamiliar services. *Advances in Consumer Research*, 19, 570-578.

Merwe, R.V, Berthon, P., Pitt, L., & Barnes, B. (2007). Analysing 'theory networks': identifying the pivotal theories in marketing and their characteristics. *Journal of Marketing Management*, *23*(3/4), 181-206.

Miler, R, & Bujak. A. (2014) Electronic cargo tracking systems as a part of the intelligent freight technologies. Their impact on the global integrated supply chain security and effectiveness based on the Avante system. *Archives of Transport System Telematics*, 7(3) 31-36.

Milorad, K., Svetlana, N., & Milan A. (2016). Measurement of logistics service quality in freight forwarding companies: A case study of the Serbian Market. *International Journal of Logistics Management*, 27(3), 770-794.

Monique, M., Christopher, A. B., Paige, R. & Rodney, T. (2017). Investigating logistics service quality in omni-channel retailing. *International Journal of Physical Distribution & Logistics Management*, 47(4), 263-296.

Mousavi, M., Ghazi, I., & Omaraee, B. (2017). Risk assessment in the maritime industry. *Engineering, Technology & Applied Science Research. 7(*1), 1377-1381.

Mukolwe, G.A., & Wanyoike, D.M. (2015). An assessment of the effects of logistics management practices on operational efficiency at Mumias sugar company limited, Kenya. *International Journal of Economics, Commerce & Management, III*(6), 1134-1156.

Mwangangi, P.W. (2016). *Influence of logistics management on performance of manufacturing firms in Kenya.* JKUAT PhD Thesis in Supply Chain Management; School of Human Resource Development, SHRD.

Naeimeh, E., & Aryati, B. (2014). Review on "expectancy disconfirmation theory" EDT model in B2C E-Commerce. University of Technology Malalysia, Skudai, Johor Bahru. *Journal of Research and Innovation in Information Systems, JISRI.*

Nikolay, D. (2016). Information systems in logistics - Transition challenges. *Journal of Innovations and Sustainability*, 2(1), 45-52.

Nilsson, F., & Gammelgaard, B. (2012). Moving beyond the systems approach in SCM and logistics research. *International Journal of Physical Distribution & Logistics Management, 42*(8/9), 764-783.

Odock, S.O. (2016). *Green supply chain management practices and performance of ISO 14001 certified manufacturing firms in East Africa.* Unpublished Doctoral Thesis, School of Business, University of Nairobi.

Owino, J.O. (2014). *Organizational culture, marketing capabilities, market orientation, industry competition and performance of microfinance institutions in Kenya.* Unpublished Doctoral Thesis, School of Business, University of Nairobi.

Ove, C. H., & Marie, A. (2004). Customer satisfaction and retention: the experiences of individual employees. Managing service quality. *An International Journal*, 14 (1), 40-57.

Öztuna, D., Elhan, A.H., & Tüccar, E. (2006). Investigation of four different normality tests in terms of type 1 Error rate and power under different distributions. Department of biostatistics, faculty of medicine, Ankara University, Turkey. *Tubitak, Turkey Journal of Medical Science*, 36 (3): 171-176.

Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using SPSS.* 4th Edition, Allen & Unwin, Australia.

Panda, T. K. (2008). *Marketing management. Text and Cases.* 2nd ed. Indian context. New Delhi.

Patton, W., & McMahon, M. (2014). Career development and systems theory; connecting theory and practice. *Career Development Series*; *Sense Publishers*, *Netherlands, (6).*

Perdana, Y. R. (2012). Logistics information system for supply chain of agricultural commodity. International congress on interdisciplinary business and social sciences. *Procedia,* 65, 608 – 613.

Peretomode, V.F. (2014). The role of the maritime industry and vocational and technical education and training in the economic development of Nigeria. *IOSR Journal of Humanities and Social Science (IOSR-JHSS).*19*(5).*

Pienaar, W. J., & Vogt, J. J. (2009). *Business logistics management, a supply chain perspective*. 3rd Ed. Oxford University Press.

Pieter, K. J. (2011). Competitive information logistics. *Business Strategy Series,* 12(3), 136-145.

Pondichery, S. K. (2014). Customer satisfaction. *International Journal of Innovation & Scientific Research; ISSN 2351-8014*, *4*(1), 6-12.

Rama, K. R. K., & Rajeev, K. P. (2015). Customer perceived service quality, satisfaction and loyalty in Indian private healthcare. *International Journal of Health Care Quality Assurance*, 28 (5), 452-467.

Ramosaj, B. & Berisha, G. (2014). Systems theory and systems approach to leadership. *ILIRIA International Review,* 4(1), 59-76.

Razali, N.M. & Wah, Y.B. (2011). Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnow, Lilliefors and Anderson-Darling tests. *Journal of Statistical Modelling and Analytics*. 2(1), 21-33.

Richey, R.G., Daugherty, P.J. & Roath, A.S. (2007). Firm technological readiness and complementarity: capabilities impacting logistics service competency and performance. *Journal of Business Logistics*, 28(1), 195-229.

Ristovska, N., Kozuharoc, S., & Petkovski, V. (2017). The impact of logistics management practices on company's performance. *International Journal of Academic Research in Accounting, Finance & Management Science*, *7*(1), 245-252.

Rushton, A., Croucher, P., & Baker, P. (2008). *The handbook of logistics & distribution management*. 3rd Ed. The C.I.L.T. (UK). Kogan Page.

Salam, S. S. A., Othman, M., & Zainal, U. F. U. (2018). Young consumers' expectation, perceived performance and disconfirmation towards SMEs Halal food products in Klang Valley, Malaysia. *Journal of Business and Management*. 20(11), 27-34.

Sanga, B., Beja, P., Mwakio, P., & Oketch, W. (2018). KPA officials under siege as port congestion escalates. *Standard Digital. Business News. Mombasa.*

Sarwar, et al. (2018). Attitude, perception, willingness, motivation and barriers to practice-based research: A cross-sectional survey of hospital pharmacists in Lahore, Punjab, Pakistan. *PLoS ONE,* 13(9).

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students*. Eleventh edition. FT Prentice Hall: Finance Times, Pearson Education.

Saura, I.G., Francés, D.S., Contrí, G.B., & Blasco, M.F. (2008). Logistics service quality: A new way to loyalty. *Industrial Management and Data Systems*, 108(5), 650-668.

SCEA, (2020). Logistics spotlight. Logistics-Business-Innovation. Magazine-loads off your mind.

SCEA-LPS. (2018). *Logistics performance survey, SCEA*. 6TH Edition. African Economic & Social Development Consultants.

SCEA, (2016). *Shippers' Council of Eastern Africa strategic plan-* 2016-2020.

Schilling, M., & Steensma, H. (2002). Disentangling the theories on firm boundaries: a path model and empirical test. *Organization Science*, *13*(4), 387-400.

Schroeder, R., Rungtusanatham, M. J., & Goldstein, S. (2012). *Operations management in the supply chain*. McGraw-Hill Higher Education.

Serenko, A. & Stack, A. (2009). The impact of expectation disconfirmation on customer loyalty and recommendation behaviour: Investigating online travel and tourism services. *Journal of Information Technology Management,* 20(3).

Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, *52*(3/4), 591-611.

Sharmin, W. (2012). Customer satisfaction in business: a case study of Moon Travel Ltd, *Finland. Laurea University of Applied Sciences.*

Sople, V. V. (2010). *Logistics management. The supply chain imperative*. Second edition. Pearson, India.

Song, B., & Xu, S. (2009). The theory of material flow substance. *Research Article. Behavioral Science*; *26(2)*, 251 – 258.

Soosay, C., & Hyland, P. (2006). Strategies for maintaining customer satisfaction in logistics cases from distribution centers. Conference paper. Logistics and Transport Focus. *The Journal of the Institute of Logistics and Transport.*

Stapleton, C. D. (1997). Basic concepts in exploratory factor analysis (EFA) as a tool to evaluate score validity: a right-brained approach. Research Paper

Sterline, J.U., & Lambert, D. M. (1989). Customer service research: past, present, and future*. International Journal of Physical Distribution &Materials Management*, *19*(2), 17.

Strickland, O. L. (2003). Using factor analysis for validity assessment: Practical considerations. *Journal of Nursing Measurement, 11*(3), 203–205.

Stock, J. R., & Lambert, D. M. (2001). *Strategic logistics management*. 4th Ed. McGraw-Hill Int. Ed.

Suthikarnnarunai, N. (2008). Automotive supply chain and logistics management. *Proceedings of the International multiconference of engineers and computer scientists, IMECS, Hong Kong, II,* 19-21.

Swanson, G. A. (2008). Material flow, material information, and the analytics of the integrative enterprise information systems: *Enterp Inf Syst* 2, *2*(1), 21-31.

Swink, M., Melnyk, M., Cooper, B., & Hartley, J. (2011). *Managing operations across the Supply Chain.* International student edition. McGraw Hill.

Sze, H. C., Keng, L.S. & Wai,P. W., 2013). Impact switching costs on the tripartite modelThird party logistics. *Journal Management* 3(2), 79-88.

Tae-Woo, L., Nam-Kyu, P., John, F. J., & Woong, G. K. (2000). A new efficient EDI system for container cargo logistics. *Maritime Policy & Management*, 27(2), 133-144.

Takwi, F. M., & Mavis, A. A. (2020). The Effects of Logistic Management on Enterprise Performance: A Case of Gas Depot Atem in Yaounde Cameroon. *American Journal of Operations Management and Information Systems*. 5(3), 41-48.

Tavakol, M., &Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education.* 2: 53–55.

Thiruvattal, E. (2017). Impact of value co-creation on logistics customers' loyalty. *Journal of Global Operations and Strategic Sourcing*, *10*(3), 334-361.

Thogori, M., & Gathenya, J. (2014). Role of inventory management on customer satisfaction among the manufacturing firms in Kenya: A case study of Delmonte Kenya. *International Journal of Academic Research in Business and Social Sciences*, *4(*1), 108-121.

Thomas, A. D. (2017). Moderation-mediation effect of market demand and organization culture on innovation and performance relationship. *Marketing Intelligence & Planning*, 35(2), 222242.

Tontini, G., Soilen, K.S., & Zanchett, R. (2017). Nonlinear antecedents of customer satisfaction and loyalty in third-party logistics services (3PL). *Asia Pacific Journal of Marketing and Logistics, 29*(5), 1116-1135.

Ugboma, C., Ibe, C., & Ogwude, I.C. (2004). Service quality measurements in ports of a developing economy: *Nigerian Ports Survey, Managing Service Quality*, 14(6), 487-97.

UNCTAD. (2019). United Nations conference on trade and development. Review of maritime transport. *United Nations Publications*.

Van, W. A. J. (2010). *Purchasing & supply chain management: Analysis, strategy, planning and practice.* Cengage Learning EMEA.

Vinh, V. T. (2008). Service quality in maritime transport: conceptual model and empirical evidence. *Asia Pacific Journal of Marketing and Logistics*, 20(4), 493-518.

Vipin, P. V., & Richard, E. W. (2015). Treating macro theory as systems theory: how might it matter? In new thinking in Austrian political economy. *Advances in Austrian Economics*, (19), 119-143.

Wachira, G. (2019). Business Daily. Why Kenya should focus on Naivasha container depot.

Wissner-Gross, A., & Freer, C. (2013). Causal entropic forces, physical review letters, *110*, 168702.

World Bank. (2005). *Kenya - Issues in trade logistics (English).* Washington, DC: World Bank.   http://documents.worldbank.org/curated/en/330211468047096946/Kenya-Issues-in-tradelogistics.

Wu, B.Y., & Chao, K.M. (2004). Spanning trees and optimization problems, discrete mathematics and its applications, *Chapman & H*all*/CRC, Boca Raton, FL.*

Xu, L., Swanson, G.A., & Samuelson, K. (2009). Systems science and enterprise integration, technological economics and the theory of material flow. *Sys Res Behav Sc*i, *26*(2), 123-127.

Xu, S. (2008). The concept and theory of material flow, *Research Article. Information Systems Frontiers*, *109*(5), 601-609.

Xuemei, F., & Zhicai J. (2016). Understanding public transit use behaviour: Integration of the theory of planned behaviour and the customer satisfaction theory. *Transportation, Springer, CrossMark.*

Yamins, D., Rasmussen, S., & Fogel, D. (2003). Growing urban roads. *Networks and Spatial Economics*, *3*(1), 69-85.

Yannis, P., Apostolos, G., & Spyridon, B. (2014). Logistics service quality and its effects on customer satisfaction in the manufacturing companies' supply chains. Empirical evidence from Greece. *Journal of Modelling in Management,* 9(20,215-237.

Yap, B. W., & Sim, C. H. (2011). Comparisons of various types of normality tests. *Journal of Statistical Computation and Simulation*, *81*(12), 2141-2155.

Yen -Chun, W., Mark, G., Chih-Hung, Y., & Shan-Huen, H. (2017). Logistics management research collaboration in Asia. *The International Journal of Logistics Management*, 28(1), 206-223.

Yeung, M.C.H., Ramasamy, B, Chen, J., & Palinoda, S. (2013). Customer satisfaction and consumer expenditure in selected European Countries. *A Research Paper*. *IJRM*, *30*(4).

Young-Harry, D. L., Oparanma, A. O. & Ejo-Orusa, H. A. (2018). Information system and organizational performance of Seven-Up Bottling Company in Aba and Port Harcourt. *IIARD International Journal of Economics and Business Management*. 4(4), 53-61.

Yuksel, A. & Yuksel, F. (2008). *Consumer Satisfaction Theories: A Critical Review. Tourist satisfaction and complaining behavior: Measurement & management issues in the Tourism and Hospitality Industry*. Nova science publishers, New York.

Zakaria H., Zailani, S. & Fernando, Y. (2010). Moderating role of logistics information technology on the logistics relationships and logistics service quality. *Journal of Operations & Supply Chain Management,* 3 (3) 134-147.

Zaryab, S. (2012). Role of third party logistics providers with advanced IT to increase customer satisfaction in supply chain integration. *International Journal of Academic Research in Business and Social Sciences,* 2(1), 546-558.

Zikmund, G.W. (2003). *Business research methods*, 7th edition. Thomson, South-Western.

Zhang, Q., Vonderembse, M.A., & Lim, J. (2005). Logistics flexibility and its impact on customer satisfaction. *The International Journal of Logistics Management*, *16*(1), 71-95.

APPENDICES

Appendix I: Interplay of the Actors of the Maritime Supply Chain
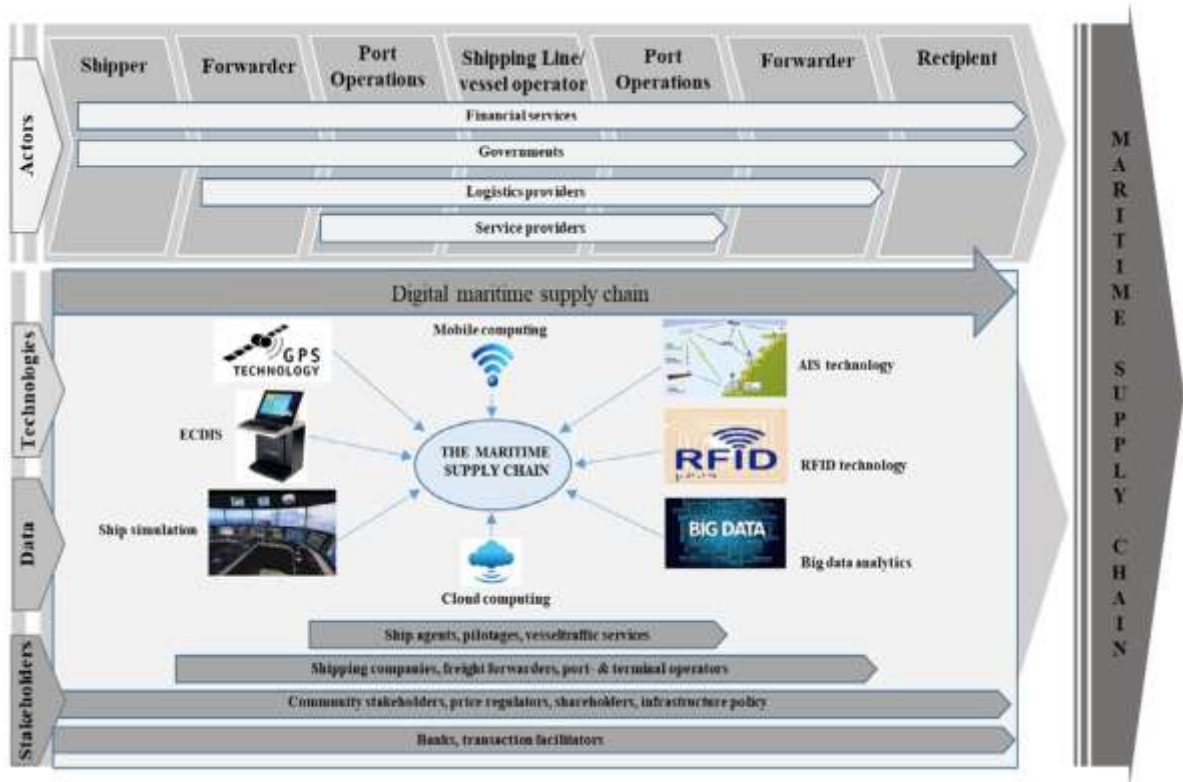
Source: Fruth, M. & Teuteberg, F. (2017). Digitization in Maritime Logistics — what is there and what is missing? Operations, Information & Technology. *Research Article. Cogent Business & Management,* 4.

This is theory of the role of logistics in the firms.
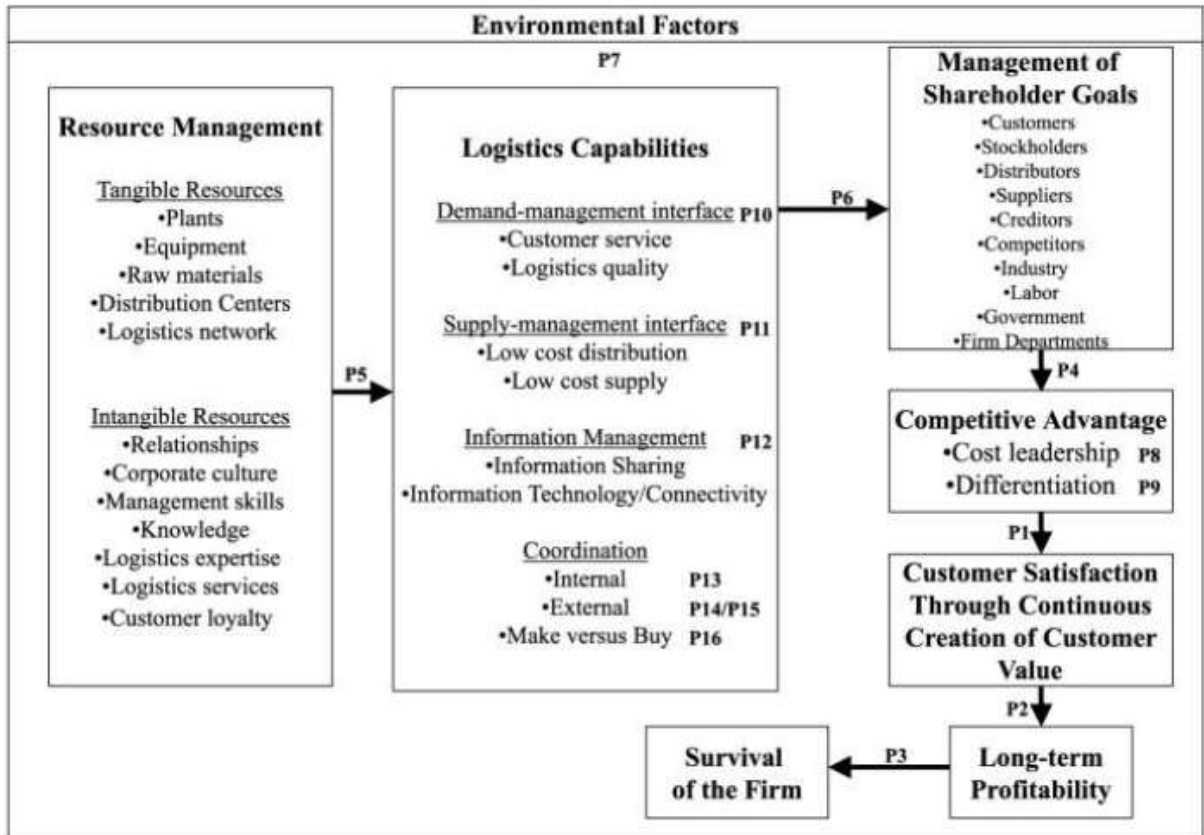
Source: John, T. M., Soonhong, M. & Michelle, B.L., (2004). Toward a unified theory of logistics. *International Journal of Physical Distribution & Logistics Management*, 34(8), 610.

Appendix III: The Ps under the Unified Theory of Logistics

1. Internal considerations of the firm

P1.   Firm's competitive advantage aims to achieve customer satisfaction through creation of customer value continuously.

P2.   Customer satisfaction leads to firm profitability

P3.   Firm's survival depends on the long-term profitability derived from

customer satisfaction.

P4.   Collaboration of all stakeholder goals contributes to organization's competitive advantage.

P5.   Management of both tangible and intangible firm resources results to distinctive logistics capabilities.

P6.   Management of stakeholder goals has a mediating effect on logistics capabilities and competitive advantage relationship.

2. Environmental considerations

P7.   Environmental factors impacts on the capabilities of logistics in achieving organizational goals.

3. Logistics capabilities and competitive advantage

P8.   Logistics capabilities impacts the cost leadership indicator of competitive advantage via cost and reductions in capital.

P9.   Logistics capabilities impacts on the differentiation indicator of competitive advantage via services to customers.

4. The logistics capabilities

P10.   The demand-management interface of logistics capabilities are customer-driven, majoring on services to customers and quality of logistics' provided.

P11.   The supply-management collaboration of logistics capabilities focusing on low-cost distribution and supply impacts on firm's competitive advantage.

P12.   The capabilities of information management results to firms' competitive advantage by focusing on information sharing and IT connectivity.

5. Internal and external coordination logistics capabilities

> **P13, P14, P15.** Collaboration and coordination of activities, within and outside the key players in the logistics process is crucial to achieving competitive advantage of a firm.

6. Borrowing external logistics capabilities – make versus buy

> **P16**. 3PLs firms providing unique logistics services exist for the sole reason that logistics activities are vital in the implementation of corporate strategy, thus enabling organizations achieve competitive advantage.

Source: John, T. M., Soonhong, M. & Michelle, B.L., (2004). Toward a unified theory of logistics. *International Journal of Physical Distribution & Logistics Management*, 34(8), 610.

Appendix IV: Research Questionnaire

This questionnaire is designed to collect data from firms (both importers and exporters) who are members of the Shippers' Council of Eastern Africa, (SCEA) and are based in Kenya. The data will be used for academic purpose only and will be treated with utmost confidence. Your participation in facilitating this study will be highly appreciated.

Section A: ORGANIZATIONAL BACKGROUND

1. Name of the organization (optional)…………………………..………………
2. Please indicate your position in the organization ………………..…….………
3. Please tick the number of years that your organization has been in operation?

0-5	( )	5-10 ( )
10-15	( )	15-20 ( )
More than 20	( )	

4. Are you a member of the Chartered Institute of Logistics and Transportation (CILT)?

   Yes ( )
   No ( )

5. Under which category does your organization belong?

Importer	( )	Exporter ( )
Importer & Exporter	( )	Importer & 3PL ( )
Exporter & 3PL	( )	Others,

   Specify……….……………….

6. Does your firm have a logistics management department?

   Yes ( )
   No ( )

7. If No in No. 6 above, which department discharges the logistics management duties?
   ………………………………………………………………………………………

8. How do you procure the services of logistics service providers (transporters)?

   i. Competitive bidding ( )
   ii. References ( )
   iii. Family ( )
   iv. Others ( )

9. How long has your firm been a member of SCEA (in years)?

   a) 0-3 years ( )
   b) 3-6 years ( )
   c) more than 6 years ( )

10. What are the benefits of being a member of SCEA?
    ………………………………………………………………………………………
    ………………………………………………………………………………………

11. The efficiency and effectiveness of ports operations, both at Mombasa and ICD can affect the performance of your logistics service providers/transporters. Kindly indicate your experience on this

	Least efficient and effective	Moderate efficient and effective	Highly efficient and effective	Very high in efficiency and effectiveness
Port of Mombasa				
Inland Container Depot, ICD				

12. Government agencies like KRA, KPA, KMA (maritime authority), KEBs, KRC (Railway Corporation) need to coordinate and integrate their systems for better services to the importers and exporters. What is your experience with this expected integration?

	Kindly indicate your experience with this expected integration?
Kenya Revenue Authority	
Kenya Ports Authority	
Kenya Maritime Authority	
KEBs	
Kenya Railway Corporation	

13. Which of the government agencies involved in the entire logistical process would you suggest to make most improvements for better services, and in which aspect/area?

	Tick	Specify area/aspect that requires improvement
KRA		
KPA		
KMA		
KEBs		
KRC		
KEPHIS		

Section B: LOGISTICS MANAGEMENT PRACTICES

14. Using the scale below, indicate the extent to which your logistics service provider(s)/transporters has implemented the following transportation management practices. Please tick appropriately.

    (1) Not at all (2) Small extent (3)Moderate extent (4)Great extent (5) Very great extent

	Transportation management practices	1	2	3	4	5
1	Carrier evaluation					
2	Carrier selection					
3	Fleet management					
4	Shipments scheduling					
5.	Route planning					
6	Adherence to maintenance schedule					

15. Using the scale below, indicate the extent to which your logistics service provider(s) /transporters has implemented the following inventory management practices.   (Please tick appropriately)

    (1) Not at all (2) Small extent (3)Moderate extent (4)Great extent (5) Very great extent

	Inventory Management practices	1	2	3	4	5
1	Inspection of goods before offloading at the premises					
2	Acceptance/rejection of goods at the premises					
3	Quality control department in operation					
4	Periodic stock counts and stocktaking					
5	Inventory control measurements practices					
6	Adherence to inventory policy guidelines					

16. Using the scale below, indicate the extent to which your logistics service provider(s) /transporters has implemented the following order processing management practices. (Please tick appropriately)
    (1)Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

	Order Processing management practices	1	2	3	4	5
1	Timely processing of electronic local purchase orders, LPOs					
2	Checks and balances at various levels of authorization					
3	Functional interaction for order processing and payments					
4	An order processing cycle					
5	Scheduled order processing management					

17. Using the scale below, indicate the extent to which your logistics service provider(s) /transporters has implemented the following information flow maintenance practices. (Please tick appropriately)

   (1)Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

	Information Flow Maintenance practices	1	2	3	4	5
1	Achieving timely response to customer references					
2	Decision making linked to accuracy in information shared amongst yourselves					
3	Extranets are in use with all internal and external users to ensure seamless flow of information to all logistics functions					
4	Periodic storage and backup of data					
5	Training for super users on confidentiality of information					

18. Using the scale below, indicate the extent to which your logistics service provider(s) /transporters has implemented the following packaging practices. (Please tick appropriately)

   (1)Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

	Packaging management practices	1	2	3	4	5
1	Logistical packaging decisions					
2	Unitization in logistical packaging					
3	Eco-friendly packaging					
4	Logistical packaging cost implications					
5	Consultations with users on packaging decisions					

19. Using the scale below, indicate the extent to which your logistics service provider(s) /transporters has implemented the following material handling practices. (Please tick appropriately)

   (1)Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

	Material Handling management practices	1	2	3	4	5
1	Material handling guidelines for systems and designs					
2	Hygiene and human safety					
3	Cost implications in materials handling					
4	Automated storage system and warehouse layout compatibility					
5	Value addition potential for goods being handled					

20. Using the scale below, indicate the extent to which your logistics service provider(s) /transporters has implemented the following warehousing management practices. (Please tick appropriately)
(1)Not at all (2) Small extent (3) Moderate extent (4) Great extent (5) Very great extent

	Warehousing management practices	1	2	3	4	5
1	Warehouse site selection					
2	Layout design considerations					
3	Warehousing performance measurements					
4	Warehouse documentation					
5	Warehousing strategies					

Section C: LOGISTICS INFORMATION SYSTEM

21. Kindly indicate the extent to which your logistics service provider(s) /transporters has implemented the following logistics information systems over the last 5 years from 2014 to 2019. 1 = Not at all, 2 = Small Extent, 3 = Moderate Extent,   4 = Great Extent, 5 = Very great extent

	Logistics Information System, LISs	1	2	3	4	5
1	Enterprise Resource Planning, ERP					
2	Global Positioning System, GPS					
3	Radio Frequency Identification, RFID					
4	Bar codes					
5	Electronic Cargo Tracking system, ECTs					

22. How would you rate the following perceived benefits of the implementation of logistics information systems by logistics service provider(s) /transporters in your organization. Where 1= Not a benefit, 2=a minor benefit, 3= a benefit, 4= a good benefit, 5= a major benefit

	Benefits of logistics information system	1	2	3	4	5
1	Enhanced levels of interoperability					
2	Quick response and information accessibility					
3	Enhanced service to customers					
4	Enhances competitiveness					
5	Data re-entry is reduced and it may be used instantly					
6	Improves vehicle routing & tracking					
7	Reduce delivery error					
8	Reduces errors					
9	Facilitates reporting					
10	Improves data control					
11	Streamlines logistics processes					
12	Tracks and controls different logistics functions					
13	Reduces paperwork					
14	Able to make better decisions based on facts					

15	Standardizes programs and procedures					
16	Reduces manpower					
17	Improves stock identification					
18	Enhances replenishment accuracy					

23. Which of the logistics information systems listed in No.22 above has worked best for your organization, and why?

………………………………………………………………..

24. In case where there is investment in more than one of the LISs above, how would you rank them in terms of performance with logistics management? ……
……………………………………………...……………………………………………………
…………………...

Section D: LOGISTICS SERVICE QUALITY (LSQ)

25. Using the scale below, indicate the extent to which you are satisfaction with logistics service quality from your logistics service provider(s) /transporters on the basis of the attributes below: (1)Very dissatisfied (2) Dissatisfied (3)Neutral (4)Satisfied (5) Very satisfied

I	Measures of functional quality- in the process of service delivery	1	2	3	4	5
1	Timeliness of process in tax invoices receipt					
2	Delivery with safety and no road accidents					
3	Delivery of requested appropriate items					
4	Delivery with minimized claim					
5	Delivery of damage free products					
6	Delivery of well packaged products					
7	Management of all costs from emergency orders					
8	Guarantee lead time as requested					
9	Kindness of staffs in order management					
II	Measures of technical quality- capability and outcome of delivery					
10	Delivery on schedule					
11	Prompt response to delivery accidents					
12	Actions aiming at avoiding future accidents undertaken					
13	Any changes in quantities ordered are quickly tackled					
14	Capability to handle emergent orders					
15	Capability to negotiate with carriers					
16	System synchronized through the supply chain					
17	Real-time delivery tracking					
18	Capability of research and development					

Section E: CUSTOMERS SATISFACTION

26. Name of your firm's logistics service provider (s)/transporters (optional)

…………………………………………………………………………….…………

…………………………………………………………………………………………

27. How long has your organization engaged your current logistics service providers/transporters (in years)

0 -5 years ( )	5 – 10 years ( )
10-15 years ( )	more than 15 years ( )

28. Using the scale below, indicate the extent to which your firm is satisfied with the services offered by its logistics service providers/transporters on the basis of the attributes below: (1) Not at all likely (2) least likely (3) likely (4) most likely   (5) Extremely likely

I	CUSTOMER SATISFACTION- Loyalty	1	2	3	4	5
1	How likely is your firm to switch to another logistics service providers					
2	Is your firm likely to renew service contract with its logistics service providers					
3	Is your firm likely to recommend their logistics service providers to other firms					
4	How likely is your firm to purchase different solutions from their logistics service providers in the future					
5	Is your firm likely to expand the use of logistics service providers' products throughout the company					
6	Your firm's loyalty is likely to grow					
7	Share information for mutual gain					

29. Using the scale below, indicate the extent to which your firm's expectations from your logistics service provider(s) /transporters are met on the basis of the attributes below: (1)Very Low   (2) Low   (3)Neutral   (4) High   (5) Very high

II	CUSTOMER SATISFACTION –Expectations Met	1	2	3	4	5
8	Consultations on internal policy matters that concern your firm					
9	Delays caused by lengthy clearance procedures addressed					
10	Constant communication on need basis					
11	Timely interventions in operational issues that may affect service offered					
12	Enactment of appropriate legislative charter					
13	Access to an interactive website with depository on key information					
14	Education and sensitization on existing regulations to enhance compliance					
15	Optimization of 24/7 operations where necessary					
16	Implementation of electronic cargo tracking systems					
17	Stakeholder engagement mechanism to address policy issues on					

	freight logistics				
18	Overall expectation of quality of services				

SECTION F

30. Any other issues that have helped improve or hindered logistics service delivery to your firm during the entire logistics process, please discuss …………………………………………………………………………………………… ……………………………………………………………………………………

THANK YOU FOR YOUR SUPPORT.

Appendix V: Communalities

Variables	Initial	Extraction
Carrier evaluation	1.000	.887
Carrier selection	1.000	.951
Fleet management	1.000	.958
Shipments scheduling	1.000	.949
Route planning	1.000	.920
Adherence to maintenance schedule	1.000	.949
Inspection of goods before offloading at the premises	1.000	.938
Acceptance/rejection of goods at the premises	1.000	.923
Quality control department in operation	1.000	.920
Periodic stock counts and stocktaking	1.000	.960
Inventory control measurements practices	1.000	.969
Adherence to inventory policy guidelines	1.000	.930
Timely processing of electronic local purchase orders, LPOs	1.000	.969
Checks and balances at various levels of authorization	1.000	.920
Functional interaction for order processing and payments	1.000	.954
An order processing cycle	1.000	.957
Scheduled order processing management	1.000	.963
Achieving timely response to customer references	1.000	.918
Decision making linked to accuracy in information shared amongst yourselves	1.000	.881
Extranets are in use with all internal and external users to ensure seamless flow of information to all logistics functions	1.000	.909
Periodic storage and backup of data	1.000	.887
Training for super users on confidentiality of information	1.000	.876
Logistical packaging decisions	1.000	.944
Unitization in logistical packaging	1.000	.965
Eco-friendly packaging	1.000	.955
Logistical packaging cost implications	1.000	.977
Consultations with users on packaging decisions	1.000	.936
Material handling guidelines for systems and designs	1.000	.966
Hygiene and human safety	1.000	.946
Cost implications in materials handling	1.000	.863
Automated storage system and warehouse layout compatibility	1.000	.939
Value addition potential for goods being handled	1.000	.905
Warehouse site selection	1.000	.949
Layout design considerations	1.000	.940
Warehousing performance measurements	1.000	.930
Warehouse documentation	1.000	.920
Warehousing strategies	1.000	.890
ERP	1.000	.924
GPS	1.000	.864

RFID	1.000	.923
Bar codes	1.000	.907
ECTS	1.000	.914
Timeliness of process in tax invoices receipt	1.000	.957
Delivery with safety and road accidents	1.000	.838
Delivery of requested appropriate items	1.000	.881
Delivery with minimized claim	1.000	.942
Delivery of damage free products	1.000	.952
Delivery of well packaged products	1.000	.856
Management of all costs from emergency orders	1.000	.937
Guarantees lead time as requested	1.000	.872
Kindness of staffs in order management	1.000	.935
Delivery on schedule	1.000	.951
Prompt response to delivery accidents	1.000	.881
Actions aiming at avoiding future accidents undertaken	1.000	.927
Any changes in quantities ordered are quickly tackled	1.000	.905
Capability to handle emergent orders	1.000	.964
Capability to negotiate with carriers	1.000	.949
System synchronized through the supply chain	1.000	.828
Real-time delivery tracking	1.000	.966
Capability of research and development	1.000	.944
How likely is your firm to switch to another logistics service providers	1.000	.925
Is your firm likely to renew service contract with its logistics service providers	1.000	.954
Is your firm likely to recommend their logistics service providers to other firms	1.000	.873
How likely is your firm to purchase different solutions from their logistics service providers in the future	1.000	.916
Is your firm likely to expand the use of logistics service providers' products throughout the company	1.000	.938
Your firm's loyalty is likely to grow	1.000	.858
Share information for mutual gain	1.000	.927
Consultations on internal policy matters that concern your firm	1.000	.948
Delays caused by lengthy clearance procedures addressed	1.000	.913
Constant communication on need basis	1.000	.879
Timely interventions in operational issues that may affect service offered	1.000	.938
Enactment of appropriate legislative charter	1.000	.954
Access to an interactive website with depository on key information	1.000	.974
Education and sensitization on existing regulations to enhance compliance	1.000	.926
Optimization of 24/7 operations where necessary	1.000	.918
Implementation of electronic cargo tracking systems	1.000	.954
Stakeholder engagement mechanism to address policy issues on freight logistics	1.000	.923
Overall expectation of quality of services	1.000	.943
Carrier evaluation	1.000	.927

Carrier selection	1.000	.925
Fleet management	1.000	.870
Shipments scheduling	1.000	.949
Route planning	1.000	.969
Adherence to maintenance schedule	1.000	.922
Inspection of goods before offloading at the premises	1.000	.962
Acceptance/rejection of goods at the premises	1.000	.936
Quality control department in operation	1.000	.927
Periodic stock counts and stocktaking	1.000	.919
Inventory control measurements practices	1.000	.936
Adherence to inventory policy guidelines	1.000	.954
Timely processing of electronic LPOs	1.000	.973
Checks and balances at various levels of authorization	1.000	.965
Functional interaction for order processing and payments	1.000	.940
An order processing cycle	1.000	.960
Scheduled order processing management	1.000	.947
Achieving timely response to customer references	1.000	.952

Extraction Method: Principal Component Analysis.

Source: Field Data (2020)

Appendix VI: Total Variance Explained

	Total Variance Explained					
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	Percent of Variance	Cumulative percent	Total	Percent of Variance	Cumulative percent
1	25.738	26.810	26.810	25.738	26.810	26.810
2	9.320	9.709	36.519	9.320	9.709	36.519
3	8.321	8.667	45.186	8.321	8.667	45.186
4	6.555	6.828	52.015	6.555	6.828	52.015
5	5.055	5.266	57.280	5.055	5.266	57.280
6	3.941	4.105	61.385	3.941	4.105	61.385
7	3.850	4.011	65.396	3.850	4.011	65.396
8	3.473	3.618	69.014	3.473	3.618	69.014
9	3.206	3.340	72.354	3.206	3.340	72.354
10	2.804	2.920	75.275	2.804	2.920	75.275
11	2.543	2.649	77.924	2.543	2.649	77.924
12	2.353	2.451	80.374	2.353	2.451	80.374
13	2.055	2.140	82.514	2.055	2.140	82.514
14	1.837	1.913	84.428	1.837	1.913	84.428
15	1.578	1.643	86.071	1.578	1.643	86.071
16	1.516	1.579	87.650	1.516	1.579	87.650
17	1.431	1.491	89.141	1.431	1.491	89.141
18	1.351	1.407	90.548	1.351	1.407	90.548
19	1.116	1.163	91.711	1.116	1.163	91.711
20	1.077	1.122	92.833	1.077	1.122	92.833

Extraction Method: Principal Component Analysis.
Source: Field Data (2020)

Appendix VII: Component Matrix

Component Matrix[a]																				
	Components																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Carrier evaluation	.597	-.124	-.248	.511	.180	-.089	-.109	-.099	-.123	-.061	-.159	.166	-.001	-.009	.045	.035	.154	-.137	-.111	.002
Carrier selection	.583	-.051	-.373	.491	.131	-.045	.045	-.027	-.084	.078	-.198	.151	-.274	.038	.145	.004	.148	.048	.085	-.051
Fleet management	.429	-.165	-.467	.459	.289	-.087	.155	.283	-.105	-.149	.209	.130	.002	-.094	.112	-.047	.019	.041	.010	.054
Shipments scheduling	.568	-.324	-.326	.324	.149	-.336	-.089	.032	-.100	.107	-.226	.097	.216	.132	.068	.098	-.016	.025	.062	-.027
Route planning	.508	-.019	-.120	.407	.360	-.317	.088	.258	.039	-.092	-.044	-.124	.049	.002	.004	-.264	-.149	-.144	-.025	.183
Adherence to maintenance schedule	.566	.273	-.296	.211	.340	-.137	.276	.289	-.028	-.135	-.029	-.018	-.090	-.110	.170	.136	.058	.060	.052	-.174
Inspection of goods before offloading at the premises	.622	-.270	-.353	-.289	-.048	.049	.111	-.111	-.067	-.268	.087	-.131	.155	-.019	-.005	-.062	.209	-.060	.248	.045
Acceptance/rejection of goods at the premises	.440	-.223	-.217	-.015	-.019	-.207	.279	-.295	.193	-.005	-.355	-.339	.211	.198	-.176	.081	.060	-.001	-.144	.023
Quality control department in operation	.673	-.110	-.053	-.140	.213	-.098	.230	-.045	-.156	-.309	.211	-.021	.082	-.236	.174	-.061	.174	.147	-.008	.094
Periodic stock counts and stocktaking	.799	.104	.245	-.055	.254	-.130	.046	-.090	.051	.111	-.128	-.204	.037	-.228	-.011	-.096	.073	-.079	.045	-.081
Inventory control measurements practices	.880	-.166	-.071	-.012	-.092	-.064	-.115	-.026	-.213	.109	.077	-.234	.000	-.106	.005	.051	-.015	.020	-.013	.048
Adherence to inventory policy guidelines	.784	-.111	-.170	-.188	-.259	.031	-.080	-.075	-.223	.004	-.232	-.050	.102	-.092	.060	-.063	.045	-.090	.030	.122
Timely processing of electronic local purchase orders, LPOs	.678	-.071	-.125	-.228	-.368	.347	.074	.155	.096	.123	-.049	-.136	.130	-.143	.080	-.076	-.191	.122	.064	-.019
Checks and balances at various levels of authorization	.669	-.020	.214	-.150	-.201	.268	-.074	.070	-.023	.021	-.342	-.289	.012	-.081	.236	-.111	.029	-.046	.031	.033
Functional interaction for order processing and payments	.562	-.299	-.012	-.095	-.008	.533	.115	.170	.082	.335	.110	-.213	-.038	.074	.058	.074	-.028	.058	-.113	.062
An order processing cycle	.715	-.380	.125	.062	-.113	.300	-.125	-.001	-.090	.071	-.117	-.236	-.113	.147	.097	.064	-.159	.007	-.085	-.034
Scheduled order processing management	.641	.004	.281	-.250	-.012	.347	.141	.014	-.189	.123	.182	-.135	-.048	-.023	.194	-.013	-.182	-.027	-.270	-.141
Achieving timely response to customer references	.490	.180	.399	-.354	.029	.158	.315	-.356	-.146	-.023	.173	.106	-.124	-.036	-.057	-.094	-.017	.126	-.009	-.043
Decision making linked to accuracy in information shared amongst yourselves	.461	-.030	.244	-.037	.157	.403	.306	-.204	.021	.027	.131	.216	-.068	.209	.109	-.232	-.055	-.026	.224	.227
Extranets are in use with all internal and external users to ensure seamless flow of information to all logistics functions	.357	-.193	.610	-.138	.043	.232	.106	.039	.020	-.134	-.247	.046	-.215	.037	-.170	.011	-.045	-.340	-.043	.085
Periodic storage and backup of data	.479	-.108	.292	.015	.129	.500	.240	.097	.032	.012	.058	.307	-.105	-.036	-.099	-.141	.220	-.020	.111	.159
Training for super users on confidentiality of information	.669	-.191	.154	.187	-.319	.225	.142	-.216	-.170	-.099	.006	.077	-.062	-.130	-.188	-.007	.052	-.075	.021	-.062
Logistical packaging decisions	.157	.024	.536	.253	-.100	.028	.521	.448	.083	.078	-.109	.140	.008	-.024	.004	.044	-.004	.182	-.054	-.032
Unitization in logistical packaging	.348	-.200	.353	.359	-.148	-.119	.505	.306	-.119	-.071	-.067	-.241	.075	.070	-.237	.008	.055	.059	-.097	.024
Eco-friendly packaging	.576	.070	.330	.230	-.068	.020	.440	.208	-.152	-.346	.159	.041	-.115	-.112	-.069	.065	-.003	.002	-.091	-.039

Logistical packaging cost implications	.191	-.083	.627	.156	-.176	-.241	.415	.260	-.293	.063	-.197	.084	.062	.092	-.051	.119	-.030	-.024	-.123	-.078
Consultations with users on packaging decisions	.112	-.112	.563	.011	-.417	-.159	.338	.308	-.261	-.044	.286	-.051	.061	-.079	.026	.092	-.002	-.089	.035	-.054
Material handling guidelines for systems and designs	.606	.203	.062	-.484	.048	.088	.079	.123	.228	.090	-.233	.263	.073	-.091	.055	-.070	.148	-.215	-.102	-.065
Hygiene and human safety	.379	.068	.569	-.410	.102	.006	-.026	.214	.239	-.243	-.196	.126	.142	.101	-.029	.027	.114	-.172	.015	-.060
Cost implications in materials handling	.450	-.140	.537	-.213	-.124	.237	-.151	.196	.193	.143	-.205	-.016	.079	-.088	.002	-.131	.121	.081	.139	.044
Automated storage system and warehouse layout compatibility	.791	.115	.194	-.042	-.066	.065	-.019	-.150	.035	-.231	-.007	-.021	.136	-.059	.004	.007	-.297	-.062	.188	-.161
Value addition potential for goods being handled	.574	.176	.400	.005	-.367	-.181	-.276	-.123	.084	.007	-.027	.081	.053	.054	.067	-.169	-.226	.024	-.007	-.143
Warehouse site selection	.651	.029	-.024	-.001	-.238	-.225	.119	.282	.285	.291	.101	.208	-.210	-.075	-.078	.080	-.026	.186	-.071	-.045
Layout design considerations	.777	-.174	.007	.224	-.127	-.230	.044	.247	.164	.163	.145	.029	.069	.008	.025	-.145	.121	-.026	.070	-.044
Warehousing performance measurements	.654	-.108	-.148	.176	-.494	-.193	-.118	.040	.135	.123	.220	.050	.109	.101	-.030	.039	.118	.005	.038	.129
Warehouse documentation	.662	-.433	-.106	.189	-.269	.036	-.085	.020	.255	.123	-.037	-.089	-.032	.063	-.099	.142	.191	.039	-.060	-.005
Warehousing strategies	.690	.006	-.076	.035	-.416	-.280	-.153	.075	-.067	.133	.101	.011	.121	-.053	-.081	-.080	-.128	-.196	.042	.084
Enterprise Resource Planning, ERP	.676	-.281	-.084	.195	.167	.320	-.125	-.052	.031	-.009	-.212	-.273	-.167	.003	-.162	-.008	.028	.100	.084	-.044
Global Positioning System, GPS	.416	-.173	-.440	.201	.358	.324	-.001	.178	.089	.038	-.078	-.289	.044	-.062	-.051	-.196	-.006	.046	.070	-.100
Radio Frequency Identification, RFID	.056	-.587	.296	.080	.143	.090	-.078	-.275	-.238	.179	.094	.292	.171	.197	.127	.209	-.123	-.206	-.002	-.045
Bar codes	.061	-.499	.207	.416	-.064	.373	.037	-.103	-.127	.280	-.107	.216	.154	.034	.038	.032	-.204	-.142	.059	.192
Electronic Cargo Tracking system	.052	-.642	.204	-.111	.273	.229	.141	.016	.053	-.082	.174	.209	.018	.430	.001	.044	.099	.123	-.051	-.003
Timeliness of process in tax invoices receipt	.353	.572	-.317	.160	.155	.308	.014	-.052	-.242	.043	.063	.101	-.245	.273	.063	.029	-.040	-.188	-.056	-.057
Delivery with safety and road accidents	.472	.661	-.060	.173	.087	-.013	.085	-.163	-.047	-.064	-.139	-.165	.093	.181	.056	.019	.021	-.010	-.055	.043
Delivery of requested appropriate items	.048	.703	.343	-.067	-.076	-.036	.099	-.032	-.066	-.050	-.327	-.016	.023	.090	.254	-.041	.005	.100	.173	-.126
Delivery with minimized claim	.087	.711	.409	-.011	-.008	-.144	.116	-.139	.079	.029	-.121	-.199	.144	.143	.088	-.018	.259	.135	.069	.084
Delivery of damage free products	.470	.416	-.149	.300	-.306	-.258	.192	-.075	-.074	.255	.021	-.092	-.091	.377	.051	-.026	-.040	.036	.066	-.048
Delivery of well packaged products	-.066	.435	.213	.243	.202	.428	-.233	-.088	-.157	-.189	.075	-.020	.085	-.140	.070	.306	.232	.078	-.109	.093
Management of all costs from emergency orders	-.111	.704	.227	.267	.005	.203	-.074	-.214	.071	-.078	.017	-.035	.198	.022	.178	-.152	.097	.067	-.253	.167
Guarantee lead time as requested	-.021	.584	.285	.371	.040	.016	-.121	.055	-.028	.150	.146	.219	.336	-.085	-.077	-.207	.121	.027	.067	.107
Kindness of staffs in order management	.051	.637	.357	.321	.269	.239	-.161	.075	-.102	-.151	-.061	-.202	.175	.044	-.012	.008	-.044	.015	-.124	.080
Delivery on schedule	.397	.424	.000	.627	-.156	.045	-.057	.091	-.114	-.037	.122	-.204	-.094	.211	.155	-.049	-.150	.028	-.095	.012
Prompt response to delivery accidents	.110	.384	.367	.411	.242	.379	-.231	-.120	.014	.144	.099	-.051	.201	-.108	.001	.136	-.081	-.001	.141	-.136
Actions aiming at avoiding future accidents undertaken	.588	.365	-.285	.141	.037	.100	.131	-.295	.148	.096	.194	.020	-.065	.037	-.200	.023	.193	-.121	.251	.014
Any changes in quantities ordered are quickly tackled	.082	.405	.339	.237	-.374	-.192	.033	-.096	.212	.188	.139	-.010	-.359	.257	.232	-.102	.105	-.056	.061	-.002
Capability to handle emergent orders	.574	.539	-.342	.333	.070	-.082	-.072	.011	-.002	.014	.135	.142	.018	-.063	-.187	.019	.027	-.133	.005	.041
Capability to negotiate with carriers	.459	.214	.312	.674	-.170	-.032	-.059	-.057	.110	-.034	-.084	-.001	.087	-.132	.097	.201	.046	-.052	.035	-.054
System synchronized through the supply chain	.315	.354	.288	.123	-.398	-.070	-.192	.197	.194	-.224	.045	.178	-.214	.090	-.177	-.106	-.106	-.043	.156	-.105

Real-time delivery tracking	.675	.458	-.249	-.033	-.196	.123	-.083	-.055	-.087	.157	.129	-.030	.021	-.080	-.272	.188	.008	.048	-.035	.077
Capability of research and development	.499	.395	-.227	-.040	-.392	.184	-.085	-.083	.032	.054	.133	-.162	.067	.022	-.257	.243	.005	-.138	-.100	.278
How likely is your firm to switch to another logistics service providers	.348	-.432	.316	.107	-.048	-.183	-.439	-.044	-.013	.140	-.099	.027	.332	.256	.124	.062	.094	.109	.170	.036
Is your firm likely to renew service contract with its logistics service providers	.208	.319	-.035	-.398	.205	.110	-.154	.482	.250	-.110	-.160	-.225	-.219	.065	.052	.176	-.159	.094	.216	.147
Is your firm likely to recommend their logistics service providers to other firms	.467	.243	-.384	-.381	.115	-.146	-.011	.124	-.008	-.239	-.260	.205	-.018	.212	-.010	.113	-.019	-.145	-.002	.082
How likely is your firm to purchase different solutions from their logistics service providers in the future	.204	-.163	.441	.303	-.072	-.122	-.270	-.005	-.050	-.437	-.200	.050	-.142	-.076	.001	.418	-.095	-.064	.068	.121
Is your firm likely to expand the use of logistics service providers' products throughout the company	.151	.014	.339	.044	.033	-.024	-.561	.129	.409	-.128	.102	.214	.038	.051	-.184	.085	-.177	.369	-.095	.052
Your firm's loyalty is likely to grow	.513	.064	-.296	-.402	-.106	.057	.081	.129	-.035	.298	.117	.305	.202	-.122	.064	.118	-.001	.067	-.122	.120
Share information for mutual gain	.764	-.103	-.111	-.259	-.029	-.144	-.008	-.183	-.291	.064	-.174	.202	.000	-.056	.082	.103	.012	-.023	-.078	-.105
Consultations on internal policy matters that concern your firm	.673	.094	-.306	-.273	-.246	-.070	.002	.019	-.320	-.217	.107	-.170	.012	-.148	.051	.079	-.111	.003	.135	-.018
Delays caused by lengthy clearance procedures addressed	.589	-.388	-.175	.083	-.281	.030	-.208	-.030	-.123	.061	.048	.068	-.140	-.027	.361	.099	.221	.125	-.035	.042
Constant communication on need basis	.520	.261	-.467	-.391	-.079	-.074	.044	-.028	-.103	-.113	-.096	.158	.100	.101	.104	.005	-.080	-.205	-.132	-.018
Timely interventions in operational issues that may affect service offered	.570	.395	-.166	-.254	-.058	.160	-.170	.048	.241	.004	.094	.229	-.250	-.096	.204	.136	.157	.035	-.121	-.115
Enactment of appropriate legislative charter	.643	.548	-.094	-.321	.037	.066	-.067	.024	.223	-.073	.121	.115	-.103	.086	-.027	.042	-.092	-.050	.050	-.043
Access to an interactive website with depository on key information	.837	-.138	-.110	.069	-.073	-.054	-.263	-.142	-.056	-.248	.108	.033	-.018	.008	-.033	-.081	.091	.096	-.066	-.181
Education and sensitization on existing regulations to enhance compliance	.656	-.093	-.463	-.132	-.088	.172	-.065	.202	.011	-.220	.092	-.017	.057	.161	.092	.005	-.222	.015	.159	.056
Optimization of 24/7 operations where necessary	.130	-.187	.318	-.248	-.163	-.079	-.036	-.161	.396	-.493	.235	-.192	.092	.242	-.025	.039	.183	-.166	-.144	-.035
Implementation of electronic cargo tracking systems	.797	-.208	-.117	.044	.194	.064	.026	.153	.056	-.275	.007	.072	.263	-.034	-.113	-.105	-.002	.087	-.045	-.079
Stakeholder engagement mechanism to address policy issues on freight logistics	.627	-.106	-.426	-.041	-.046	.095	-.112	.222	.074	-.246	-.040	.103	.040	.171	.058	-.095	-.074	.282	-.215	.104
Overall expectation of quality of services	.652	.002	.114	-.314	-.343	-.013	.026	-.417	.058	-.174	.042	.067	.047	-.040	.026	-.140	-.058	.114	-.183	.004
Carrier evaluation	-.013	.292	-.104	-.427	-.083	.085	.333	-.075	.073	.302	.043	-.088	.374	.066	-.083	.378	.136	.143	.148	-.238
Carrier selection	.105	-.275	.197	-.224	.223	-.344	.306	-.426	.348	.036	.152	-.222	-.150	.147	.210	.055	-.052	.013	-.033	.128
Fleet management	.503	-.234	.450	-.176	.164	-.319	-.039	-.114	.075	-.013	.175	-.068	-.085	-.230	.038	.078	-.056	-.034	.111	.244
Shipments scheduling	.440	-.146	-.072	.325	.161	-.029	.371	-.278	.505	.015	.229	-.050	-.085	-.090	-.011	.144	-.160	-.041	.039	.074
Route planning	.375	-.119	-.226	.224	.395	-.045	.327	-.259	.496	-.006	.134	-.111	.185	-.075	.114	.054	-.195	-.051	-.072	-.056

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Adherence to maintenance schedule	.518	-.047	.089	.307	.311	-.002	.072	-.170	.390	.031	-.156	.325	.098	-.167	.125	.191	-.199	-.009	.043	-.058
Inspection of goods before offloading at the premises	.594	-.318	.172	.164	.180	.027	-.347	.051	.209	-.062	.168	-.076	.071	-.001	-.044	-.115	.192	-.179	-.051	-.349
Acceptance/rejection of goods at the premises	.571	-.545	.178	.054	-.047	-.064	-.250	-.108	.069	.209	-.177	-.070	-.274	-.046	-.041	-.081	.143	.061	-.005	.060
Quality control department in operation	.506	.273	.086	-.198	.373	-.103	-.132	.130	.131	.439	.097	-.036	.125	-.072	-.016	-.229	-.098	-.187	-.139	-.085
Periodic stock counts and stocktaking	.274	.045	.407	-.192	.402	-.255	-.202	.225	.075	.183	.045	-.168	-.221	-.235	.225	.151	.144	-.168	-.073	.140
Inventory control measurements practices	.230	-.043	.203	-.140	.375	-.107	-.391	.289	-.218	.258	.382	-.259	-.106	.143	-.183	.086	-.012	-.139	-.082	-.087
Adherence to inventory policy guidelines	.587	.197	.176	-.189	.270	-.110	-.079	-.357	-.328	.117	-.080	-.009	-.302	-.039	-.201	-.017	.010	.121	.023	-.091
Timely processing of electronic local purchase orders, LPOs	.714	-.179	.246	.176	.238	-.064	-.127	-.286	-.152	-.070	-.091	.111	-.069	.052	-.226	-.188	.002	.157	-.121	.020
Checks and balances at various levels of authorization	.647	.228	.045	-.169	.386	-.214	.097	-.218	-.197	.076	-.089	.044	-.164	.019	-.238	.030	-.072	.250	.072	.021
Functional interaction for order processing and payments	.560	.186	.258	-.317	.194	-.359	-.116	.188	-.248	-.035	.261	.014	.178	.042	.088	-.082	.026	.014	.046	.165
An order processing cycle	.222	-.264	.467	-.148	.373	-.011	-.132	-.020	-.350	-.106	.434	-.059	.091	.207	.128	.060	-.029	.104	.168	-.088
Scheduled order processing management	.533	.240	.320	-.265	.329	-.349	-.014	-.139	-.099	.200	-.216	.086	.049	-.053	-.075	.026	-.157	.157	-.077	.113
Achieving timely response to customer references	.524	.084	-.095	-.225	.477	.068	.078	.363	-.031	.117	-.102	.069	.042	.405	-.132	.106	.120	-.040	.018	.036

Extraction Method: Principal Component Analysis.
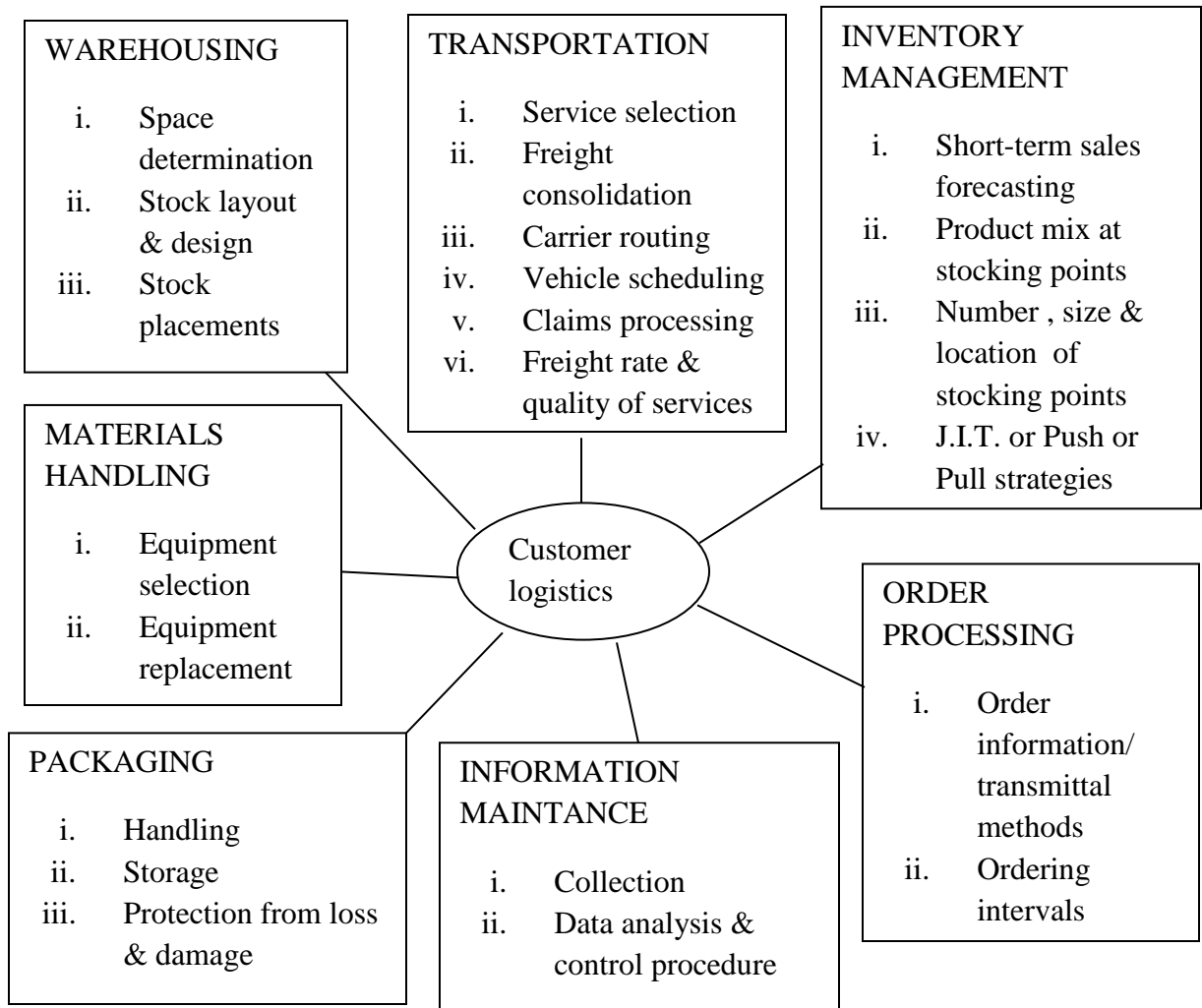
a. 20 components extracted.

Appendix VIII: Shippers Council of East Africa Importers/Exporters Member List

1	Allpacks Industries
2	Aon Kenya Insurance Brokers Limited
3	ARM Cement Ltd
4	Armaan Limited
5	Bamburi Cement Limited
6	Bidco Africa Ltd
7	Britam General Insurance Co. Ltd
8	Brookside Dairy
9	Cadbury Kenya Ltd
10	Chai Trading Co. Ltd
11	Cooper K. Brands
12	Cotecna Kenya Limited
13	Dodhia Packaging Limited
14	Dune Packaging Ltd
15	East Africa Cables
16	East African Packaging Ltd
17	East Africa Sea Food
18	East African Tea Trade Association
19	Equity Bank
20	Eveready
21	Fresh Produce Exporters Association of Kenya
22	Frigoken Ltd
23	General Printers Ltd
24	GlaxoSmithKline Ltd
25	Haco Tigerbrands E.A. Ltd
26	Heineken E.A. Import Company Ltd
27	Hotpoint Appliances Ltd
28	Intra Africa Insurance
29	Kenya Association of Manufacturers
30	Kapa Oil Refineries
31	Kenafric Industries Ltd
32	Kenya Trade Network Agency
33	Kenya Sweets Limited
34	Kibos Sugar & Allied Industries Ltd.
35	Kimfay E.A Limited
36	Kenya Tea Development Agency (KTDA
37	Louis Dreyfus Company K. Ltd
38	Mabati Rolling Mills Ltd
39	Majid Al Futtaim Hypermarkets Ltd
40	Master Mind Tobacco K Ltd
41	Mombasa Maize Millers
42	Nampak Kenya Ltd
43	Nation Media Group Ltd
44	Naushad Trading Company
45	Nestle Kenya Ltd
46	New Kenya Cooperative Creameries Ltd
47	Orbit Chemical Industries Ltd
48	PG Bison (K) Limited

49	Rai Plywoods (K) Ltd	
50	Safaricom Limited	
51	Sameer Africa Ltd	
52	Schneider Electric EA Ltd	
53	Sunripe (1976) K Ltd	
54	Tata Chemicals Magadi Ltd	
55	Transnational Bank	
56	Unga Limited	
57	Unilever Kenya Ltd	
58	Vivo Energy Limited	
59	United Nations World Food Programme	
60	Wigglesworth Exporters Limited	
61	Wrigley Company E.A Ltd.	
62	Weetabix	
63	Palsgaard (K) Ltd	

Source: SCEA (2019)

Appendix IX: Components of Customer Logistics

WAREHOUSING

i. Space determination
ii. Stock layout & design
iii. Stock placements

TRANSPORTATION

i. Service selection
ii. Freight consolidation
iii. Carrier routing
iv. Vehicle scheduling
v. Claims processing
vi. Freight rate & quality of services

INVENTORY MANAGEMENT

i. Short-term sales forecasting
ii. Product mix at stocking points
iii. Number , size & location of stocking points
iv. J.I.T. or Push or Pull strategies

MATERIALS HANDLING

i. Equipment selection
ii. Equipment replacement

Customer logistics

ORDER PROCESSING

i. Order information/ transmittal methods
ii. Ordering intervals

PACKAGING

i. Handling
ii. Storage
iii. Protection from loss & damage

INFORMATION MAINTANCE

i. Collection
ii. Data analysis & control procedure

(Source: Panda T. K. (2008). *Marketing management. Text and cases, Indian context* (second edition). New Delhi, India: Excel books, 461)

Appendix X: The World Top 50 Container Ports

The World Shipping Council labelled these as the biggest container ports in the globe and noted that they are the hubs that keep global trade moving

S/No.	Name of Port	S/No.	Name of Port
1	Shanghai, China	21	Keihin Ports, Japan
2	Singapore	22	Long Beach, U.S.A.
3	Ningbo-Zhoushan, China	23	Tanjung Priok, Jakarta, Indonesia
4	Shenzhen, China	24	New York-New Jersey, U.S.A.
5	Guangzhou Harbor, China	25	Colombo, Sri Lanka
6	Busan, South Korea	26	Ho Chi Minh City, Vietnam
7	Qingdao, China	27	Suzhou, China
8	Hong Kong, S.A.R, China	28	Piraeus, Greece
9	Tianjin, China	29	Yingkou, China
10	Rotterdam, The Netherlands	30	Valencia, Spain
11	Jebel Ali, Dubai, United Arab Emirates	31	Manila, Philippines
12	Port Klang, Malaysia	32	Taicang, China
13	Xiamen, China	33	Hai Phong, Vietnam
14	Antwerp, Belgium	34	Algeciras, Spain
15	Kaohsiung, Taiwan, China	35	Jawarharlal Nehru Port (Nhava Sheva), India
16	Dalian, China	36	Bremen/Bremerhaven, Germany
17	Los Angeles, U.S.A	37	Tanger Med, Morocco
17	Hamburg, Germany	38	Lianyungang, China
19	Tanjung Pelepas, Malaysia	39	Mundra, India
20	Laem Chabang, Thailand	40	Savannah, U.S.A

41	Tokyo, Japan	46	Santos, Brazil
42	Rizhao, China	47	Salalah, Oman
43	Foshan, China	48	Dongguan, China
44	Jeddah, Saudi Arabia	49	Guangxi Beibu, China
45	Colon, Panama	50	Felixstowe, United Kingdom

Note: The ranking was based of the data from the year 2019 survey

Source: World Shipping Council (2021)

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Nairobi, Kenya

7th February, 2020

TO WHOM IT MAY CONCERN

INTRODUCTORY LETTER FOR RESEARCH
SALOME WAMBUI RICHU - REGISTRATION NO.D80/80035/2008

The above named is a registered PhD candidate at the University of Nairobi, School of Business. She is conducting research on *"Logistics Management, Logistics Information Systems, Logistics Service Quality and Customer Satisfaction of Shippers in Kenya"*.

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the thesis. The information and data required will be used for academic purposes only and will be treated in **Strict-Confidence**.

Your co-operation will be highly appreciated.

Prof. Mary Kinoti
Associate Dean, Graduate Business Studies
School Of Business

MK/jkm

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7 February 2020

National Commission for Science Technology and Innovation,
P. O. Box 30623, 00100.
Nairobi, KENYA.

Dear Sir/Madam,

INTRODUCTORY LETTER FOR RESEARCH
SALOME WAMBUI RICHU - REGISTRATION NO.D80/80035/2008

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Date of **1 /Februa02**

RESEARCH LICENSE

**This is to Certify that Ms.. Salome Wambui Richu of University of Nairobi, has been licensed to conduc
Kisumu, Mombasa, Nairobi, Nakuru, Nyeri on the topic: Logistics management,logistics information
quality and customer satisfactions of shippers in Kenya, for the period ending :**

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4174

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NATIONAL COMMISSION
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