Vol. 11, No. 3, 142-152, https://doi.org/10.22712/susb.20200011

INTERNATIONAL JOURNAL OF
SUSTAINABLE Building Technology and Urban Development

pISSN : 2093-761X · eISSN 2093-7628

Evaluating stakeholder's satisfaction with the performance of selected seaports in Nigeria

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Received: 20 December 2019
Accepted: 20 July 2020

A B S T R A C T

Aside the high competition between seaports, the quest for economic performance and satisfying the port's stakeholders has become a great challenge for port operators and managers. In an attempt to perform optimally and achieve the intended goals of their establishment and meeting the needs of the society, ports performance needs to be measured at regular intervals with the key performance indicators. This study was carried out in Nigeria with the aim of ascertaining the performance of 6 seaports in 5 key performance indicators with respect to the environment, health and safety/security, congestion, corporate relations, and organization. 120 questionnaires were distributed, and 83 usable responses were received. The data was analyzed descriptively using the mean score. The results obtained show that the stakeholders were mostly dissatisfied with congestion while cooperative relations, health and safety/security, and environment were rated slightly high, and environmental performance was rated to have performed high. The results imply that the port stakeholders are substantially satisfied with the performance of the ports except for the rate of congestion. More efforts need to be put in place by the government and the port managements in decongesting the ports through the provision of efficient transportation networks to and from the ports like railway and more access roads. Also, efforts should be made to sustain and improve the current gains in other performance indices where performance was high.

Keywords: seaports; stakeholders' satisfaction; performance indicators; nigeria

Introduction

A seaport is a part of an entire transportation system and a hub for other means of transportation (e.g roads, and rail) is basically an economic infrastructure that carters for local and international cargoes. Seaports are very vital nodes in worldwide logistics networks and play very important roles in ensuring the efficiency of the world's supply chains. Due to the crucial roles ports play, they are under constant pressure to meet certain minimum performance thresholds when delivering value to the various port stakeholders such as shippers, and other logistics service providers [1]. At times, the various port stakeholders (port authorities, port users, service providers, and the host communities) work at cross-purposes due to varying interests with regards to social, economic, security, and organizational issues [2]. This is so even as the continued patronage of the ports by the stakeholders is dependent on

how well the port managers are able meet the stakeholders needs through effective relationship management. In order to achieve this, port performance measurement becomes a vital tool in assessing the satisfaction of stakeholders to ensure long term business relationship and competitive advantage of the port above others [3].

The importance of seaports in the socio-economic life of any country can not be over-emphasized. These ports aid in the movement of goods and services and the overall advancement of the society. Its importance can be felt in the contributions it makes to the Gross Domestic product of any country [4]. Despite the importance of ports to the everyday life of the society, there are very serious concerns about the performance satisfaction of stakeholders directly and indirectly affected by the situations in these ports. Some of these concerns range from emissions, health and safety issues(security),operational issues, congestion, ventilation, natural lighting and so on [5]. The Nigerian government, port authorities, and other stakeholders are generally aware that there is a need to find a middle ground between the economic performance of these ports and satisfaction of stakeholders. However, it is quite difficult to achieve since there are several facets to stakeholder satisfaction and there is lack of data to give more insight into the level of satisfaction of port stakeholders.

Nigeria currently has 6 seaports. The seaports in Nigeria include Apapa port, Tin Can island port, the Onne port, Port-Harcourt ports in Rivers State, the Warri Port in Delta state, and the Calabar Port. And these seaports are seen as one of the major revenue earners for the country. Much attention is beginning to be given to these ports because of the current situation of the economy. Nigeria's economy has suffered dwindling fortunes as a result of the economic recession between 2015 and 2018 ports [6]. This has led to more emphasis been placed on strengthening the capacity of the sea ports to generate more revenues and increased monitoring of the activities along the water ways. There has also been a noticeable increase in cargo capacity increasing year by year, and greater competition between the various sea ports in the country and those in neighbouring African countries over time [7]. The quest for greater economic performance, and the need to satisfy the various stakeholders has made the need to measure other performance indicators related to the stakeholders very pertinent.

There has been many studies focused on performance of sea ports but most of these studies focus on limited aspects of ports performance or few areas of the ports [1]. Most of these studies focused mainly on the financial performance of the ports without considering other intangible performance indicators related to the multi-stakeholder's satisfaction. Passed studies like Min, Ahn [8] and Oh, Lee [9] have called for the adoption of a new all-encompassing approach considering other performance indicators aside the financial performance in measuring the performance of ports. Thus, this study attempts to measure the performance of the 6 ports in Nigeria using multi-dimensional performance indicators. The popular maxim that: 'what gets measured, gets managed' backs the idea that regular measurements can surely assist managers to identify what actions are contributing to improve or reduce the performance of a process, particularly the sea ports under consideration [10].

The paper is structured as follows: section 2 presents a literature review on the various performance indicators that determines the satisfaction of the seaport stakeholders, section 3 presents the methodology of the study, section 4 presents the results and discussion, while section 5 presents the conclusion and recommendations of the study.

Seaport Performance Indicators

There were 8 seaports in Nigeria before the government commenced a reform in the sector. These 8 ports were subsequently merged into 6 after the reform process and were all placed under the control of the Nigerian Ports Authority (NPA). The ports include Apapa, Calabar, Onne, Port Harcourt, Tincan island and Warri. The ports lacked autonomy, and its management was central. The tool port system was adopted in all the ports prior to the reforms with the exception of Onne port that practiced the landlord system. Before and after the port reforms, the Nigerian port sector was characterized by poor performance compared to other West African ports [6].

It is very important that there is good infrastructure, not only to serve businesses and consumers, but also to ensure the port capacity and performance [11]. The improved monitoring of a seaport's overall performance in a very dynamic global environment is very important in determining the extent of its efficiency and thus, its competitiveness. The assessment of the level of a sea port's performance and setting minimum acceptable standards are the most prominent methods used in ascertaining and adopting global best practices as an avenue for enhancing performance and raise the efficiency of the ports. This is particularly useful when there is absence of objective/engineered criteria to define efficient and effective performance [12]. This may assist decision-makers not only in diagnosing both the efficiency and effectiveness aspects of performance, but also in identifying the strengths and weaknesses of ports [1].

The management of every sea port will have as its main priority adherence to both local and international regulations, reduction in operating cost, risk mitigation, and the protection of the ports environment. The main driver to achieving these objectives is the use of key performance indicators and indices [10]. The key performance indicators offer clear proof of the trends with regards to performance and also serves as a means of providing common advantages to port authorities and other stakeholders such as terminals operators or shipping companies, and shipping agents. The reputation/image of the seaports alongside other port characteristics like its efforts in protecting and preserving the environment, security infrastructure, attention given to health and safety, congestion, customer relations and the general organization of the ports have far reaching influence on the choice of routes and ports that the stakeholders would patronize [13, 14].

In the light of the above, Litman [15] and Ju and Liu [16] opined that for a port to satisfy the needs of its stakeholders, it should be able to be easily accessible and also be able to meet the safety needs of its users and that of the general public. They further posit that other indices such as the health and safety of the humans and the natural environment, and the ability of the ports to encourage equity between different classes of stakeholders is of paramount importance. The various performance indicators are discussed next.

The common sight in most ports in Nigeria today is congestion. This has been attributed to poor management of the ports processes. Also, the characteristic heavy traffic and congestion that most ports have to cope with are part of the major sources of accidents [10]..it is practically impossible to always meet the quest for better transportation through the provision of more transport infrastructure as this could result in congestion in transportation networks within the ports and also its surroundings which could cause accidents [11]. The heavy traffic and congestion that

large ports have to cope are among the causes of those accidents [10]. One of the major causes of congestion in Nigerian ports is poor management which leads to cargo overstaying in the ports [7]. Many port premises, quay aprons and roads have gotten so bad that they had to be abandoned, that they can no longer be used leaving port users with just a few functional facilities to make use of thus causing congestion [17]. This is also corroborated by Mohiuddin and Jones [18] who opined that underinvestment, obsolete infrastructure, limited integration with inland transport results in the noticeable congestion in Nigerian ports.

Also, the health, safety and security in and around the seaport is very important and requires continuous monitoring so that all the lapses can be identified early enough and preventive measures can be put in place. This will aid in the reduction of uncertainties, and more significantly reduce the incidences of accidents that could be a major threat to the port users, the natural environment and ports assets. Similarly, accidents resulting in injuries and sicknesses may be a source of serious interruption in the ports' activities, and legal disputes and, thus leads to a rise in the operating cost of the port [10].

The merits of having the port's environment safe, healthy and secure for the workers as well as other stakeholders can not be overemphasized. Several studied in this area have opined that safe working places in ports are likely to increase labour output and also improve their operational performance [19, 20]. In another vein, a secure and safe seaport would lead to retention of skilled workers and attract new ones.

One of the major types of accidents in sea ports is collision [21]. Almost 60% of accidents in the ports are associated with the maneuverability of ships and the to and fro movement of cargo in ports by lorry and other vehicles [22]. According to them, almost 15% of accidents are linked to cargo loading and uploading, 12% associated with cargo distribution and its storage, 11% to plant processes, while 4% are attributed to warehousing. As a result of the accident-prone nature of sea ports, the International Ship and Port Facility Security (ISPS) Code has spelt out some measures to improve the security, health and safety of ships and other port facilities (IMO 2004). Another aspect of ports health and safety performance in the ability of the port management to be proficient in identifying restricted areas and access control, formal safety and security training practices, adequate monitoring and threat awareness, safety and security officers and facilities [23].

It has been acknowledged in extant literatures that the increased port facilities, and its accompanying processes can substantially add to the growth and development of maritime transport and economic development, it could also result in negative effects on the natural environment. The activities carried out in ports may have negative effects on air quality, water, and soil, thus affecting both land and water bodies. It is therefore necessary that ports operations be carried out in a strategic manner taking into account the environmental implications[24]. It is obvious that awareness is increasing globally on the need for environmental protection, therefore effective environmental management is essential if stakeholders are to continue their support for port operations and development [25]. In a view to evaluate environmental performance of port authorities and to track progress towards continuous improvement, relevant Environmental Performance Indicators (EPIs) can be employed so that port authorities can show compliance and continuous improvement with substantive evidence from science-based, quantifiable

measures [26].

The organization of the seaports can be defined as the efficiency to which the ports are and its supporting services are arranged and run in a systematic manner. In the 90's, seaports in Nigeria were lacking in efficiency, and very expensive. The lack of efficiency and the expensive nature of the ports was attributed to poor organization of the government operated ports. This was responsible for the long turnaround times for ships and increased container dwell times [6]. As a result, the ports were transferred to the private sector through concessioning. This is so as Trujillo and Nombela [27] have argued that private participation in both infrastructure and operation has improved the performance of seaports globally.

Cooperation at the seaport is valuable for all economical actors [28]. It could also be a veritable means for reducing congestion and other inefficiencies. Cooperation results in more information sharing and compliance with ports' rules and regulations [29]. The presence of unhealthy intra-port competition and inter-organizational rivalry in the ports could have negative effects on the overall port performance. Next is the methodology adopted in this study.

Methodology

A survey was carried out on the six sea ports in Nigeria by adopting the probability sampling technique where any of the stakeholders have equal chance of been selected. The instrument for data collection was the structured questionnaire containing 40 questions. The questionnaire was distributed randomly among the port stakeholders such as the shippers, clearing agents and so on from the 6 seaports in Nigeria. 120 questionnaires were distributed, and 83 usable responses were received. The questionnaire was graded on a 5-point Likert scale. The respondents were expected to choose from the options according to their level of agreement with the questions posed. In the Likert scale, 1 represented strongly disagree while 5 represented strongly agree. The first section of the questionnaire contained questions related to the respondents' profile consisting of their years of working experience, and job designation. The questionnaire items were adopted from Li and Jiang [30], Santos, Rodrigues [31] and Antão, Calderón [10].

The data collected were analysed descriptively using the summated mean score. The interpretation for the mean scores adapted from Kabilan and Embi [32] for a five point Likert scale is presented in Table 1 below

Table 1. Interpretation of level of performance of sea ports

Mean score of items	Extent of performance
1.00 − 2.00	Low extent
2.01 − 3.00	Slightly high extent
3.01 − 4.00	High extent
4.01 − 5.00	Very high extent

The items measured in the questionnaire and the sources are presented in Table 2 below:

Table 2. Measurement items for seaport performance

Performance indicators	Source
Cooperative relations	
Grade cooperation performance of customs clearance and quarantine	J. Li and Jiang (2014)
Number of dedicated railway freight line	√
Grade accuracy and timeliness of information sharing	√
Grade different intents of cooperation and agreements signed	√
Health and safety, Security	
Compliance with Personal Protection Equipment	Antão et al. (2016)
Feedback to safety suggestions	√
Safety exercises and drills	√
Extent of damage caused by security offences	√
Education and training in security	√
Security exercises and drills	√
Body searches	√
Number of cases of goods theft	√
Environmental	
Dust	Antão et al. (2016)
Noise	√
Dredging	√
Waste	√
water, sediment and ecosystems)	√
Congestion (operational performance)	
space per container	Hui, Aye, and Duffield (2019)
Number of occupied slots per number of available slots	√
compliance with segregation requirements	√
Organization	
Compliance with the schedule by workers	Di Vaio, Varriale, and Alvino (2018)
Availability rate of equipment	√
The mean time of equipment waiting / container	√
Handling customer complaints	√

Results and Discussion

The results obtained from the questionnaire survey are presented in Table 3 below:

Table 3. Results of questionnaire survey

Performance Indicators	Mean Score		Interpretation
	Item mean	Summated mean	
Cooperative relations performance		2.47	Slightly high extent
Grade cooperation performance of customs clearance and quarantine	1.14		
Number of dedicated railway freight line	1.21		
Grade accuracy and timeliness of information sharing	3.44		
Grade different intents of cooperation and agreements signed	4.12		
Health and safety/Security performance		2.76	Slightly high extent
Compliance with Personal Protection Equipment	2.24		
Feedback to safety suggestions	1.53		
Safety exercises and drills	2.43		
Extent of damage caused by security offences	3.67		
Education and training in security	2.48		
Security exercises and drills	2.62		
Body searches	4.03		
Cases of goods theft	3.07		
Environmental performance		3.16	High extent
Performance regarding dust mitigation	3.41		
Performance level in noise reduction	2.89		
Dredging prevention around the ports	4.21		
Waste management in & around the ports	2.11		
Congestion/operational performance		1.93	Low extent
Space per container	2.14		
Number of occupied slots per number of available slots	2.34		
Compliance with segregation requirements	1.32		
Clearance time in port			
Organization **performance**		2.72	Slightly high extent
Compliance with the schedule of workers	3.41		
Availability rate of equipment	2.19		
The mean time of equipment waiting / container	1.52		
Handling customer complaints	3.75		

The results show that the ports studied had slightly high performance with regards to customer satisfaction, corporate relations, health and safety, and organization since they all have summated mean values between 2.01 to 3.00. while the results for environmental performance shows that the ports had a high level of performance (mean score between 3.01 to 4.00). The performance indicator with the least performance was in the area of congestion which showed low performance (1.00 − 2.00). The results indicate that the seaports with regards to the key performance indicators is heterogenous ranging from low to high.

The study results show that performance is low in the aspect of port congestion. The results in this regard

conforms to the findings of Chikere, Ibe [33] who described congestion of sea ports in Nigeria as a cause for worry and has attributed this as the main reason for the diversion of Cargo from Nigerian ports to the ports of neighboring African countries. Cargo whose final destination is Nigeria are diverted to seaports in Benin republic, Chad, Niger and Cameroon [34], due to the poor infrastructure, lack of professionalism among port workers and general inefficiencies in the Nigerian ports which has led to congestion of the seaports. This has led to the revenues running into millions of dollars which ordinarily would have been paid to the Nigerian government coffers been paid to other countries with more efficient seaports [35]. Also, Nwanosike, Tipi [6] confirmed the congestion at Nigerian ports and attributed it to serious ship delays, cumbersome and bureaucratic clearing procedures, corruption and limited storage space. This needs to be addressed urgently as it could be partly affecting the performance level of other port performance indices.

Despite the assertion by Trujillo and Nombela [27] that the performance of seaports the world over has increased due to private sector involvement in their management, the situation in Nigeria still leaves much more to be desired as the performance is still largely below the optimum. This situation can be attributed to the time required for the private port operators to get familiar with the day to day running of the ports and improve performance which would usually require medium to long-term periods as opined by Nwanosike, Tipi [6]. Also, with the slightly high performance results in the organization of the ports attained in this study, the findings are similar to that obtained by Yuen, Zhang [36]. Nwanosike, Tipi [6] opined that the probable reason for the slightly high performance is because of the concessioning of the ports to private investors. They attributed this to the reduced the impact of technological change which is necessary for organizational performance of the sea ports. The adoption of new technologies will invariably improve the organization of the ports, make processes less cumbersome, and reduces incidences of corruption since it limits the interface between the port workers and other port stakeholders using the ports.

Other aspects of port performance which showed high performance also needs to be sustained. This is important even as Dutra, Ripoll-Feliu [37] opined that that seaports performance regarding one indicator could influence the performance of other indicators. For example, if the organization level of the ports performs maximally, it will impact on congestion. Also, in the area of health and safety performance, if the seaports perform very high in environmental performance, some incidences of health and safety will be forestalled. Aspects such as environmental performance, though showing high performance, could still be improved through better enlightenment of stakeholders and training on environmental protection. The performance in this regard could be due to increased surveillance by the various environmental regulatory agencies such as the federal environmental protection agency (FEPA).

Conclusion and Recommendations

This study was set out to investigate the perception of stakeholders on the performance of seaports in Nigeria using the seaport performance indicators. The results obtained showed that the stakeholders had high levels of satisfaction with environmental performance of the seaports, while their level of satisfaction with cooperative

relations, health and safety, and organization of the seaports was slightly high. The aspect in which the ports least performed was the port congestion which the stakeholders termed to have performed low.

Based on the results obtained, it is imperative that there is a need for a high degree of excellence of the ports in Nigeria for them to be competitive. The improvement especially with respect to decongesting the ports can deliver internal and external satisfaction from a multi-stakeholder perspective and reduce the incidences of diversion of cargo to seaports in other African countries and denying the Nigerian government the much-desired revenue. Therefore, there is a need for an all-encompassing policy geared towards awakening the evolution of port services, creating awareness about various performance standards, and encouraging their adoption.

Due to the increase in cargo after the period of port concession, the government and the port's management need to be strategic in their planning. This is important in view of the imminent congestion which could exceed what is currently being experienced. Studies similar to this current study needs to be carried out to collect data for planning purposes which would be useful in the future for new port development and the expansion of the existing ones. This would help in increasing the performance of the ports with regards to reducing congestion.

In view of the above, this study presents a different approach in the measurement of seaport performance by considering other key performance indicators not considered in previous studies. It represents an effective performance measurement tool and offers a diagnostic instrument for performance assessment and monitoring of seaports and terminals with the aim of satisfying different needs of various port stakeholders in a dynamic manner.

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