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RESEARCH ARTICLE

LOGISTICAL FACTORS INFLUENCING PORT PERFORMANCE A CASE OF KENYA PORTS AUTHORITY

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The study was carried out in Kenya at the port of Mombasa which is run and managed by Kenya Ports Authority. The port of Mombasa is the gateway to East and Central Africa and over the recent years the global maritime trade has been evolving rapidly. The surge in shipping traffic and cargo volumes especially on container traffic has placed the port with a huge responsibility to provide effective, efficient and reliable maritime service.

The main objective of the research was to find out the logistical factors influencing port performance at the port of Mombasa and eventually the expected result on future performance, the study shall give recommendations that can make the Port of Mombasa become more efficient and effective as Port of choice for East and Central Africa region.
This study used descriptive data where research questionnaires were administered to a sampled size of 60 respondents whom the researcher intended to reach among the sampled target of 600 Port Stakeholders with a certain level of knowledge of the Port of Mombasa and comparative ports in the Maritime Industry such as Singapore Port, Port of Dar es Salaam, used published and unpublished literature available in the public domain as secondary data from scholars and port planners dealing with transport sector touching on logistical factors influencing port performance in the port of Mombasa.

Introduction

Kenya Ports Authority is the only mandated Government Agency authorized to operate all sea ports in Kenya. The port of Mombasa is the largest port in East Africa and is the gateway to East and Central Africa and plays a very important role in facilitating trade and development of the region. 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, the Democratic Republic of Congo, southern Sudan and southern Ethiopia.
The Port handles approximately 90% of Kenya external trade in terms of tonnage. Mombasa port has 17 deep water berths. Cargo traffic through Mombasa port is about 22 million tonnes in year 2012 including 903,000 TEUs of container traffic. KPA also operates two inland container depots in Nairobi and Kisumu, currently the port has about 7200 employees ~~workers~~ working in various departments with nearly 60% working in operations departments who execute the core functions of the port in cargo handling, marine services and stevedoring. KPA's strategy is to introduce private sector management and financing so as to improve the port's performance, starting with the new

container terminal under construction, conventional berths, oil terminals and marine craft~~. currently the port employs approximately 7200 employees~~. (KPA - Annual Bulletin of Statistic 2013).

The port of Mombasa is currently among the fast growing ports in the world in terms of container handling trends following the recent infrastructure development undertaken by the government to expand the current container terminal.

Global Maritime Transport has considerably changed in the last decade. Maritime Transport is growing at a high pace. Container traffic is the fastest growing segment of maritime transport. Shipping lines have invested in ever growing containerships in order to benefit from economies of scale: the threshold of 10,000 TEUs per vessel was surpassed whereas, ten years ago, the largest vessels had capacity of 6,500 TEUs. As a result of increased competition, mergers and takeovers have taken place in the recent years to establish "mega-carriers".

As ports would be increasingly challenged by intensified traffic, greater ship size and transhipment growth, ports capacity may have to be expanded in the future. Larger ships are more demanding in terms of port installations. The ship to shore gantry cranes need to be sufficiently large to reach all the containers and sufficiently fast in operation for an acceptable ship turnaround time. (*Drewry 2006),*

2. Port Performance

Understanding performance is a concept fundamental to any business, whether it is the measuring of achievements against set goals and objectives or, against the competition. Ports are no exception and it is only by comparison that performance can be evaluated. Ports are, however, a complex business with many different sources of inputs and outputs which make direct comparison among apparently homogeneous ports seem difficult (Valentine and Gray, 2002).

The port industry like any other industry measures its performance, such measurement has been focused on productivity indicators. Performance appraisal is a requirement for the development of any economic activity and the literature offers different definitions of performance (Marlow and Casaca, 2003).

Mentzer and Konrad (1991) define performance as an investigation of effectiveness and efficiency in the accomplishment of a given activity and where the assessment is carried out in relation to how well the objectives have been met. In relation to efficiency, Bichou and Gray (2004) expressed three broad categories : physical indicators, factor productivity indicators and economic and financial indicators they further argued that physical indicators generally refer to time measures and are mainly concerned with the ship (for example, ship turn round time, ship waiting time, berth occupancy rates and working time at berth). Factor productivity indicators focus on the maritime side of the port as it measures both labour and capital required to load and unload goods from ship. Economic and financial indicators are also related to the sea side access in relation to operating surplus or total income and expenditure in respect to Gross Registered Tonnes or Net registered tonnes (Bichou and Gray (2004).

The more efficiently a port is operated, the more throughputs can be accommodated within the physical capacity of its infrastructure. It is therefore critical to accompany investments with institutional reforms that increase the efficiency and performance of port operations. A first key step would be to move toward the adoption of the internationally preferred landlord model of port management, whereby the public sector provides port while the private sector provides port services; second step would be to seek greater private participation in port operation and investment.

3. Literature Review

This entails proven research from other authors in support of the development of this research and its objectives in support of the conceptual framework of the study. According to Salaman (2005), there are two theories underlying the concept of performance management: Goal-setting theory had been proposed by Edwin Locke in the year 1968. This theory suggests that the individual goals established by an employee play an important role in motivating him for superior performance. This is because the employees keep following their goals. If these goals are not achieved, they either improve their performance or modify the goals and make them more realistic. In case the performance improves it will result in achievement of the performance management system aims.

Expectancy theory had been proposed by Victor Vroom in 1964. This theory is based on the hypothesis that individuals adjust their behavior in the organization on the basis of anticipated satisfaction of valued goals set by them. The individuals modify their behavior in such a way which is most likely to lead them to attain these goals. This theory underlies the concept of performance management as it is believed that performance is influenced by the expectations concerning future events.

Banfield and Kay (2008) describe performance management as a framework in which performance by individuals can be directed, monitored and refined. They also view performance management as the process of creating a work environment or setting in which employees are enabled to perform to the best of their abilities. Despite the fact that the number of studies measuring ports performance is flourishing, several deficiencies still exist. The vast majority of the studies have a specific focus towards the assessment of operations productivity, in order to conclude on port efficiency.

Port Authorities and container terminal operators have increasingly strong incentives to lower the real figure. The average or mean dwell time has usually been the main target indicator in the best performing ports worldwide. *(RaballandG,Refas S, Beuran M, and Isik G)*

Productivity at the East African ports is affected by several logistical factors, among them are: Equipment Utilization and Labor productivity; for Mombasa, labour productivity still remains low despite heavy investment in equipment modernization and infrastructure development over the past five years.

Container terminals are essential inter-modal transportation network which work under multiple operational objectives. The main one is to minimize ships turnaround time and subsequently maximize the terminal throughput. They can be achieved by efficient loading and discharging of ships. Therefore, accurate ship assignment is usually taken as the key performance measure for the operational efficiency of a terminal.

Other effective parameters in efficiency of container ports, that is the quay length of which leads to economies of scale on the ability to handle more containers per one ship within one quay.

Recognizing that the shipping industry is shifting towards large vessels that cannot come to the Port of Mombasa due to draught restrictions, KPA embarked on capital dredging of the navigational channel and anchorage basins, maintenance dredging of areas in front of the existing berths, new berth 19 with 13.50 metres draught, the same have resulted in bigger ships calling at the port of Mombasa.

A fully integrated ICT Strategy has embraced an Enterprise Resource Planning system, a Kilindini Water Front System, and a Community Based System, all web enabled. The ERP system integrates all functions at the Port to provide on-line and real-time information hence assisting in making timely decisions.

Benefits of the waterfront system include: Reduced Human intervention due to system controls that are based on authorization, Reduced cargo documentation processing time, Reduced cargo dwell time from an average of 8 days to 5 days, Reduced port clearance time from 5.5 days to 3 days, Enhanced planning process both in the yard and on board ship, Easy access of statistical data for planning and decision making, Enhanced audit trails, hence minimized cargo pilferage at the port (Kenya Port Authority, 2012).

The Community Based System, commonly known as the National Single Window System currently on trial & sensitization to stakeholder is due for full implementation by the end of 2014. The port of Mombasa has been facing major challenges with KRA Simba System and KPA Kwatos System.

Kenya's rail corridor is of strategic importance to the region. It is a common knowledge that Standard Gauge Railway launched recently by President Uhuru will handle over 22 Million tonnage of Cargo against the current Single Gauge handling only 1.2 Million tonnes (Kamau M 2014). Linking the port of Mombasa to Nairobi and continuing onward into Uganda, it is a key conduit for bulk freight, easing pressure and providing additional capacity along the northern corridor. Currently the cargo is mostly transported using the road and few on rail.

The gate expansion by KPA has enable trucks hauling export/imports/empty containers within Mombasa depots/CFS's faster turnaround than previous. Currently the trucks are able to make 6 trips per day unlike 1trip per day before the gate expansion. This enables the fluid movement of containers from the port and creation of more space for incoming containers.

Cargo handling equipment includes equipment used to move cargo to and from marine vessels, on-road trucks and yards. The equipment typically operates at container terminals or at rail yards and not on public roadways or lands. KPA inventory on cargo handling equipment includes 7 Ship to Shore Cranes, 27 Reach stackers, 57 Terminal Tractor, 5 Mobile cranes, 23 Forklifts among others. Beside the availability of equipment there are other silent features which have direct correlation with performance, motivation is one among them, and this is evidence by the various ships categories calling at the port of Mombasa, those with incentives yield better results than those without incentive from the same operators.

Ships planning also play an important role in measuring Vessel performance and the features which drive the performance are cargo handling equipment allocated to a particular ship such as the number of SSG, TT etc.

With regard to East African ports, it is important to note that the efficiency of these ports and the entire logistics chain is not wholly dependent on the management structure. There exist a number of public and private sector players who have a role to play in the goods clearance process and the efficiency with which they execute their obligations plays a critical role in the overall efficiency of ports (G. Langat 2013).

The yard operation is perhaps the busiest of all the activities in the terminal. The operation involves discharging of containers from the vessels, loading of containers onto vessels, shuffling of containers that are out of sequence, in the yard block, redistribution of containers to other blocks for more efficient loading onto the second vessels and inter-terminal haulage where containers are moved to other yards in another loading berth in convectional cargo.

The crucial terminal management problem is to optimize the balance between the ship owners who request quick service of their ships and economic use of allocated resources. Since both the container ships and the container port facilities are very expensive, it is desirable to utilize them as intensively as possible.

The Port of Singapore Authority runs one of the most technologically advanced ports and information technology is the tool behind making it the most efficient port in the World (lee Partridge, Teo&lim).The Country is in severe lack of land hence, the efficient utilization of existing land is crucial for the port and this was achieved by the sophisticated technology used in the port. This is a good example of overcoming physical limitations by the proper utilization of information technologies. The information system in port of Singapore is separated into three levels (Applagate, Dustin, &Macfarlan, 2003). While Operations and Information Technology has helped reduce labuor in some instances, reduce time and increase quality, its major contribution has been to create flexibility.

Ports facilities and the road network require extensive rehabilitation to provide a basis for improved cost-effective movement of cargo as incentives to the development of export oriented agriculture and industry (GordonJ. A 1997).

For the Port of Mombasa to meeting its future trade growth proper planning, port development and capacity addition to port and marine infrastructure in line with the international trends and demand of the regional growth rate using the port of Mombasa for Import and Export."Ports are evolving rapidly from being traditional land/sea interfaces to providers of complete logistics networks. This means that ports have had to face many challenges due to unpredictable environmental changes and trends in the shipping, port and logistics industries."*(UN ESCAP, 2014)* Growth in regional and international trade opportunities means the port of Mombasa should be in a position to handle a fleet of post-panamax vessels for it to be in a competitive business route and any opportunities for trade containerization will not be a challenge. '

4. Finding

Some of the empirical observations from this research show that port activities at the Port of Mombasa are more or less control by international linkage of business happening internationally. For one to assess the performance at the port, he/she has to put into consideration the global business trend, competition in the Maritime industry and regional development which contributes towards port activities arising from imports and exports. The research shows that factors leading to poor performance in the port of Mombasa are: lack of funds for Infrastructure/capital works, in adequate yard capacity, under utilization of IT system (Kwatos), poor supervision of workers/resources, Lack of adequate training for engineers, unclear Strategies by Central Government, lack of commitment from senior managers, ineffective / un coordinated management of container terminal and others support service. Cargo clearance and customs procedures at Mombasa port contribute a big portion to the cost of trade along the transport corridor to the hinterland.

Some of the challenges affecting the port of Mombasa as a result of increase in throughput over the last 10 years especially cargo handling capacity and yard space has been well taken care of by the current trend of equipment purchase policy and utilization of Container Freight Station yard instead of port yard.

Business environment associated with trade competitiveness leads to improved growth, jobs, incomes and social effects, the relationship between trade, growth and poverty reduction is complex and the evidence is difficult to interpret however. Whilst increased trade may be a necessary condition for economic development it is not always sufficient.

The poor state of transport infrastructure within Kenya ensures that freight cost are high and competitiveness is reduced. Road and rail networks are both in bad condition, the single biggest contributor to the cost of transporting along the northern corridor is fixed port charges and time delays at Mombasa port as consequence of the inadequacies of port infrastructure, and burdensome documentation, cargo clearance and customs procedures.

5. Conclusion

The research reveal that multi sectorial linkage such as working relation between Kenya Ports Authority, Kenya Revenue Authority, Shipping lines/agencies, KEBS, Police etc play a key role is contributing to poor performance in the port of Mombasa as most of the stated institutions have different reporting structures.

It is also clear from the research that KPA have put in place several strategies aimed at improving port performance now or in future and although equipment too plays a role in poor performances, it was realize during this research that Kenya Ports Authority staff are well train on cargo handling equipment and this is attributed to good work done by Bandari College training programme.

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