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Factors Influencing Logistics Service Delivery at the Port Of Mombasa - A Case Study of Kenya Ports Authority Mombasa

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Abstract: *The study assessed the various factors influencing logistics service delivery at the port of Mombasa. It took a paradigm shift from the economic performance indicators such as the port throughput. Ports are ranked according to the volume of cargo that is handled, these cargo volumes figure prominently in media and on websites of port authorities. Growth of throughput is regarded as evidence of the performance of ports, as the case of port of Mombasa (Handling a record 1million TEUs in 2014 and 1million plus in 2016), even though the use of volumes as performance indicator is widespread, there are some limitations of throughput being used as a performance indicator of a port. Logistics service delivery from the perspective of 'consumer benefits from lower transport costs' can be estimated by calculating the additional costs when a 'second best' port would have to be used; these additional costs do not have to be incurred because of the presence of the port thus, they can be regarded as the benefits of the presence of this port- the efficiency at which a port operates. This study looked at performance indicators with a logistics service delivery dimension, the efficiency at which a port operates. The general objective of the study thus was to assess the factors influencing logistics service delivery at the port of Mombasa, the specific objectives of the study being; to find out how port information technology systems; EDI, KWATOS,SWS influence on logistics service delivery at the port of Mombasa, to determine the effects of port infrastructure; cargo handling equipment and port yards on logistics service delivery at the port of Mombasa, to examine the effects of port customs processes; cargo clearance/ scanning on logistics service delivery at the port of Mombasa and to examine the influence of port staff competences; Training programs and education Levels, on logistics service delivery at the port of Mombasa. The study employed descriptive and case study research design with SPSS tool used for analysis of the resultant data. The population from which the required information was derived are the various port stakeholders such as Kenya Port Authority operations staff, Kenya Revenue Authority port staff, Study Keywords were – Logistics Service Delivery, Infrastructure to mean both hard and soft port infrastructure.*

INTRODUCTION

This chapter comprises of background information, statement of the problem, research objectives, and scope of the study. The chapter introduces the gaps in knowledge that the study intended to fill.

1.1 Background

The vast majority of research into logistics service delivery has focused on efficiency, or 'doing things right'. While some research has looked at logistics service delivery in terms of effectiveness, in almost every case it is concerned with effectiveness in economic terms, such as the rate of profitability, the studies consider measures such as rate of port throughput, terminal performance, port congestion, availability of stevedore services, and so on that are deemed to influence effectiveness and logistics service delivery, (GS1, 2014). Ports have traditionally evaluated their performance by comparing their actual and optimum throughputs (measured in tonnage or number of containers handled). If a port's actual throughput approaches (departs from) its optimum throughput over time, the conclusion is that its performance has improved (deteriorated) over time. Engineering optimum throughputs have typically been used in such evaluations, defined as the maximum throughput that a port can physically handle under certain conditions, (Talley, 2009).

In an environment in which ports have natural hinterlands and are not in competition with one another, an engineering performance evaluation methodology of comparing actual and engineering optimum throughputs may be appropriate. In an environment in which ports are in competition with one another where shippers and carriers are part of the port-selection process, a port should not only be concerned with whether it can physically handle cargo, but also whether it can compete for cargo. In a competitive environment, port time-related costs

in addition to port charges incurred by shippers and carriers are important determinants in port selection. Since port cargo remains in the shipper's inventory (assuming the shipper retains ownership), the shipper incurs time-related inventory (or logistics) costs in port; water and inland carriers also incur port time-related costs, e.g. depreciation and insurance costs on their ships and vehicles while in port. A port can reduce these time-related costs by reducing the time that the cargo of shippers and the ships and vehicles of carriers are in port, i.e. by improving the quality of its service (Talley, 2007). Performance indicators quantify and simplify information for decision-makers and other stakeholders to assess how activities and operations affect the direction and magnitude of change in terms of social economic, governance and environmental conditions (Vitsounis, 2011).

An alternative methodology to that of comparing actual and optimum throughputs for evaluating the performance of a port is one that makes use of logistics service delivery indicators. From an economics perspective, logistics service delivery indicators are choice variables (i.e. variables whose values are under the control of port management) for optimizing the port's economic objective. If the economic objective is to maximize profits, port management would select values for the port indicators that would result in maximum profits for the port. These values of the performance indicators have been referred to in the literature as performance indicator standards (or benchmarks). If the actual values of the port's performance indicators approach (depart from) their respective standard over time, the port's performance – with respect to its economic objective – has improved (deteriorated) over time. Note that the logistics service delivery evaluation methodologies, comparing actual and optimum throughputs and comparing actual values and standards of performance indicators, are consistent with one another. For example, if the port's economic objective function e.g. to maximize profits is known, the port's economic optimum throughput can be determined by substituting the standards for the performance indicators and solving (Talley, 2007).

According to Bruce Hollingsworth, the port's president and CEO, the vision of the Port of San Diego is to foster a world-class port through excellence in public service. "Driving world-class excellence is about being responsive to customer needs," he says, "strengthening our customer relationships means starting with a vision . . . We must better understand customer issues and provide excellent service in response." Ports are well known as playing an important role in multimodal transport systems and international supply chains, apart from their traditional role as clusters of economic activities. Ports engage in various activities: loading/discharging cargo onto/from vessels; providing value- added services such as labeling, packaging, cross-docking, and others; and acting as warehouse and distribution centers (World Bank, 2007). Ports add more value to shipments that are in the port area by further integrating themselves into value chains. Many ports are increasingly being perceived as integrated and inseparable nodes in their customers' supply chains. Ports play a critical role in the effective and efficient management of product and information flow in the supply chain because these transport nodes are important and indispensable. Any failure or unreliability in ports' services results in unhappy customers as a result of the disruption in the smooth movement of these flows in the next stage of the supply chain. This role of ports in the supply chain is increasingly being viewed in both the academic literature and management practices (Yeo, 2015).

It is extremely important that port efficiency is at highest possible achievable level, speed of turnaround times, cost effectiveness & inland distribution capabilities are critically important.

Notteboom & Winkelmans (2001) identified that, for the port industry, those ports that are service-oriented and customer driven and offer 'best practice' service will be the ones that succeed. This supports the need for an instrument that identifies various user types so that the level of services provided can be improved to a best practice standard. At present there are only three initiatives that focus on assessing user perspectives in port service delivery. The first effort to provide a third party effectiveness benchmarking standard for the port industry was when Germanischer Lloyd introduced a certification process for container terminals in 2008 - the Container Terminal Quality Indicator (Global Institute of Logistics, 2008); this instrument did not find widespread adoption by the port industry. The second effort has been adopted by the European Sea Ports Organization, PPRISM—Logistics service delivery Indicators: Selection and Measurement (ESPO, 2012). While this second effort developed a dashboard for all participating ports, individual ports did not get a specific understanding of their own performance against the criteria their own users consider important and relevant. This third effort is founded on the concept that an individual port will wish to benchmark its efforts against those of other individual ports against which it may compete.

The most widely used logistics service delivery indicators (PPI) is throughput volume. Ports are

ranked according to the volume of cargo that is handled, these cargo volumes figure prominently in media and on websites of port authorities. Growth of throughput is regarded as evidence of the performance of ports, even though the use of volumes as performance indicator is widespread, there are at least three limitations of throughput as PPI: Adding up throughput volumes of different commodities to one aggregated throughput figure limits the value of a comparison between ports. E.g. one ton of crude oil is very different from one ton of fruit juice, throughput volumes do not tell much about the economic impact of a port, growth of throughput volumes is mainly explained by international trade flows, and not by the performance of a port. A second PPI, that is used in a number of ports, for instance in the Netherlands and Belgium, is the value added generated in seaports, this PPI is relevant for assessing the economic importance of the port but does not say anything about the efficiency of the port. The increasing integration of ports in logistics chains has also led to attention for PPIs to assess this integration (Bichou & Gray, 2004).

Due to the commercialization of (some) port authorities and the increasing pressure from stakeholders on port development, new PPIs are introduced in the port industry. Performance indicators (PIs) have mainly three functions: they provide management information for organizations, they serve to compare performance (of organizations and other units, such as countries) and they are used to communicate with relevant stakeholders. Publicly owned organizations increasingly use performance indicators to ensure public expenditure is managed effectively and the results of public investments can be measured (De Lange & Horst 2006). Even though ship turnaround time is already discussed in academic literature for more than 30 years (Heaver & Studer, 1972), no port systematically reports the ship turnaround times. This turnaround time includes the time spend with entering the port, loading, unloading and departing. Even though this is clearly relevant for shipping lines, ports do not report turnaround time in annual reports or other publications. A connectivity index can be used to quantify how well a port is connected to overseas destinations; such a connectivity index is used for airports (Button & Stough, 2000) but does not exist for seaports. The most practical approach would be to develop an index for both overseas accessibility and hinterland accessibility. The index can be calculated based on the quality of connections (in terms of frequency and transit time) to a large number of ports and intermodal terminals in the hinterland.

Logistics service delivery from the perspective of 'consumer benefits from lower transport costs' can be estimated by calculating the additional costs when a 'second best' port would have to be used; these additional costs do not have to be incurred because of the presence of the port thus, they can be regarded as the benefits of the presence of this port. Due to the competition between ports, for instance competition between the port of Mombasa Kenya and that of Dar es salam Tanzania it can be assumed that these benefits are passed on to the port users, and finally to the consumers in the hinterland served by the port, in this instance the hinterland being the east African land locked nations such as Uganda, Rwanda, Burundi, Ethopia, DRC Southern Sudan. Even though some economic impact studies do argue along these lines, the benefits to consumers in the port hinterland are not presented explicitly. Some of the additional costs are as a result of bureaucracies within the port setting such as delays in loading and or offloading cargo, documentation processing delays by the port authorities, system breakdowns, long port customs procedures and even port staff apathy to work or just inefficiencies and lack of proper competencies. Woo & Pettit (2010), logistics service delivery measurement framework, include timeliness, reliability, lead time, cargo damage and accuracy of information along with responsiveness, flexibility and claims.

The international community has been increasing investment in projects that promote trade facilitation and improve logistics in the developing world, including in ports. In Africa, a key motivation for such projects has been a presumption that poor infrastructure and inefficient border control agencies are the major causes of extended delays in sub-Saharan Africa (SSA) ports. Based on new data and analysis, this note argues that collusion between controlling agencies, port authorities, private terminal operators, logistics operators, and large shippers is an important part of the problem. Decreasing dwell times in ports requires governments to combat collusive practices between the private sector and public authorities and recognize that large-scale investments in infrastructure are not sufficient to reduce logistics delays – (Raballand, & Refas, 2012). Hummels (2001), demonstrates empirically that increased transport time dramatically reduces trade. Without rapid import processes, trade based on assembly operations for export is impossible: delays and unpredictability increase inventories and prevent integration into global supply networks.

In the years ahead, the significance of global logistics markets will continue to increase in response to economic and social conditions- (DHL

Logbook 2014). Improving logistics performance is at the core of the economic growth and competitiveness agenda. Policymakers globally recognize the logistics sector as one of their key pillars for development. Trade powerhouses in Europe like the Netherlands, Singapore or in developing countries like Vietnam or Indonesia, Kenya included see seamless and sustainable logistics as an engine of growth and of integration with global value chains, in Kenya that can be seen by efforts made by the transport ministry to come up with a seamless movement of cargo to and from the port of Mombasa and the development of the standard gauge rail (SGR), also the modernization and expansion of the Mombasa port as well as the LAPSET project.

1.1.1 The Port of Mombasa (under Kenya Ports Authority management)

The Port of Mombasa is a state corporation under the management of Kenya Ports Authority (KPA) who is also charged with the responsibility of managing all other ports along the Kenyan coastline. KPA is one of the leading parastatal in the Country and a major facilitator of sea borne trade within the East and Central African region. Its strategic direction is guided by her vision "world class seaports of choice". The mission is to "facilitate and promote global maritime trade through provision of competitive port services". (www.kpa.co.ke, 2016). The port is equipped to handle a wide range of cargoes including dry bulks, liquid bulks as well as bagged, break-bulk including iron and steel products, motor vehicles, machinery and containerized cargo. KPA envisions itself to be World class seaports of choice with a mission of facilitating and promoting global maritime trade through provision of competitive port services. To achieve these vision and mission, KPA is guided by five key objectives which include: improving managerial, operational and financial performance; developing, maintaining and sustaining port facilities and infrastructure to meet the customer needs; promoting the Port of Mombasa as a primary gateway to the great lakes region and also serve the horn of Africa; maintaining and promoting a clean, safe working and rewarding environment; integrating the functionality of the Port of Mombasa in the development vision of the republic of Kenya and the region; and instilling sound corporate governance practices.

The current channel depth is 15m with berths at 13.5m sufficient to handle Panamax size vessels. Congestion normally occurs due to seasonal issues but has in the recent past been well anticipated and handled. Berthing is strictly on first come, documents ready basis with priority granted to Oil tankers, Containers ships, bulk carriers and other conventional ships in that order. In times of on-going and known humanitarian crises, priority berthing, labour and equipment is availed on "need be basis". In such instances, it is important that the port management is adequately sensitized in order to facilitate. (Cochran, 2016). During the annual press conference in march 2016 talking about the performance of the port, KPA managing director enumerated the gains but also mentioned some shortfalls**;** last year (2015) the port handled a total throughput of 26.732million tons of cargo against 24.875million tons recorded in 2014, reflecting an increase of 1.856 million tons or 7.5 per cent. Imports recorded a total of 22.676million tons of cargo in 2015 against 20.777million tons handled in 2014, posting an increase of 1.899 million tons or 9.2 per cent.

Exports recorded a total of 3.534million tons of cargo during the period under reviews up from 3.366million tons recorded in the corresponding period in 2014, registering an increase of 168,000 tons or 5.0 per cent. Transshipment traffic however registered a decline from 731,912 tons recorded in January to December 2014 to 523,993 tons handled in January to December 2015, reflecting a decrease of 207,919 tons or 28.4 per cent. Transit traffic increased substantially from 7.199million tons in 2014 to 7.667million tons in 2015. This is a growth of 8.2 per cent or 468,000 tons. I am also pleased to note that most of the transit countries have increased their usage of the Port. Uganda maintains her position as the biggest transit market with her cargo growing by 8.2 per cent from 5.522 million tons in 2014 to 5.977 million tons in 2015. The new nation of South Sudan maintained her second biggest user of the port with 702,531tons of cargo passing through Mombasa. This is despite her drop by 7.7 percent due to the political instability that has befallen the country. It is however Rwanda that made the biggest growth of 23.7 per cent to record 291,924 tons in 2015 up from 235,912 tons in 2014.

In terms of container traffic, the Port handled a total of 1,076,118 TEUs up from 1,012,002 TEUs handled in 2014. This reflects an increase of 64,116 TEUs or 6.3 per cent.

Although this performance falls short of our target of 1.1 million TEUs for last year by a small margin, it is a manifestation that the port traffic is growing at a fast rate. It definitely maintains our position as one of the top container ports globally. We will continue to put in place measures aimed at enhancing efficiency to reduce cargo dwell time to below four days and to reduce ship turnaround time to three days. Second Container Terminal As you

may be aware construction of phase one of the Mombasa Port Second Container Terminal is now complete and was handed over to KPA yesterday by the contractor. We are therefore in the process of making necessary arrangements to start operating the terminal under the KPA Management. The facility brings an additional capacity of 550,000 TEUs per annum to make the current Mombasa Port total container capacity to be at 1.5million TEUs. The Terminal also has 15 meters depth alongside to allow berthing of fourth generation vessels of above 6000 TEU capacity. This capacity makes us among the five biggest ports in Africa. (KPA Annual press conference March, 2016). This positive trend has necessitated the port authority to focus on several initiatives aimed at increasing efficiency and effectiveness of its services. The initiatives have been amongst others decreasing dwell times of consignments, increasing speed of discharge/ loading by modernizing equipment, increasing size of ships calling the port through dredging.

1.2 Statement of the Problem

In the 1980s and 1990s, the port of Mombasa was plagued by many problems which saw its growth stagnate. From an institutional perspective, the situation was brought about by a combination of issues including inadequate and ageing facilities, poor hinterland transport infrastructure, and inefficient cargo clearance procedures that led to slow vessel turn around and cargo off take, and chronic vessel congestion. Cargo security was also a major problem, with rampant cargo loss and damage. From a management perspective, port operations struggled under stifling bureaucracy, political interference, and rampant corruption among port officials, low employee morale and financial mismanagement (AfDB 2010, Ntamutumba 2010). These problems persist to some extent, but of greater concern is that the port currently suffers from basic capacity and operations restrictions. According to interviews with key Stakeholders, the problem is associated with a growing emphasis on productivity and the management's focus on increasing throughput with little attention to the enhancement of internal operations capacity. According to one stakeholder, the port has "until recently preoccupied itself more with image and marketing... cosmetic changes", as opposed to "seriously tackling performance and capacity issues" (Kenya Shippers council official, 2011).

The current focus for the government and the port is to improve efficiency and reduce delays in cargo transport. After coming to power in 2013, the government took immediate steps to reform the port and cut unnecessary bureaucracy and red tape, largely in response to calls from its hinterland neighbours to improve transit times (KPA Handbook 2014-15). The port has strategic importance far beyond the borders of Kenya. As the largest port in East Africa, it is the main gateway for the import and export of goods not only for Kenya but also to countries of the East African Community (EAC), the Democratic Republic of Congo (DRC), Southern Sudan and southern Ethiopia. Inefficiency of port operations and constraints on capacity are threatening the growth of Kenya and its neighbors. It is a problem which is set to get worse very quickly unless decisive action is taken now – (World Bank Economic update 2010).

The Port of Mombasa recorded a growth of 11.5 per cent in total cargo throughput handled from 22,307 thousand tonnes in 2013 to 24,875 thousand tonnes in 2014. Container traffic handled by the port stood at 1,012.0 thousand Twenty-foot Equivalent Units (TEUs) in 2014 compared to 894.0 thousand TEUs in 2013. Total pipeline throughput maintained an upward trend in 2014 (KPA statistics/KEBS Economic Survey 2015). The users of ports have complained of delays and surcharges accruing to them due to congestion caused by low productivity by ports. Gachiri (2014:20) writes that Kenya Ships Agents Association (KSAA) threatened to impose Vessel Delay Surcharge on shippers due to inefficiency at the port in the months May, June, July and August 2014 and was attributed to berth moves per hour of less than 30, the acceptable benchmark for an efficient port, low productivity of equipment, low productivity of labour forcing shipping lines to offer incentives (bribes) for work to be done. Idle ships in anchorage result in extra cost of fuel burnt and time lost due to unwarranted waiting time. The costs are usually passed on to shippers who are not in any way responsible for the delays. The reasonable action is to make the port operator pay for cost and not the shipper.

According to the Kenya Ports Authority (KPA), operator of Mombasa Port, the drawback on turnaround time was temporary and was caused by construction works of rehabilitating existing infrastructure at container terminal, expansion of exit gates and adjacent roads. It was also reported that traffic volumes at the port had increased to 122% over a period of six months against the projected 12%. The increase was mainly due to increase in transshipment of cargo passing through Mombasa Port. The other reason for the delays was attributed to heavy rains during the period in question (ISCOS Secretariat, Nov. 2014). In the period under review (2015), ship turnaround time **remained at 3.5 days** just as it was the previous

year while ship waiting time **reduced to 0.9 days from 1.0 day.** This means that ships were taking less than one day before going to berth, comparing very well with other major ports globally. However, container dwell time went slightly **up from 3.9 days to 4.8 days, t**his was caused by slow start of the single customs territory regime that was implemented last year. However this can be an indication that as KPA is working on addressing most of the bottlenecks through regular consultations among the stakeholders and the various member countries, it might also be an indicator that some of the performance indicators considered 'non-essential' or overlooked might need further investigation and scrutiny on how they influence logistics service delivery.

1.3 Research Objective

1.3.1 General Objective
The general objective of the study was to assess the factors influencing logistics service delivery at the port of Mombasa.

1.3.2 Specific objectives
1. To assess the influence of port information systems deployed on logistics service delivery at the port of Mombasa.
2. To determine the influence of port infrastructure on logistics service delivery at the port of Mombasa.
3. To examine the influence of port customs processes on logistics service delivery at the port of Mombasa.
4. To examine the influence of port staff competences on logistics service delivery at the port of Mombasa.

1.4 Research Questions
1. What is the influence of port information technology systems on logistics service delivery at the port of Mombasa?
2. What is the influence of port infrastructure on logistics service delivery at the port of Mombasa?
3. What is the influence of port customs processes on logistics service delivery at the port of Mombasa?
4. What is the influence port staff competence on logistics service delivery at the port of Mombasa?

1.5 Significance of the Study
This study examined factors influencing logistics service delivery at the port of Mombasa. The research findings seek to benefit port stakeholders by developing actionable institutional and legal framework to enhance efficiency which in turn has a ripple effect on the productivity and performance of the port, its competitive position as well as effects on economies of Kenya and her hinterland.
The port Authority (Kenya Ports Authority) may use the findings of the study to improve the business climate and reduce the cost of doing business by their clients. The field of academia can also use these information for further research on other factors influencing logistics service delivery/ performance indicators that are considered non-traditional and new ones that are developed. All these are to go a long way to benefit port stakeholders in one way or another.

1.6 Scope of the Study
The study targeted Port Stakeholders who have various expertise in the maritime and supply chain industry, this included Kenya Ports Authority, Container Freight Stations, Kenya Revenue Authority and Shipping Agents knowledgeable of the Port of Mombasa and comparative ports in the Maritime Industry.

LITRATURE REVIEW

2.1 Introduction
The objective of this research was to assess factors influencing logistics service delivery of Mombasa port along efficiency of cargo movement in and out of the port. This review looked at related studies on issues such as cost, efficiency of port services and delays among the factors influencing logistics service delivery.

2.2 Theoretical Framework

The research was guided mainly by Personal construct theory by Borman and Harter's Competence Theory as well as the DEA model (Data Envelopment Analysis model); the main focus being linked to performance of individuals and holistic approach to performance and service delivery in an organization.

2.2.1 Borman Personal constructs theory (1987)
Personal construct theory by Borman (1987), supported by empirical evidence, states that people develop theories of performance based on their experiences and perceptions of what it takes to be successful in a job. These perceptions can differ significantly between people, resulting in what Borman refers to as "folk theories of work performance." The performance theories of inexperienced managers tend to be one-dimensional. Statements such as "The key to this (sales) job is thinking on your feet with customers" or "Show me a person who comes to work on time and I'll show you a good customer" reflect simplistic, one-dimensional views of performance

(Borman, 1987, p.310). With growing experience of managers, their personal performance constructs tend to become more sophisticated and multidimensional. Personal performance constructs have been shown to vary significantly among managers, even within relatively homogeneous samples such as a unit of US Army officers (Borman, 1987). They have also been shown to differ considerably from the performance theory espoused by the organization (Longenecker, 1987).

2.2.2 Harter's Competence Theory

According to Harter; in perceived competence**,** people do not just act, they also reflect upon their actions. Through these reflections they develop a perception of themselves. One of the aspects of these perceptions concerns their own competence, their capacities in performing particular activities. Perceived competence is that part of the self-concept that contains the perception and evaluation of the person's own competences in different fields. Perceived competence has an important function in the interaction with the environment. It gives information about which tasks and activities are within the possibilities of a person, which interactions and activities are worth trying.

In adults, perceived competence is not one homogeneous construct, but is divided in specific perceived competences for different skills and fields. A global perceived competence could be described as a general perception of one's own competence to cope with different aspects of life. Perceived competence can thus be described as the whole complex of beliefs and cognitions people have about their own capacities. Bandura (1981, 1982) assumes that perceived competence is determined by two processes: first the selection and second the processing of information. This information may consist of one's own previous achievements, characteristics of the tasks performed, information about performances of others and the characteristics of these others and the reactions of others to successes and failures and performance attempts in general.

There are individual differences in the way available information is selected and used to form a perceived competence (Bandura, 1982; Otto, 1989). The differences depend upon personal ideas and theories about what causes one's achievements (Coopersmith, 1967; Heckhausen,1985). These personal theories are influenced by past experiences with achievement-outcomes and by information from others. People tend to attribute in such a way that their perceived competence is confirmed (Bandura, 1982; Taylor & Boggiano, 1987). There thus exists a circular influence between ideas about one's own competence and attributions. This raises a 'chicken-egg' question: "what came first, the perceived competence or the attribution preference?" The same question can be asked with regard to the selection of information. People with a high perceived competence tend to forget information about their own failures more readily, evaluate similar performances as more positive, and are less sensitive to evaluations of others (Burns, 1979). This selectivity in turn has a positive influence upon perceived competence.

Apparently, people have a kind of theory or perception of their competence and use rules for selecting and processing information about their own competence in such a way that this theory or perception is confirmed. Optimally, formation of perceived competence requires a complex cognitive process. It appears however that in general people use only a small amount of information and use simple rules which are not always rational (Bandura, 1982). It can be concluded that the perceived competence of an individual is determined by the information that is available and by the individual style of selecting and processing this information. A factor which is closely related to this individual style of selecting and processing is the attribution style -the preference for internal, stable and controllable attributions- of an individual. Theories about attributing are discussed in the next section.

2.2.3 Data Envelopment Analysis (DEA Model)

Data envelopment analysis (DEA), occasionally called frontier analysis, was first put forward by Charnes et al., (1978). It is a performance measurement technique which, can be used to evaluate relative efficiencies of decision-making units (DMU's) in organizations. DMU is a distinct unit within an organization that has flexibility with respect to some of the decisions it makes, but not necessarily complete freedom with respect to these decisions. Since the technique was first proposed much theoretical and empirical work has been done. Many studies have been published dealing with applying DEA in real-world situations. Obviously there are many more unpublished studies, e.g. done internally by companies or by external consultants.

The original motivation for DEA was to compare the productive efficiency of similar organizations, referred to as DMUs. The problem of assessing efficiency is formulated as a task of fractional programming, but the application procedure for DEA consists of solving linear programming (LP) tasks for each of the units under evaluation, (Martic *et al*, 2009). The utmost important tenets in any business is the tenet of efficiency, in which the preeminent possible economic influences/ outputs are achieved with as little economic trade-offs as possible. Efficiency can be arrived at when desired goals are ac-

hieved with the minimum use of the available resources. To assess the relative efficiency of a business unit, it is critical to take into account the conditions and operation results of other units of the same kind and to determine the real standing of the results of such a comparison, (Martic, 2009).
The DEA is data-oriented as it effects performance evaluations and other inferences directly from the observed data and with minimal assumptions. The efficiency of a Decision Making Unit (DMU) is measured relative to all other DMUs with the simple restriction that all DMUs lay on or below the extreme frontier. DEA is a non-parametric method as it does not require any assumption about functional form such as regression equation, a production function, among others. It is a methodology directed at the frontier rather than at central tendencies. While statistical procedures are based on central tendencies, DEA is a process of extremities. DEA analyzes each DMU separately and calculates a maximum performance measure for each unit. DEA has become one of the most popular fields in operations research, with applications involving a wide range of context (Thanassoulis, 2001).

DEA links service units in view of all resources used and services provided, and ascertains the most effectual units or best practice units such as branches, departments, individuals and the inefficient units in which real efficiency progresses are possible.
Specific variations in the inefficient service units are acknowledged, and management can in turn implement to attain probable investments located with DEA. These variations would make the efficient units performance methodology the superlative practice unit performance, in addition, DEA assesses the amount of additional service an inefficient unit can provide without the need to use additional resources. Organization receives information about performance of service units that can be used to help relocation system and managerial expertise from better-managed, relatively efficient units to the inefficient ones – this in turn results into improving the productivity of the inefficient units, reducing operational costs and increasing cost-effectiveness.

2.3 Conceptual Framework
The research intended to find out factors influencing logistics service delivery at the port of Mombasa, this was by way of critically examining the theoretical and empirical grounds for efficient and effective logistics service delivery and its implication for the port of Mombasa (Kenya Ports Authority).

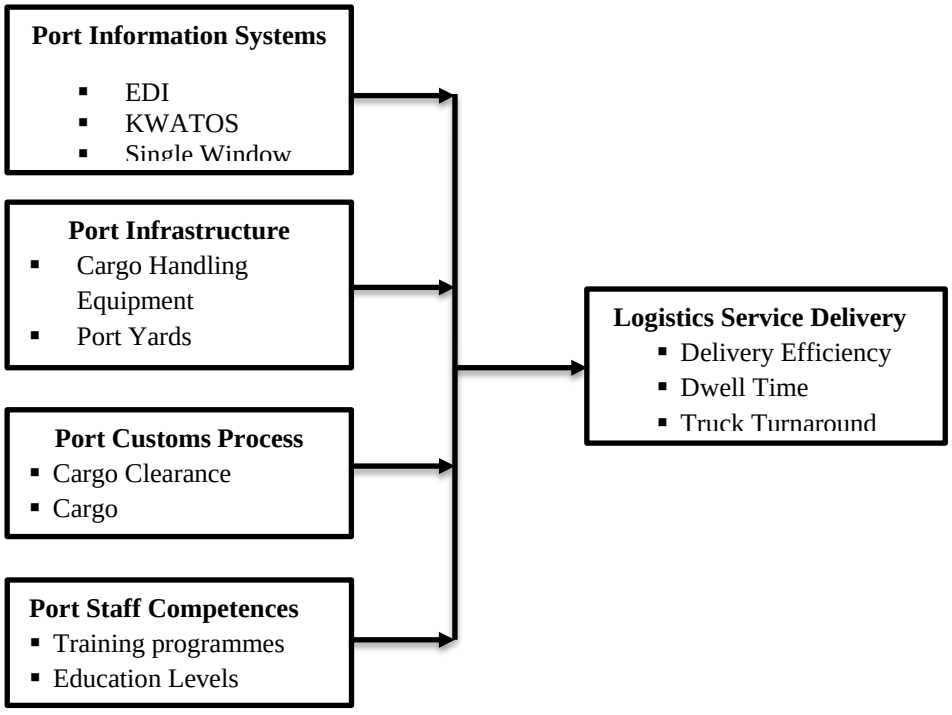

Figure 2.1 Conceptual Framework
Source Researcher (2016).

2.4 Review of Literature on Variables

2.4.1 Port Information System

According a Swedish maritime expert Willand Ringborg, failure by the region to reduce, simplify and standardize its trade documentation has turned it into the most expensive region in the world to conduct import and export business from. According to the recent World Bank report, it takes shippers an average of 42 days to import their cargo and 35 to export compared to North Africa where it takes 28 and 24 to import and export respectively. Experts say that additional day of delay in shipping is equivalent to 0.8 per cent of the tariff, which means that importers in the region pays almost double to import compared to those in North Africa.

"Trade transactions costs due to unnecessary procedures also accounts for between one and 15 per cent of the import value according to some studies. So it is imperative that the region adopt simple commercial framework for doing regional and international business in order to cut costs," Ringborg & Sanga (2009).

According to OECD (Organization for Economic Co-Operation and Development) Programme of Research Transport Logistics; shared solutions to common challenge (2002), noted that the use of ICT has improved the exchange of supply chain information, leading to the development of integrated production and logistics management systems and has thereby improved supply chain performance in many ways. Commercial transaction flow and physical distribution are separated. Electronic Data Interchange (EDI) has dramatically changed the ways in which commercial transactions are managed. These systems use computer links instead of hard-copy paper which required extensive time to transfer and often contained errors. The advantages of these ICT-supported information exchange systems include: increased speed and reliability, increased storage capacity, increased transparency, reduced transaction costs and increased worldwide coverage. The strategic use of ICT is critical for realizing advanced logistics systems; On the other hand, the high pace of change in this area poses a challenge.

The increasing use of ICT in logistics resulting in fast, flexible development of transport on a global scale may pose a threat to achieving sustainability unless the policy requirement is rigorously defined. Many governments are lagging behind in the development of a policy framework that could promote the effective use of ICT to the benefit of transport efficiency and sustainability. Alongside the huge investment in infrastructure and equipment at the Port of Mombasa, upgrades to the information and communications technology (ICT) systems have been a vital part of the process. (KPA, 2014). In 2000, KPA embarked on a 10-year ICT strategy that resulted in a fully integrated enterprise resource planning (ERP) system being launched in 2002 using systems applications and products (SAP) software. Fully web enabled, it included modules to handle human resources management, financial planning and control, material management, plant maintenance, project systems management, payroll and travel management.

Kenya Ports Authority (KPA) has continued to push on with its computerization programme launched in 2001, aimed at automating key port services though it has been dogged with delays and breakdowns when it is interfaced with those of Kenya Revenue Authority (KRA). The computerization programmes include the installation of the Systems Application Product (SAP) that has integrated all functions in KPA. The authority also implemented the Electronic Data Interchange (EDI). In the last part of its first phase in its computerization plan, KPA also implemented a system called Through Very Small Aperture Terminal (VSAT) to connect KPA headquarters with Inland Container Deports (ICD). Sanga (2009). In 2008, the port entered the second phase of its ICT strategy by unveiling the Kilindini Water Front Operating system (KWATOS). This allowed key port operational areas to be automated including container, conventional cargo and marine operations in the Port of Mombasa as well as operation of the Nairobi and Kisumu inland container depots. These two developments were vital steps on the way to becoming an e-port.

The ultimate goal of turning the port into an e-port has however, was hampered by teething problems that continued to be encountered when interfacing this programmes with those of KRA but were later resolved. "Interface between KWATOS and SIMBA system is complete and there is no problem as EDT (Electronic Data Transfer) is flowing as required. On the interface between KRA's Cargo Management Information System (CAMIS) and KWATOS we are conducting the test," (KPA, 2009). Further investments in 2010 and 2013 led to the upgrading of both the physical and functional aspects of the systems. The functional upgrade to the SAP system included new modules for a general ledger, financial supply chain management (FSCM), employee and manager self-service (ESS and MSS) and supplier relationship management (SRM). These upgrades were launched in March 2013, allowing staff to produce and deal with documentation and paperwork much more quickly.

Staff training was a key part of the implementation. All workers now have access to terminals throughout the port. They can access their own human resources (HR) information and pay slips online as well as requesting leave. Managers can approve leave in the same way and can access reports promptly via the portal. Other areas such as performance management will be added in the near future. Ultimately, these upgrades allow port operations to proceed with greater efficiency and productivity, with the online portals opening the way to improved decision-making, transparency, traceability and visibility.

Other port information system that KPA also initiated was the Single Window System (SWS), for cargo processing. On 31 October 2013 the Kenya Trade Network Agency (KenTrade) launched the Kenya National Electronic Single Window (KNESW) system two months ahead of the government deadline of 31 December. The KNESW system is part of the Kenya Vision 2030 initiative to facilitate trade, customs clearance and competitiveness and to reduce the cost of trade, thus promoting the economy. Work on the single window was begun initially by the KPA and the Kenya Revenue Authority (KRA), but it soon became a government project because of its wide-ranging implications for the nation's trade and logistics sectors. The KNESW single window is based on the highly successful Singapore single window system. Introduction of the single window system has brought huge improvements in efficiency across the port and beyond. The system provides Kenya's trading community and stakeholders with a single point of access for all external trade-related services. Single Window main features are: Arrival notices, electronic declaration submission, payment, electronic manifest submission, permits and licenses, access to all trade-related procedures and updates.

Importers now have to submit only one manifest, online, and clearance can be obtained much faster, so that cargo can be released from the port or other holding areas sooner than was previously possible. Eliminating the former inefficiencies from the clearance process will dramatically reduce the cost of cargo handling because of the reduction in delays. These cost savings can be passed on to the importer or exporter and boost trade throughout the country. Perhaps the most pertinent part of the process was engaging the many stakeholders in the pursuit of a single goal to the benefit of every single stakeholder and every cargo handler in Kenya. It marks the beginning of a new growth in trade within the country **(**KPAHB 2014-15).

2.4.2 Port Infrastructure

Jacobs in his article themed 'The Role of Port Infrastructure and Logistics in Global Networks' notes, "The introduction of these giant vessels has consequences for seaport infrastructure. Not every port has the capacity to handle these giant ships in terms of navigable port channels and quay wall sizes. Port infrastructure is characterized by huge investments and large sunk costs, often reflecting investment decisions in the past and leading to sub-optimal locations in the present. Many ports are thus spatially and environmentally constrained to accommodate infrastructure upgrading and expansion as they are often located near dense urban areas. While major port expansions have been spatially planned away from urban cores (e.g. Rotterdam's Second Maasvlakte), much of the offloaded goods still need to be funneled through already congested metropolitan infrastructure corridors towards distribution centers and final markets in the hinterland. For this reason logistics activity and distribution are increasingly being developed further inland and away from the congested ports, in turn making their intermodal connectivity with the ports and the coordination between various transport intermediaries of upmost importance (Notteboom & Rodrigue, 2005; Van der Horst & De Langen, 2008).

Proper maintenance and timely replacement of the port's large fleet of equipment is vital for the smooth operation of the port. Everything from the smallest component to major items like gantry cranes and tugs must be working correctly for the port to serve its customers best; and that is no easy task for this dedicated and conscientious segment of KPA employees. The Engineering Division has three main areas of operation: container terminal equipment; conventional terminal equipment; and marine craft. (KPAHB 2014-15). The KPA operates over 400 items of large cargo handling equipment. The container terminal equipment includes: ship-to-shore (STS) gantry cranes, rubber tyred gantry (RTG) cranes, two rail-mounted gantry (RMG) cranes serving the container yard, reach stackers, terminal tractors, trailers, over 98 low bed trailers, empty container handlers. The conventional quay equipment includes: Three mobile harbour cranes, over10 heavy duty and 10 light duty fork-lift trucks, five mobile cranes six portal cranes (these are being phased out and replaced with mobile harbour cranes), trailers. In addition, RTG cranes from the container terminal can be moved around if required. (kpa 2014-15).

Management of port terminal and yard operations is essentially the allocation and scheduling of the expensive resources such as berths, quay cranes, storage space, yard cranes, and container carriers.

Each of these resources plays a crucial role in the linking processes in a terminal, (Chen 2001). Port yards play an important role in international cargo transportation by serving as an intermodal interface between the sea and the land carriers. There are various performance guides of port yards from different viewpoints, but ultimately the port and terminal performance is measured by its service level to the customers.

Port operators do characteristically look at two objectives; to minimize the vessel turnaround time, which is a measure of the service level of a terminal to its customers, i.e. the shipping companies, and also to maximize the throughput of the terminal which is a measure of the productivity of a terminal (Zhang 2001). In order to achieve acceptable performance, a number of assessments have to be made at the operational level to manage the involved operations and all these decisions influence each other, for example, decisions on the storage locations of containers directly influence the allocation of yard cranes, it also indirectly influence the efficiency of logistics service delivery at the yards, (Davis, 1999).

Yard planning allocates proper storage locations for the inbound cargo, the purpose of which is to integrate all activities within the terminal area into a seamless whole, though not conclusive, the attitude from most port operators is that it is yard planning that is the crucial to efficient logistics service delivery to clients as well as terminal operations. It is also important to note that logistics planning is also crucial for a port as it harmonizes the allocation of resources for handling cargoes, such as yard cranes and other machines i.e. reach stackers, and consequently called Resource allocation in some literatures - normally logistic plans are decided days beforehand, (Yun, 1999).

2.4.3 Port Customs processes

Achieving a smooth and efficient logistics delivery at the port only reduces the cost of import but is vital to producers to be able to participate in global production circles and eventually move into new business opportunities. Improving logistics service delivery includes several dimensions: enhancement of human resource and machine operation capabilities, the development or rehabilitation of the physical infrastructure, and the streamlining of trade related procedures (customs). Cochran (2016), Gives an overview of a standard customs procedure as follows; Customs clearance formalities start with shipping line lodging ship's manifest with customs 48hrs to ship arrival. Upon approval of manifest by customs, the Clearing agent is able to lodge an entry for a consignment within the ship. The entry is released by customs online after payment of the various duties. If exempted from duty, original exemption letter must be verified physically by customs at port before getting final release. Upon clearing with customs, the agent proceeds to settle port charges and release consignment with other regulatory authorities. Once completed, the port gives a "Pick up Order"/PUO which is effectively the gate pass to allow cargo exit from port. The whole clearing process takes on average 3 working days hence possible to have all clearance in place by time of ship arrival to facilitate direct delivery upon discharge.

According to P.J Shah a veteran with over three decades experience in cargo clearance at the port of Mombasa, in his presentation 'Documentation and Role of Cargo Interveners In Port Operations**'** There are various types of goods that pass through the Port of Mombasa i.e. local imports, local exports, transit imports, transit exports and transshipment. Each type of cargo is covered by different types of shipping documents and undergoes different clearance processes.

Clearing goods through the various interveners involved in the process i.e. Kenya Ports Authority (KPA), Kenya Revenue Authority (KRA), Kenya Bureau of Standards (KEBS), Kenya Plant Health Inspectorate Services (KEPHIS), Port Health Authority (PHA), Dairy Board of Kenya (DBK), National Biosafety Authority (NBA), Anti-Counterfeit Agency (ACA) and Port Police and forwarding them to their final destination is not only a very complex but also lengthy and cumbersome exercise Shah, (2012).

For scanning the container is loaded on a truck and passed through the scanning machines either in the port or at the Container Freight Station. If the scanning image shows any irregulaties, customs will usually proceed to do verification. For customs verification containers have to be placed down, opened and stripped. If verification is to be performed at a Container Freight Station, all cargo has to be transferred to the respective Container Freight Station by the Container Freight Station operator. A verification report, which must tally with the customs declaration, is inserted on the Tradex – Simba system by the Customs Officer. If the results of the designated verification procedure indicate any abnormalities then the customs will usually proceed for 100% verification. Any discrepancies on value-quality-quantity or the finding of any undeclared items will lead to customs raising an offence for which the outcomes are varied and guided by the customs management act. Aeromarine.co.ke/customs clearance (2016).

If cargo was not verified / scanned or if the result of this was a clean bill, customs can issue a customs release order once it is confirmed that the delivery order obtained earlier is reflecting online

(indicating the clearing agent for which the cargo was checked by customs is indeed to be released to this clearing agent).

In conclusion the above processes have a bearing on the overall logistics service delivery from financial perspective that being the throughput levels, as well as the efficiency of logistics service delivery, exact causes for the delays and bureaucracies causing delays need to be looked into and ironed out. There is no port in the world that is going to realize improved performance in terms of efficiency or even through put without properly realigned and streamlined customs processes, and doing away with bureaucracies of documentation processing.

2.4.4 Port Staff Competences

One of many definitions of competencies is "a descriptive tool that identifies the skills, knowledge, personal characteristics, and behaviors needed to effectively perform a role in the organization and help the business meet its strategic objectives" (Lucia & Lespinger, 1999). Traditionally, Hayes (1980) defined competency as generic knowledge, motives, traits, self-image, and skills related to superior performance on the job. Pinto & Walker (1978) stated that competencies are the specific skills, knowledge, abilities, and other attributes, such as values and attitudes, necessary for the effective performance of activities. Human resource development for regional strategic industries is an emerging emphasis for the development of industries that have growth potential, the port of Mombasa is no exception if better performance is to be realized and achieved, as well as remaining competitive in the region since there are other ports coming up such as the port of Dar es salam, Tanzania.

In the current competitive business world, knowledge and information technology are key factors in national and regional development. For many years now, Korea has been in the process of transforming itself from an economy that relies on material capital to one that relies on human capital, and from a physical labor base to a knowledge-based society. Under these circumstances, human resource development (HRD) based on knowledge and information is needed for the new industrial structure and economic development. It does so by developing employees' competencies (Park, 2002), - Ahn & McLean (2008). Several competencies, such as system management, services delivery, customer care, machine operations multi skills, and globalization, need to be benchmarked because the port of Mombasa in its quest to be a sea port of choice is currently competing with the other top ports in Africa such as Durban and the rest of the world, as much as the port did handle one million TEUs (2014), it fell short of its target of 1.1million, and that throughput is less capacity compared to other container ports. The organization has to provide a training and selection system that ensures the know-how needed for work performance in order to develop employees' competencies.

According to International Journal of Shipping and Transport Logistics (2012), nowadays, ports have transformed from a purely ship-shore interface into logistical platforms where logistics-related activities occur, and are also important clusters of economic activities. The role of seaports is therefore essential since these transport nodes are important and indispensable for the effective and efficient management of flows of products and information in the supply chain. With this new role, it is critical that port personnel possess necessary competencies to contribute to port efficiency and turn the port into an effective supply chain partner. This research issue is explored through a conceptual model of competencies constructed based on thorough literature review and in-depth interviews and validated by a survey with port personnel both in Singapore and Vietnam. As a result, important managerial insights are drawn to the design and implementation of human resource development policy for ports. The port of Mombasa, under the management of KPA on this front is using its Bandari College department to take employees through various trainings related to their jobs. The KPA management also fired personnel who had fake certificates in 2015 in a bid to professionalize the port, it has also granted employees willing to further their studies a humble time to pursue the same for the overall good and benefit of the port.

2.4.5 Logistics service delivery

Logistics service delivery from the perspective of 'consumer benefits from lower transport costs' can be estimated by calculating the additional costs when a 'second best' port would have to be used; these additional costs do not have to be incurred because of the presence of the port thus, they can be regarded as the benefits of the presence of this port. Due to the competition between ports, for instance competition between the port of Mombasa Kenya and that of Dar es salam Tanzania it can be assumed that these benefits are passed on to the port users, and finally to the consumers in the hinterland served by the port, in this instance the hinterland beng the east African land locked nations such as Uganda, Rwanda, Burundi, Ethopia, DRC Southern Sudan. Even though some economic impact studies do argue along these lines, the benefits to consumers in the port hinterland are not presented explicitly. Some of the additional costs are as a result of bureaucracies

within the port setting such as delays in loading and or offloading cargo, documentation processing delays by the port authorities, system breakdowns, long port customs procedures and even port staff apathy to work or just inefficiencies and lack of proper competencies.

Woo & Pettit (2010) logistics service delivery measurement framework, include timeliness, reliability, lead time, cargo damage and accuracy of information along with responsiveness, flexibility and claims. The international community has been increasing investment in projects that promote trade facilitation and improve logistics in the developing world, including in ports. In Africa, a key motivation for such projects has been a presumption that poor infrastructure and inefficient border control agencies are the major causes of extended delays in sub-Saharan Africa (SSA) ports. Based on new data and analysis, this note argues that collusion between controlling agencies, port authorities, private terminal operators, logistics operators, and large shippers is an important part of the problem. Decreasing dwell times in ports requires governments to combat collusive practices between the private sector and public authorities and recognize that large-scale investments in infrastructure are not sufficient to reduce logistics delays – (Raballand & Refas, 2012). Hummels (2001) demonstrates empirically that increased transport time dramatically reduces trade. Without rapid import processes, trade based on assembly operations for export is impossible: delays and unpredictability increase inventories and prevent integration into global supply networks.

Cargo Dwell Time at the Port of Mombasa: Dwell time is measured by the time that elapse from the time cargo offloaded at the port to the time goods leave the port premises after all permits and clearances have been obtained. According to Port community charter, monthly report (Feb, 2015) Port dwell time drastically reduced from 5.17 days (123.96 hours) to 4.54 days (108.94 hours) in the month of February 2015. Nevertheless, the figures were still above the benchmarked cargo dwell time of 2 days (48 hours) at the port of Mombasa. KPA, in collaboration with other stakeholders was to achieve a dwell time below 3 days (72 hours) within 120 days after signing the Port Community Charter in June 2014. On the contrary, this has not been achieved yet. More importantly, there is need to improve port operations, speed clearance of cargo processes by all the stakeholders involved as well as cargo pick up from the port.

2.5 Empirical Review

Empirical research has shown that by efficiently and effectively reacting to customers' demands timely, based on their needs as well as responding to their complaints, an organization is bound not only guard itself against loss of business but also, to get the goodwill from the other stakeholders thereby improving their productivity and service delivery efficiencies which in turn help organizations leverage their operations and drive them towards becoming totally customer driven. According to OECD (2002), transport logistics; shared solutions to common challenges, use of information systems o lead to improvement in performance of logistics. Some of the advantages of ICT supported information exchanges systems include; increased transparency, reduced transactional costs, increased speed and reliability as well as increased worldwide coverage. Hollweg (2009), in measuring regulatory restrictions in logistics services, noted that customs procedures include time consuming, documentation, customs inspection and lack of coordination in clearance. This can also be related to logistics service delivery or logistics performance using the logistics restrictive/ performance index.

2.6 Critique of existing literature relevant to the study

Most of the authors have written articles on logistics service delivery and various performance indicators, but there is very little literature in regards to the new emerging trends such as viewing the business process at the port in a holistic way. Several studies have been conducted to look at logistics performance such as Stank, *et al* (2003) Logistics Service Performance: Estimating Its Influence on Market Share which looks at the interactions midst scopes of logistics service performance such as operational, relational, and cost performance, also customer satisfaction, but there are still gaps when it comes to analyzing the various business units that are determinants to service delivery outputs. Other studies have also taken the path of analyzing logistics service delivery in terms of supplier – customer relationships, such as loyalty dependency (Davis, 2006), but fail to address the vital units that might affect the optimization of service levels. The Supply chain concept of logistics service delivery as not been covered extensively. In addition new performance indicators that measure logistics service delivery on service delivery fronts as opposed to financial fronts have limited reviews, what has been done is not enough. In this research, the researcher will look assess factors influencing logistics service delivery taking into account logistics service delivery as a performance measure

of logistics service delivery as opposed to throughput.

2.7 Research Gaps

The ability of port of Mombasa to perform more effectively and efficiently to ensure cargo movement as well as logistics operations in a ports entire chain is enhanced is not only vital to the Kenyan economy but also to the landlocked economies that she serves. There is increasing demand for port services this can be seen by the statistical data showing steady rise in the cargo volumes handled at the port of Mombasa in the past 3-5 years, with more projections made. Yet the rate of operations such as dwell times and turnaround times has stagnated or increase, showing deteriorating service levels/ performance or inability to formulate ways to enhance operational efficiencies to cope with the increased cargo volumes.

Many researchers and authors have written on logistics service delivery and took into account the various logistics service delivery indicators. The indicators have been adopted by ports, in most cases with the assistance of the World Bank but it is high time individual port authorities realized that as much as ports are striving to operate at international standards, there remain a unique phenomenon to each port based on their geographical locations and workforce, infrastructural composition. The ports and researchers must thus start formulating and look into new performance measurement indicators that have not been traditionally thought of as having major impact on logistics service delivery, this calls for a paradigm shift of performance being based on cargo throughput only as the case of Mombasa port. More researches need to be done to cover logistics service delivery in a holistic way; covering the whole operations chain and not only throughput to operate efficiently.

2.8 Summary

From the available literature it is clear that logistics service delivery cannot only be based on throughput measures. The overall port operations chain has to be aligned towards the achievement of increased efficiency, this calls for various actors in the port industry to ensure that they manage each indicator area with the aim of reducing logistical related costs, increase logistical service delivery levels, times aspects too. Increased cargo throughput does not necessarily translate into improved performance if viewed from a logistical efficiency and supply chain perspective, thus greater need to have not only financial performance views but also operational, logistical and supply chain perspectives of performance.

Logistics performance which is a new indicator to logistics service delivery (additions for emphasis) is strongly associated with the reliability of supply chains and the predictability of service delivery for producers and exporters. Supply chains are only as strong as their weakest links and are becoming more and more complex, often spanning many countries while remaining critical to national competitiveness (Arvis, *et al,*. 2014).

METHODOLOGY

3.1 Introduction

This chapter looks into the research methodological approach used in the study and encompasses the research design, population sample and size, sampling technique, instruments, pilot test, data collection procedure, data processing and analysis techniques.

3.2 Research Design

According to (Creswell, 2014), research designs are types of inquiry within qualitative, quantitative and mixed methods approaches that provide specific direction for procedures in a research design. According to (Cooper and Schindler, 2003), a descriptive study is concerned with finding out the what, where and how of a phenomenon. Descriptive research design was chosen because it enables the researcher to generalize the findings to a larger population. Other scholar such as (Denzin & Lincoln, 2011), refer to them as strategies of inquiry. A descriptive study is concerned with finding out the what, where and how of a phenomenon. Descriptive research design was chosen because it enables the researcher to generalize the findings to a larger population. The type of research design the study intends to adopt is a descriptive research design. The research intends to gather quantitative and qualitative data that describes the various situations as they are.

3.3 Target Population

The study targeted Port Stakeholders, various experts in the maritime and supply chain industry, this included Kenya Ports Authority, the Container Freight Stations (CFS) under KPA nomination who are 15 in number, Kenya Ships Agents Association – representing 36 ships agents operating at the Port of Mombasa and comparative ports in the Maritime Industry. The composition had a competitive business drive that makes them aware of the world industry trends and best practices. At the port of Mombasa clients either nominate their cargo to a CFS or where a client fails to do so the port authority will nominate the clients' cargo to a CFS from where their clearing agents/ the clients will

collect the cargo from, other shipping lines that offer multimodal transportation also do clearing of cargo at the port for their clients - thus the targeted groups had the relevant information regarding the problem/topic to investigated.

Table 3.1 Showing population

Target Group	Target Pop. Averages
Kenya ports authority; Operation Officers	400
Kenya revenue authority	40
CFS Staff under KPA nomination	450
Shipping agents (KSAA)	360
TOTALS	**1250**

According to Peers, (1996), when dealing or using smaller groups of people to make inferences about larger populations views, it is vital to pick a larger sample to deal with nonresponsive bias which is essential. As per Mugenda and Mugenda (2003), the preference is of having a sample size of at least 125 respondents or 10% of the targeted population was employed in getting the sample size for the study; Port stakeholders were used as the target population as it brought together various players in the maritime industry (port) with varied backgrounds who continuously work with the aim of ensuring efficient and effective logistical service deliveries at the port.

3.4 Sampling Frame

Sampling frame is a list of all the items from where a representative sample is drawn for the purpose of a study (Nachmias and Nachmias, 2008). In this study, it was Kenya Ports Authority operational staff, Kenya Revenue Authority port staff, Container Freight stations under Kenya Ports Authority nomination and shipping Agents working at the port of Mombasa. These groups are the main people who have direct contact with the port operations and are affected in one way or another with the service delivery levels at the port.

3.5 Sampling Size and Sampling Technique

The sampling technique be used was stratified random sampling. In the technique, the researcher identified his target population then defined the criteria for stratification in this case it was association. The population (stakeholders) was then divided into different groups (strata), the respondents were chosen randomly within the different strata to give all such subsets of the frame an equal probability. The strata was formed based on members' shared attributes or physiognomies. Lastly, the researcher randomly selected respondents from each stratum according to the sample size.

Table 3.3 Sample Size and Target population

Target Group	Target Population	Sample Size	Population Percentages
Kenya ports authority; Operation Officers	400	40	32
Kenya revenue authority	40	4	3
CFS Staff under KPA nomination	450	45	36
Shipping agents (KSAA)	360	36	29
TOTALS	**1250**	**125**	**100**

3.6 Data Collection Methods

According to (Creswell, 2014) data collection is a way of collecting information from the selected entities in or of a study. Data gathering methods or techniques are the procedures used by a researcher to gather information pertaining to the study and aimed at substantiating or contesting some facts. The researcher employed the use of questionnaires and interviews, which was administered to the respondents, bearing in mind their literacy level and their availability.

3.6.1 Questionnaire

This comprised a series of questions and other prompts for the purpose of gathering information from respondents. Questionnaires was used because it is a more efficient and economical tool for descriptive research as well as due to the ease of analyzing them, and most statistical analysis software can be used to process them. The questionnaires were administered to the various stakeholders involved in the study – this included operations staff and those in management levels.

3.6.2 Interview
The interview was semi- structured in a sense that in as much as the interview was unstructured in nature, questions presented in the questionnaires will be asked. The interviews were tape recorded then analyzed later. The targeted population for interview was restricted to the operations and transport managers in the various groups.

3.7 Data Collection Procedure
The researcher collected data from the field using questionnaires as the preferred instrument; questionnaires were self-administered to the selected port stakeholders in operational and management levels, additional secondary data was obtained from Ports annual reports, past studies and various reports.
The questions were prepared, both closed and open ended, pre-tested before being self-administered to the respondents. The self-administered questionnaire was collected same time from respective respondents for analysis.

3.8 Pilot Test
One of the advantages of conducting a pilot study is that it might give advance warning about where the main research project could fail, where research protocols may not be followed, or whether proposed methods or instruments are inappropriate or too complicated. (Teijlingen & Hundley, 2001). In the words of De Vaus (1993). "Do not take the risk pilot test first." These are important reasons for undertaking a pilot study, but there are additional reasons, for example convincing funding bodies that the research proposal for the main study is worth funding, developing and testing adequacy of research instruments and identifying logistical problems which might occur using proposed methods. Thus, pre testing will relates to the importance of validity, acceptability, reliability, appropriateness, interpretability, responsiveness and precision as measure of the representativeness and completeness of an instrument, if research is to be well inclusive (Peter, 1981; Peter & Churchill, 1986)
One month before the onset of the study, the questionnaires were pre-tested on 5 respondents who are port stakeholders and were part of the study target groups, to ascertain the validity and reliability of the research. Pre-testing was restricted to the respondents picked for the pre-testing purpose, this allowed for easy personal de-briefing of each respondent by the researcher. Faults and inadequacies that were identified in this instrument at this stage was corrected during time of the study.

3.8.1 Data Validity
Validity is the extent to which the outcomes are factual, that is the success of the measurement scale in gauging what was set out to be measured (Mbugua, 2010). In validating the questionnaire, a pilot test was conducted. A sample was selected from the strata and served with the questionnaires to fill. This enabled the researcher to refine the questionnaire to eliminate problems to the respondents while answering the questions and during data recording. Validity involved how accurately the data obtained represented the variables of the study.

3.8.2 Data Reliability
Reliability refers to the degree to which a research instrument yields consistent results or data after repeated trials to establish its dependability (Saunders, et.al. 2003). To ensure consistency, the questionnaires will be pre-tested on a pilot scale through selected respondents outside the study area. The objectives of pre-testing will allow for modification of various questions in order to rephrase, clarify and or clear up any shortcomings in the questionnaires before administering them to the actual respondents.

3.9 Data Processing and Analysis
The data was presented quantitatively and analyzed using SPSS tool
(Statistical Package for the Social Sciences) and narratives. SPSS Statistics Standard includes techniques such as logistic and non-linear regression and presentation quality custom tables to help business managers and analysts, it also provided a range of statistical procedures suitable for many problems, including crosstabs, linear regression, Monte Carlo simulation, geospatial analytics, and the ability to extend built-in capabilities with Python, R, or Java code. Quantitative data will be analyzed using the Statistical tool using descriptive statistics and inferential statistics. The analysis shows mean, standard deviation and variance that helped the researcher make analyze and make conclusions for recommendation. Qualitative data was analyzed using narratives and conclusions made on the trend of events.

3.9.1 Multiple Regression Analysis
Multiple regression analysis was used to establish the relationship between the dependent and the independent variables. Factors influencing logistics service delivery at the port of Mombasa is to be regressed against four independent variables namely; port information systems, port infrastructure, customs processes and port staff competence. The relationship among the variables is depicted below.
The equation for factors influencing logistics service delivery at the port of Mombasa will be expressed in the following equation:

$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$, where,
Y = Logistics Service Delivery
$\beta 0$ = constant (coefficient of intercept),
X_1 = Port Information System
X_2 = Port Infrastructure
X_3 = Port Customs Process
X_4 = Port Staff Competence
ε = error term
$\beta_1 \ldots\ldots \beta_4$ = regression coefficient of three variables.

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents analysis of the data on the factors influencing logistics service delivery at the port of Mombasa a case study of Kenya Ports Authority, Kenya. The chapter also provides the major findings and results of the study and discusses those findings and results against the literature reviewed and study objectives. The data is mainly presented in frequency tables, means and standard deviation.

4.2 Response Rate

The study targeted 125 port stakeholders such as employees of Kenya Ports Authority, Kenya Revenue Authority, Container Freight Stations and Shipping agents, Mombasa County, Kenya. From the study, 95 out of the 125 sample respondents filled-in and returned the questionnaires making a response rate of 74% as per Table 4.1 below.

Table 4.1 Questionnaire Response Rate

	Frequency	Percentage
Response	95	76%
Non- Respondents	30	24%
TOTAL	**100**	**100**

According to Kothari and Gang, (2014) a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent; therefore, this response rate was adequate for analysis and reporting.

4.2.1 Validity

Factor analysis was used to check validity of the constructs. Kaiser-Mayor-Oklin measures of sampling adequacy (KMO) & Bartlett's Test of Sphericity is a measure of sampling adequacy that is recommended to check the case to variable ratio for the analysis being conducted. In most academic and business studies, KMO & Bartlett's test play an important role for accepting the sample adequacy. While the KMO ranges from 0 to 1, the world-over accepted index is over 0.5. Also, the Bartlett's Test of Sphericity relates to the significance of the study and thereby shows the validity and suitability of the responses collected to the problem being addressed through the study. For Factor Analysis to be recommended suitable, the Bartlett's Test of Sphericity must be less than 0.05.

The study applied the KMO measures of sampling adequacy and Bartlett's test of sphericity to test whether the relationship among the variables has been significant or not as shown in below in table 4.2. Factor 1 was based on four items that represented port information systems EDI, CATOS and SWS; Factor 2 was based on eight items that represented port infrastructure, Factor 3 was based on six items that represented port customs processes, Factor 4 was based on three items that represented port staff competence, Factor 5 was based on four items that represented logistics service delivery. The Kaiser-Mayor-Oklin measures of sampling adequacy shows the value of test statistic as 0.705, which is greater than 0.5 hence an acceptable index. While Bartlett's test of sphericity shows the value of test statistic as 0.000 which is less than 0.05 acceptable indexes. This result indicates a highly significant relationship among variables.

Table 4.2 KMO Bartlett

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	123.612
	df	10
	Sig.	.000

4.2.2 Reliability Analysis

Prior to the actual study, a pilot study was carried out to pre-test the validity and reliability of data collected using the questionnaire. The pilot study allowed for pre-testing of the research instrument. The results on reliability of the research instruments are presented in Table 4.3

Table 4.3 Reliability Analysis

Scale	Cronbach's Alpha	Number of Items	Remarks
Port Information System	0.813	4	Accepted
Port Infrastructure	0.797	8	Accepted
Port Customs Processes	0.883	6	Accepted
Port Staff competence	0.798	3	Accepted
Logistics Service Delivery	0.721	4	Accepted

The overall Cronbach's alpha for the four categories which is 0.802. The findings of the pilot study showed that all the four scales were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Bryman and Bell, 2015).

4.3 Background Information

The background information gathered was based on working experience and company working in.

4.3.1 Working Experience

The study sought to establish the working experience of respondents. The study results revealed that respondents who have worked for below 2 years were 9.5%, between 2 – 5 years were 11.6%, between 6 – 10 years were 17.9%, between 11- 15 years were 44.2%, between 16 – 20 years were 7.4% and over 20 years were 9.5% with a mean score of 3.57 and a standard deviation of 1.334 as shown in Table 4.4. This shows that the majority of the respondents have a working experience of between 11 – 15 years.

Table 4.4 Working Experience

	Frequency	Percent
Below 2 Years	9	9.5
Between 2 – 5 Years	11	11.6
Between 6 – 10 Years	17	17.9
Between 11 – 15 Years	42	44.2
Between 16 – 20 Years	7	7.4
Over 20 Years	9	9.5
	95	**100**

4.3.2 Company of Respondents

The study sought to establish the company where port stakeholders are working in. The study results revealed that respondents working with Kenya Ports Authority were 53.7%, container freight stations were 17.9%, Kenya Revenue Authority were 11.6% and Shipping Agents were 16.8% with a mean score of 1.92 and a standard deviation of 1.155 as shown in Table 4.5. This shows that majority of the respondents that participated in the study were those working with Kenya Ports Authority.

Table 4.5 Company Working In

	Frequency	Percent
Kenya Ports Authority	51	53.7
Container Freight Stations	17	17.9
Kenya Revenue Authority	11	11.6
Shipping Agents	16	16.8
	95	**100**

4.4 Analysis of Objectives

In the research analysis the researcher used a tool rating scale of 5 to 1; where 5 were the highest and 1 the lowest. Opinions given by the respondents were rated as follows, 5= Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree. The analyses for mean, standard deviation were based on this rating scale.

4.4.1 Port Information System
Table 4.6 Port Information System

Descriptive Statistics

	N	Mean	Std. Deviation
It is easy to access the systems to process your documents	95	3.77	1.627
The integration of the port information systems (CATOS, EDI..) works well	95	3.95	1.324
The agents area able to access all the customs systems under the Single Window Systems	95	4.24	.695
The customs clearing agent in the importing country can access services from the first point of entry	95	3.81	1.179
Valid N (listwise)	95		

The first objective of the study was to establish the effects of port information system on logistics service delivery at the port of Mombasa. Respondents were required to respond to set questions related to port information system and give their opinions. The statement in agreement that it is easy to access the system to process your documents had a mean score of 3.77 and a standard deviation of 1.627. This statement is in agreement with Milimu, (2015) that accessing the Kenya Ports Authority system is easy for all the stakeholders. The statement in agreement that integration of the port information systems (CATOS, EDI) works well had a mean score of 3.95 and astandard deviation of 1.324. The statement in strong agreement that the agents are are able to access all the customs systems under the single windows systems had a mean score of 4.24 and a standard deviation of 0.695. This statement is in agreement with Milimu, (2015) who argued that providing cleareance agents access to the ports clearance platform creates efficiency in the clearing of cargo and reduces human contact thus reducing corruption.The statement in agreement that the customs clearing agent in the importing country can access services from the first point of entry had a mean score of 3.81 and a standard deviation of 1.179.

4.4.2 Port Infrastructure
Table 4.7 Port Infrastructure

Descriptive Statistics

	N	Mean	Std. Deviation
The current port yard capacity affects service delivery at the port in a negative way.	95	3.80	1.318
Cargo security at the port yards is well taken care of by the concerned parties.	95	3.23	1.395
The port yards are located in ideal area with ease of accessibility.	95	3.73	1.275
Traffic flow at the port yards satisfactory.	95	3.22	1.370
Handling equipment are readily available at the port.	95	4.25	.899
The equipment provided by the port authority are serviceable	95	3.92	1.117
Planning for resources and handling equipment at the port is satisfactory	95	4.41	.660
The equipment charges in relation to the services rendered are reasonable	95	3.59	1.292
Valid N (listwise)	95		

The second objective of the study was to establish the effects of port infrastructure on logistics service delivery at the port of Mombasa. Respondents were required to respond to set questions related to port infrastructure and give their opinions. The statement in agreement that the current port yard capacity affects service delivery at the port in a negative way had a mean score of 3.80 and a standard deviation of 1.318. The statement that cargo security at the port yards is well taken care of had a mean score of 3.23 and a standard deviation of 1.395. The statement in agreement that the port yards are located in ideal are with ease of accessibility had a mean score of 3.73 and a standard deviation of 1.275. The statement that traffic flow at the port yards is satisfactory had a mean score of 3.22 and a standard deviation of 1.370. The statement in agreement that handling equipment are readily available at the port had a mean score of 4.25 and a standard deviation of 0.899. This statement is in agreement with Muchori, (2015) that availability of cargo handling

equipment increases efficiency of logistics service delivery in the port of Mombasa. The statement that the equipment provided by the port authority are serviceable had a mean score of 3.92 and a standard deviation of 1.117. The statement in agreement that planning for resources and handling equipment at the port is satisfactory had a mean score of 4.41 and a standard deviation of 0.660. This statement is in agreement with Siricha and Theuri, (2016) that planning of Kenya Ports Authority resources is efficient and operating at maximum capacity thus increasine efficiency of logistics service delivery. The statement that the equipment charges in relation to servive rendered are reasonable had a mean score of 3.59 and a standard deviation of 1.292.

4.4.3 Port Customs Processes
Table 4.8 Port Customs Processes

Descriptive Statistics

	N	Mean	Std. Deviation
Port customs clearance process is fast enough	95	3.64	1.368
The coordination between agencies involved with cargo clearance at the port is well organized	95	3.16	1.114
Delays adds costs, is this the case with cargo clearance and scanning operations at the port of Mombasa	95	4.15	1.010
All government agencies concerned with the clearing process have their presence at the port.	95	3.43	1.520
The scanning operation makes the port efficient and effective	95	3.59	1.106
The machines used for scanning at the port are vital to efficiency in service delivery, the machines are enough in comparison to the scanning/verification traffic	95	3.12	1.443
Valid N (listwise)	95		

The third objective of the study was to establish the effects of port customs processes on logistics service delivery at the port of Mombasa. Respondents were required to respond to set questions related to port customs processes and give their opinions. The statement that port clearance process is fast enough had a mean score of 3.64 and a standard deviation of 1.368. The statement that the coordination between agencies involved with cargo clearance at the port is well-organized had a mean score of 3.16 and a standard deviation of 1.114. The statement in agreement that delays adds to costs is this the case with cargo clearance and scanning operations at the port of Mombasa had a mean score of 4.15 and a standard deviation of 1.010. This statement is in agreement with Njogu and Gichinga, (2016) that slow customs processes at Kenya Ports Authority increases the cost of cargo. The statement that all government agencies concerned with the clearing process have ther presence at the port had a mean score of 3.43 and a standard deviation of 1.520. the statement that the scanning operations makes port operations efficient and effective had a mean score of 3.12 and a standard deviation of 1.443. The statement that the machines used for scanning at the port are vital to efficiency in service delivery, the machines are enough in comparison to the scanning/verification had a mean score of 3.12 and a standard deviation of 1.443.

4.4.4 Port Staff Competence
Table 4.9 Port Staff Competence

Descriptive Statistics

	N	Mean	Std. Deviation
Port staff are having positive attitude towards their work	95	3.61	1.371
Port staff have skills to deliver services as required of them	95	3.16	.971
Port staff have a good customer service approach to clients.	95	3.58	.963
Valid N (listwise)	95		

The fourth objective of the study was to establish the effects of port staff competence on logistics service delivery at the port of Mombasa. Respondents were required to respond to set questions related to port staff competence and give their opinions. The statement that port staff are

having positive attitude towards their work had a mean score of 3.61 and a standard deviation of 1.371. The statement that port staff have skills to deliver services as required of them had a mean score of 3.16 and a standard deviation of 0.971. The statement that port staff have a good customer service approach to clients had a mean score of 3.58 and a standard deviation of 0.963. This statement is in agreement with (Njogu and Gichinga, 2016) that staff competencies are the hulmark of efficiency at the port of Mombasa.

4.4.5 Logistics Service Delivery

Table 4.10 Logistics Service Delivery

Descriptive Statistics

	N	Mean	Std. Deviation
Is it agreeable that the current dwell time at the port is satisfactory?	95	4.14	.906
You concur that the current cargo delivery time at the port of Mombasa is satisfactory	95	4.47	.682
It is possible to have a lower dwell time than the current dwell time at the port	95	3.87	1.282
Cargo delivery efficiency is having a negative effect on the cost of doing business at the port of Mombasa	95	3.43	1.078
Valid N (listwise)	95		

The statement in agreement that is it agreeable that the current dwell time at the port is satisfactory had a mean score of 4.14 and a standard deviation of 0.906. The statement in agreement that you concur that the current cargo delivery time at the port of Mombasa is satisfactory had a mean score of 4.47 and a standard deviation of 0.682. The statement that it is impossible to have a lower dwell time than the current dwell time at the port had a mean score of 3.87 and a standard deviation of 1.282. The statement that cargo delivery efficiency is having a negative effect on the cost of doing business at the port of Mombasa had a mean score of 3.43 and a standard deviation of 1.078.

4.5 Correlation Analysis

To establish the relationship between the independent variables and the dependent variable the study conducted correlation analysis which involved coefficient of correlation and coefficient of determination.

4.5.1 Coefficient of Correlation

Pearson Bivariate correlation coefficient was used to compute the correlation between the dependent variable (Logistics Service Delivery) and the independent variables (Port Information system, Port infrastructure, Port Customs Processes and Port staff competence). According to Sekaran, (2015), this relationship is assumed to be linear and the correlation coefficient ranges from -1.0 (perfect negative correlation) to +1.0 (perfect positive relationship). The correlation coefficient was calculated to determine the strength of the relationship between dependent and independent variables (Kothari and Gang, 2014).

Table 4.11 Pearson Correlation Coefficient

Correlations

	Logistics Service Delivery	Port Information Systems	Port Infrastructure	Port Customs Processes	Port Staff Competence
Logistics Service Delivery	1				
	95				
Port Information Systems	.275**	1			
	.000				
	95	95			
Port Infrastructure	.181	.344**	1		
	.000	.001			
	95	95	95		
Port Customs Processes	.727**	.416**	.218*	1	
	.000	.000	.004		
	95	95	95	95	
Port Staff Competence	.175	.002	.061	.193	1

	.000	.003	.000	.001	
	95	95	95	95	95
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

In trying to show the relationship between the study variables and their findings, the study used the Karl Pearson's coefficient of correlation (r). This is as shown in Table 4.11 below. According to the findings, it was clear that there was a positive correlation between the independent variables, port information system, port infrastructure, port customs processes and port staff competence and the dependent variable logistics service delivery. The analysis indicates the coefficient of correlation, r equal to 0.275, 0.181, 0.727 and 0.175 for port information system, port Infrastructure, port customs processes and port staff competences respectively. This indicates positive relationship between the independent variable namely port information system, port infrastructure, port customs processes and port staff competence and the dependent variable logistics service delivery.

4.5.2 Coefficient of Determination (R^2)

To assess the research model, a confirmatory factors analysis was conducted. The four factors were then subjected to linear regression analysis in order to measure the success of the model and predict causal relationship between independent variables (port information system, port infrastructure, port customs processes and port staff competence), and the dependent variable (Logistics service delivery).

Table 4.12 Coefficient of Determination (R^2)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728[a]	.531	.510	1.54426

a. Predictors: (Constant), Port Staff Competence, Port Infrastructure, Port Customs Processes, Port Information Systems

The model explains 53.1% of the variance (Adjusted R Square = 0.510) on logistics service delivery. Clearly, there are factors other than the four proposed in this model which can be used to predict logistics service delivery. However, this is still a good model as Cooper and Schinder, (2013) pointed out that as much as lower value R square 0.10-0.20 is acceptable in social science research.

This means that 53.1% of the relationship is explained by the identified four factors namely port information system, port infrastructure, port customs processes and port staff competence. The rest 46.9% is explained by other factors in the logistics service delivery not studied in this research. In summary the four factors studied namely, or determines 53.1% of the relationship while the rest 33.6% is explained or determined by other factors.

4.6 Regression Analysis

4.6.1 Analysis of Variance (ANOVA)

The study used ANOVA to establish the significance of the regression model. In testing the significance level, the statistical significance was considered significant if the p-value was less or equal to 0.05. The significance of the regression model is as per Table 4.13 below with P-value of 0.00 which is less than 0.05. This indicates that the regression model is statistically significant in predicting factors of logistics service delivery. Basing the confidence level at 95% the analysis indicates high reliability of the results obtained. The overall Anova results indicates that the model was significant at F = 25.443, p = 0.000.

Table 4.13 ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	242.699	4	60.675	25.443	.000[b]
	Residual	214.627	90	2.385		
	Total	457.326	94			

a. Dependent Variable: Logistics Service Delivery
b. Predictors: (Constant), Port Staff Competence, Port Infrastructure, Port Customs Processes, Port Information Systems

4.6.2 Multiple Regression

The researcher conducted a multiple regression analysis as shown in Table 4.14 so as to determine the relationship between value chain and the four variables investigated in this study.

Table 4.14 Multiple Regression

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.159	3.230		.049	.001
	Port Information Systems	.222	.105	.020	.210	.004
	Port Infrastructure	.011	.067	.013	.158	.000
	Port Customs Processes	.739	.093	.726	7.990	.000
	Port Staff Competence	.048	.111	.032	3.430	.000

a. Dependent Variable: Logistics Service Delivery

The regression equation was:

$Y = 0.159 + 0.222\mathbf{X_1} + 0.011\mathbf{X_2} + 0.739\mathbf{X_3} + 0.048\mathbf{X_4}$

Where;

Y = the dependent variable (Logistics Service Delivery)

X_1 = port information system

X_2 = port infrastructure

X_3 = port customs processes

X_4= port staff competence

The regression equation above has established that taking all factors into account (Logistics service delivery as a result of port information system, port infrastructure, port customs processes and port staff competence) constant at zero logistics service delivery will be 0.159. The findings presented also shows that taking all other independent variables at zero, a unit increase in port information system will lead to a 0.222 increase in the scores of logistics service delivery; a unit increase in port infrastructure will lead to a 0.011 increase in logistics service delivery; a unit increase in port customs processes will lead to a 0.739 increase in the scores of logistics service delivery; a unit increase in port staff competence will lead to a 0.048 increase in the score of logistics service delivery. This therefore implies that all the three variables have a positive relationship with port customs processes contributing most to the dependent variable.

This therefore implies that all the four variables have a positive relationship with public procurement performance with top management commitment contributing most to the dependent variable. From the table we can see that the predictor variables of top management commitment, supply chain timelines, supply chain costs and supply chain products got variable coefficients statistically significant since their p-values are less than the common alpha level of 0.05.

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter provides the summary of the findings from chapter four, and it also gives the conclusions and recommendations of the study based on the objectives of the study. The chapter finally presents the limitations of the study and suggestions for further studies and research.

5.2 Summary of the Findings

The objectives of this study was to examine the factors influencing logistics service delivery at the port of Mombasa a case study of Kenya Ports Authority. The study was conducted on 95 out of 125 that constituted the sample size. To collect data the researcher used a structured questionnaire that was personally administered to the respondents. The questionnaire constituted 25 items. The respondents were the employees of Kenya Ports Authority, Kenya Revenue Authority, Container Freight Stations and Shipping agents. In this study, data was analyzed using frequencies, mean scores, standard deviations, percentage, Correlation and Regression analysis.

The results revealed that majority of the respondents that participated in the study have a working experience of between 11 – 15 years working with Kenya Ports Authority. Further the results revealed that there was a strong positive correlation between the independent variables and

dependent variable. The coefficient of determination was 66.4%.

5.2.1 Port Information System

The study results revealed that it is easy to access the Kenya Ports Authority systems and be able to commence clearing processes and also be able to know at what level your process is and know where your cargo has been stored as you await clearance. That the integration of the port information system is secure and can be used by all stakeholders at their convenience. Further the study revealed that all port stakeholders system is integrated such that a Kenya Revenue Authority officer can be able to know the status of cargo at the port of Mombasa.

5.2.2 Port Infrastructure

The study results revealed that current yard has limited capacity to hold cargo therefore causing congestion at the port of Mombasa. The study also revealed that there is proper security at the yards and that yards are easily accessed. Further the study revealed that there is sufficient cargo handling machines that are serviceable. The study established that equipment charges is too high as compared to the services rendered.

5.2.3 Port Customs Processes

The study showed that port customs clearance process is fast enough as compared to other ports in the region. That port stakeholders are well coordinated through the port information system. That delays in the clearance processes increases cost of doing business. That Kenya Ports Authority and Kenya Revenue Authority together with Container Freight Stations are interconnected and that they are working in harmony.

5.2.4 Port Staff Competence

The study revealed that staff of port stakeholders are well trained and that they handle customers in an acceptable manners. That port staff are well trained and operate in a professional manner.

5.3 Conclusion

From the research findings, the study concluded all the independent variables studied have significant effect on logistics service delivery as indicated by the strong coefficient of correlation and a p-value which is less than 0.05.The overall effect of the analyzed factors was very high as indicated by the coefficient of determination. The overall P-value of 0.00 which is less than 0.05 (5%) is an indication of relevance of the studied variables, significant at the calculated 95% level of significance. This implies that the studied independent variables namely port information system, port infrastructure, port customs processes and port staff competence have significant on factors influencing logistics service delivery at the port of Mombasa in Kenya.

The stepwise multiple regression analysis revealed that logistics service delivery namely; port information system, port infrastructure, port customs processes and port staff competence explained statistically significant portion of the variance associated with the extent of logistics service delivery. The stepwise multiple regressions indicated that among the factors influencing logistics service delivery at the port of Mombasa, had more effects on improving logistics service delivery of port information system, port infrastructure, port customs processes and port staff competence explained statistically significant portion of the variance associated with the extent of logistics service delivery at the port of Mombasa. This result was an emphasis on the role of port information system, port infrastructure, port customs processes and port staff competence explained statistically significant portion of the variance associated with the extent of logistics service delivery at the port of Mombasa.

5.4 Recommendations

The study recommended that following:

1. That there is need to maintain a better port information system that is tamper proof and can be accessed to by all stakeholders even on their smart phones.
2. That there is need to expand the yard to accommodate more goods and improve its security.
3. That customs processes should be faster to reduce demurrage charges.
4. That more staff should be trained on application of the software's to be used instead of using manual techniques to do business.

5.5 Suggestion for Further Studies

This study focused on the factors influencing logistics service delivery at the port of Mombasa a case study of Kenya Ports Authority. Since only 66.4% of results were explained by the independent variables in this study, it is recommended that a study be carried out on other factors on logistics service delivery in the private sector. The research should also be done in other government corporation of private sector and the results compared so as to ascertain whether there is consistency on logistics service delivery.

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