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A Comparative Analysis of State of Security in Eastern Ports of Nigeria Before and After Concession

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Abstract:

The extent of the realisation of the objectives of Port Concession in Nigeria is yet to be determined fifteen years after its inception. This study therefore examined the state of security (attack on ships) of Eastern ports of Nigeria before and after Port Concession. This study considered a twelve-year period each of Pre (1994-2005) and Post (2007-2018) Concession era. The study used secondary data sourced from International Maritime Bureau (IMB) Annual Piracy Reports. The data were presented using tables and charts and analysed using Wilcoxon Signed Ranks Test. Results of the analysis showed negative significant differences between the level of attacks on ships before and after Port Concession. It was concluded that Port Concession have not improve the level of ships' attack in Eastern ports of Nigeria. The study recommended that the Lessees (Terminal Operators) should partner with the Lessor (Nigeria Port Authority) in the provision of security in the maritime domains of their respective areas of coverage to reduce the rate of incidences of attacks on vessels especially in the Gulf of Guinea.

Keywords: Port concession, port reform, ships security, piracy, operational performance

1. Introduction

Countries under the African sub-region have adopted Public Private Partnership (PPP) as one of the reforms process to boost private sector participations in the port industry and Nigeria is not an exemption. The reform policy heralded the transfer of terminal operations to the private sector by the the public through Concession Contracts. This has led most of the container ports and other specialized ports/terminals in Nigeria to be operated by private operators/Concessionaires or operating under lease.

The belief that ports play substantial part in the total logistics chain leading to a considerable reduction in the overall transportation costs (importation and exportation of goods) has made ports in the Sub-Saharan Africa and the world over to embrace reforms in the port industry. Consequently, the belief that such reform(s) will also have positive impacts on the overall competitiveness of the economies of the countries has equally encouraged countries to be involved in the Port Concession initiative (Estache, Gonzalex, & Trujillo, 2016).

Port reforms via Concession Contracts are policies put in place by Government to enhance port performance and productivity by stimulating and reinforcing the functional and operational modalities at the ports (Ndikom, 2004). In Nigeria, the idea for port reforms was to make the Nigeria ports both investor and user friendly, vis-à-vis ensuring smooth operations at the ports. The model adopted by government of Nigeria in the reform of Nigeria ports was Concession Contracts. Port Concession entails the retention of the ownership of infrastructure and contracting out the management and operations of the terminals /facilities to private operators for a specified period of time ranging between 25 and 30 years. In the works of Bousquet & Fayard (2015), Port Concession is when government grants private operator the right to fund, build, operate, own, upgrade, improve and maintain public infrastructure for a specified period of time while charging users for services rendered.

The economic recession in the eighties and the changes in the global distribution network made existing infrastructure to become obsolete and unproductive. It was glaring at this point that the government lacked the resources and managerial ability to successfully run a modern port (Razak, 2009). Consequently, the trend generally was government disengagement from port operations to regulating and provision of an enabling environment for the private sector to strive. The notion for the transfer of port operations to private investors through Concession Contracts became necessary. Furthermore, policymakers' realisation of changing the status quo in order to avoid further deterioration of the

ports and its facilities was a step in the right direction. To this end, the introduction of Public-Private Partnership in the operations of Nigerian ports was brought to limelight.

The operations of the Nigerian ports by private operators through Concession Contracts was a common conviction that it will give rise to improved efficiency and make services to port users flexible. However, the level of attainment of the objectives of Concession is yet to be felt in most of the Nigerian ports after over a decade of Concession (Omoke, Diugwu, Nwaogbe, Ibe, & Ekpe, 2017). This research therefore seeks to assess the state of security (level of attacks and armed robbery on ships) before and after Concession of Eastern ports in Nigeria.

2. Literature Review

A guarantee of security in shipping is one of the critical factors in the facilitation of international trade (Closs & McGarrell, 2004). Hawkes (2015), defined shipping security as “the measures put in place by owners, operators, and managers of vessels, port facilities, offshore installations, and other marine establishments to guard against sabotage, seizure, pilferage, piracy and other form of illegal acts within the port area”. In shipping, the major threats leading to insecurity include vessels, cargo, ports, information and people (OECD, 2003; Barnes & Oloruntoba, 2005; UNCTAD, 2006; Lorenz, 2007). Accordingly, the International Ship and Port Security Code (ISPS), Container Security Initiative (CSI), and 24-hour Advanced Vessel Manifest rule are maritime regulations intended specifically to boost security in shipping (Banomyong, 2005). The Customs-Trade Partnership against Terrorism (C-TPAT), an extension of the Container Security Initiative, is also another initiative to increase security in shipping especially at it affects containers (Barnes and Oloruntoba, 2005; UNCTAD, 2006; Marlow, 2010; Kim, 2011). To comply with C-TPAT guidelines, shipping firms must adhere to some norms guiding security procedures, physical access controls, container security, personnel security, security training and awareness, physical security, procedural security, information technology security, security assessment, response, and improvement.

Previous studies have identified some security concerns affecting the shipping industry. Yang (2010) and Banomyong (2005) studied the impact of Container Security Initiative on container shipping supply chain. Frankel (2005), advocated that shipping security issues include ship security, cargo security, personnel security, communication infrastructure, access control, human resources security, and data security. Yang (2006), established that the assessment plan for port security should embrace ship and environmental control, personnel control, management training and facilities control. Thai (2009) in his study of security in maritime transport applied quality management and found some dimensions that are crucial in the successful management of security to include: a well-structured security policy, risk-based security alleviation plans, security risk assessment, consultation and communication with stakeholders, continuous security improvement, security monitoring and review, adoption of specific organisational structures, commitment and leadership by senior management, employee involvement, employee empowerment, security training, security design and process control, security incident handling and response. Noticeably, the capability of a shipping firm to incorporate security management techniques with other members of the shipping supply chains is necessary to guarantee a smooth performance and sustainability of its competitive advantage.

Reflecting on the effects of security threats on the performance and safety of the shipping industry, an effective security performance measurement plan is required by organisations to enable them understand where they are and also identify areas of improvements if there is deviation in the set target (Enoma & Allen, 2007; Bichou, Lai, Lun, & Cheng, 2007). The performance of security in shipping are usually assessed by hard and soft measures. While the hard measures are done objectively, the soft measures are based on perceptual or responsive measures (Shang & Lu, 2009; Dalton, Todor, Spendolini, Fielding, & Porter, 2014). This research will adopt the hard measures to evaluate the security performance of the port under study. The reason for the choice is to achieve objectivity in the outcome.

Performance indicators of security performance in container shipping have been identified by many studies. Container shipping security has been identified as one that influences customs clearance process and safety performance (Yang, 2006; Frankel, 2005). The performance of Customs clearance is seen as the measurement and comparison of actual levels of accomplishments relating to the efficiency in the customs clearance process.

Even though the implementation of security programs can lead to additional cost, security management in the shipping industry has numerous benefits ranging from decrease in theft and pilferage in port, reduction in cybercrime and acts of terrorism, avoidance of human trafficking and trade in counterfeit goods, reduction in damage to goods to ensuring supply chain visibility among supply chain partners and improvement in lead time fulfilment by cargo interest (OECD, 2003; Martens, Crum, & Poist, 2011; Gutierrez & Hintsa, 2006). A report by the European Commission (2006), shows that improvement of security in the shipping supply chain can reduce losses and theft, reduce the number of shipment delays, increase employee commitment and customer loyalty, decrease the number of safety incidents, reduce cost of inspections of suppliers, reduce the rate of crime and acts of sabotage, and improve communication between supply chain members. Security management in the shipping supply chain also enhances international trade by decreasing transit time of containers (OECD, 2003; Banomyong, 2005), enhancing efficiency in customs clearance (Peleg-Gillai, Bhat, & Sept, 2006; Sheu, Lee, & Niehoff, 2006; Diop, Hartman, & Rexrode, 2007), and increasing the operational efficiency of the port (Bichou, 2017; Yang Y., 2018). The C-TPAT program benefits trades through speedy inspections at the border, costs reduction, and increase in customer satisfaction (Sheu et al., 2006). It equally assists to monitor the movement of goods and prediction of lead-times, reduce the number of customs inspections, reduce waiting times and the time used to clear cargo by customs (Diop et al., 2007). More so, Banomyong (2005) debated that a secure and an efficient shipping supply chain can assist businesses to sustain their competitiveness by decreasing transit time, transport costs, and increase reliability and security of cargo. In the same vein, Frankel (2005), also argued that the container shipping security could improve a firm's

effectiveness, reliability, costs, and safety significantly. Equally, Peleg-Gillai et al. (2006) examined the advantages of investing in supply chain security programs and came up with the benefits such as efficient customer service, inventory reduction, process improvements, enhancement of supply chain visibility, improvement in customs clearance process, speedy operations, and greater customer satisfaction. Improvements in shipping supply chains can also boost service quality relating to increase in reliability of service, awareness in social responsibility, efficiency in port operations and management and improve the general image of the shipping industry (Thai, 2007).

Researches on Port Concession such as Okeudo, (2016), Ogbojafor, Kuye, & Alaneme, (2017), Akinwale & Aremo, (2016), has been in piecemeal as none have been able to do a holistic study aimed at determining whether the objectives of the Concession policy have been met in any of the Nigerian ports or not. Consequently, almost all the studies on port performance evaluation (Adi, Ndukwe, Iheanachor, & Dim, 2013; Barros & Athanasiou, 2017; Nwanosike, 2014; González & Trujillo, 2016; Okeudo, 2016; Ogbojafor, Kuye, & Alaneme, 2017; Notteboom, Coeck, & Van Den Broeck, 2017, focused on the efficiency measurement of seaports without considering the effectiveness aspect of the performance measurement thereby neglecting the customer side of the performance evaluation. Also, there is no study on Port Concession and port performance known to the researchers that sought to address the interests of the ship owners and the cargo owners/shippers, but rather that of the Port Authority/Terminal Operators through the use of berth occupancy rate, cargo throughput, ship's throughput and revenue generated by the port. This study is therefore undertaken to assess the operational performance of the Eastern ports of Nigeria using state of security as an indicator. The aim is to determine if there are any statistical significant differences between the state of security before and after Concession of the ports under study.

3. Materials and Methods

Data for this study were sourced from International Maritime Bureau (IMB) Annual Piracy reports between 1994 and 2005 (representing the Pre-Concession period) and between 2007 and 2018 (representing the Post-Concession period).

The data were analysed using Wilcoxon Signed Ranks Test to determine if there are any significance differences between the state of security before and after Concession of Eastern ports.

The Wilcoxon test statistic was computed as the sum of the positive ranks. The test statistic was computed using the formula below.

$$W = \sum R_i^{(+)}$$

$$I = 1$$

Where

W = Wilcoxon test statistic

R_i = sum of positive ranks

n = number of years

The null hypotheses were represented as $H_0: \mu_1 - \mu_2 = 0$ (the difference between the means before and after Concession is equal to 0), while the alternate hypotheses were represented as $H_1: \mu_1 - \mu_2 \neq 0$ (the difference between the means before and after Concession is not 0). A α -level of $W_{0.05}$ (two tailed) was used as the level of significance. The decision rule was to reject the null hypothesis if the W test statistic is $\leq$ the lower critical value or the W test statistic is $\geq$ the upper critical.

4. Results and Discussion

The table below shows the level of security in terms of number of attacks on vessels before and after Concession of Eastern ports.

S/No	Year	State of Security (Occurrence of Attacks on Vessels)	Period
1	1994	0	Pre-Concession
2	1995	1	
3	1996	4	
4	1997	9	
5	1998	3	
6	1999	12	
7	2000	9	
8	2001	19	
9	2002	14	
10	2003	39	
11	2004	28	
12	2005	16	
13	2006	12	Concession Year
14	2007	42	Post-Concession
15	2008	40	
16	2009	29	

S/No	Year	State of Security (Occurrence of Attacks on Vessels)	Period
17	2010	19	
18	2011	10	
19	2012	27	
20	2013	31	
21	2014	18	
22	2015	15	
23	2016	36	
24	2017	33	
24	2018	48	

Table 1: Occurrence of Security Attacks on Ships
Source: IMB Annual Piracy Reports 1994-2018 Editions

The figure below shows a graphical presentation of the security attacks on ships in Nigeria. The graph indicates that the number of attacks on vessels did not change in the post Concession era. The lines show an upward trend during the post Concession era, indicating that Port Concession does not have significant improvement in the level of attacks on vessels and other security threats in the Gulf of Guinea.

Figure 1: Occurrence of Security Attacks on Ships
Source: Field Study, 2021

To test the hypothesis, the table below shows the Wilcoxon Signed Ranks Test conducted to test the hypothesis.

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
Pre_Security_Level	12	12.83	11.575	0	39
Post_Security_Level	12	29.00	11.685	10	48

Table 2: Descriptive Statistics

Ranks				
		N	Mean Rank	Sum of Ranks
Post_Security_Level - Pre_Security_Level	Negative Ranks	2 ^a	2.25	4.50
	Positive Ranks	10 ^b	7.35	73.50
	Ties	0 ^c		
	Total	12		
a. Post_Security_Level < Pre_Security_Level				
b. Post_Security_Level > Pre_Security_Level				
c. Post_Security_Level = Pre_Security_Level				

Table 3: Wilcoxon Signed Ranks Test

Test Statistics ^a	
	Post_Security_Level - Pre_Security_Level
Z	-2.707 ^b
Asymp. Sig. (2-tailed)	.007
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

Table 4: Test Statistics^a

Source: SPSS Result, 2021

Wilcoxon Signed Ranks Test as presented in the table above shows that $W = \min(73.50, 4.50)$ and since $W = 4.50$ is less than the lower critical value (13) and significant at $W_{0.05}$ with 0.007 significance level (2 tailed), the null hypothesis was rejected to conclude that the median (mean) is equal to 0.

The test statistic implied that although there was a statistical significant difference between the state of security before and after Concession of Eastern ports, and since the median (mean) score of occurrence of attacks on ships after Concession (29.00) was higher than the median (mean) score of occurrence of attacks on ships before Concession (12.83), it showed a negative statistical significant difference.

5. Conclusion and Recommendations

Based on the findings, it was concluded that Concession of the port did not show significant improvement in the level of security (piracy and armed robbery attack on ships) in the Eastern ports of Nigeria.

The study recommended that the Lessees (Terminal Operators) should partner with the Lessor (Nigeria Port Authority) in the provision of security in the maritime domains of their respective areas of coverage to reduce the rate of incidences of attacks on vessels especially in the Gulf of Guinea.

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