

INLAND DRY PORTS AS LOGISTICS CENTRES FOR OPTIMIZING LOGISTICS CAPABILITY IN NIGERIA

¹Eto, Gabriel M., ²Akpoghomeh, Osi S., and ³Mbee Daniel Mbee
Centre for Logistics and Transport Studies
University of Port Harcourt

Abstract

The paper reviews the numerous challenges confronting inland dry ports as logistics centres and their prospects in the effort to optimize logistics capability in Nigeria. Some of the challenges identified are land constraints, infrastructure deficit, poor port hinterland connections, lack of capital to expand and modernize, environmental and institutional impediments. These challenges have contributed to the suboptimal performance of the IDPs in Nigeria such that shippers are having harrowing experiences transporting their goods from the seaports directly to their operational bases in the hinterland where the IDPs are located. However, the prospects for the economic boom of the IDPs (as extended gateways) are bright considering the vast captive hinterland and the market opportunities presented by the country's landlocked neighbours. This paper summarizes the major challenges from literature review, media reports and industry stakeholders. The paper found from the survey conducted among industry stakeholders that adopting regional approach to establishing standards and principles for the development and operation of IDPs in Nigeria would enhance the country's logistics capability. The paper submits that the Nigerian Government should spearhead the adoption of regional approach to establishing standards and principles for the development and operation of IDPs in Nigeria in order to ensure the efficiency of IDPs and be accorded international recognition as ports of origin and destination for exports and imports. This would encourage shipping lines to issue their through bill of lading and it would be a huge relief for hinterland based shippers in the country.

Keywords: Logistics, optimizing, capability, hinterland, competitiveness and affiliate services

Introduction

As seaports continue to evolve into modern entities in the wake of the growth in ship size in order to better achieve economies of scale, with the introduction of post-Panamax containerships (For example, Ever Ace has a capacity of 23,992 TEUs, according to Ashar & Rodrigue (2012) cited in Brooks et al, 2014.), the demands of port users for efficient and speedy cargo handling capabilities and other value adding services have increased as well. This view is reflected by Roso et al. (2009) when they assert that the maritime part of the intermodal transport chains now employs ever larger ships in order to cope with increasing transport demand so as to facilitate potentially lower unit costs.

This trend in the shipping industry is a reflection of the development of the world economy and globalization, which have combined to result in demand for new standards of efficiency for maritime transport, inland freight distribution and thus creating new challenges for the world's ports. Naturally, this has influenced the dynamics of inland freight distribution systems and also

engendered the introduction of logistics centres and affiliate services; all of which have turned out to be critical factors that determine the nomination of particular ports as preferred destinations (Menegaki & Alexopoulos, 2017). This is with the aim that inland dry ports as logistics centre would offer opportunities to improve services to shippers by optimizing logistics capability, grow the regional economy, and generate new employment sources (Roso and Lumsden, 2010).

Freight transport systems generally are characterized by orderly transfers of goods between points of origin and destinations, which are commonly referred to as nodes. Inland dry ports as nodes are components of the logistics system and they are considered to be logistics centres. They are natural appendages of seaports, which play complementary role towards seaports because they offer services such as storage and transshipment between vehicles and traffic modes, distribution, assembly, consolidation, sorting and cross-docking (UN Economic and Social Commission for Asia and the Pacific, 2015).

In the view of Jeevan et al. (2017), the primary objectives of dry ports are to hasten national and international trade, activate intermodalism in the nation, improve seaport competitiveness, enhance regional economic development and establish a country's port policy. Generally, however, inland dry ports also have a number of functions which include logistics, transport, value adding service provision and administration functions in order to assist seaports and their clients. Besides the benefits that inland dry ports bring to container seaports, they equally provide benefits to users in that they reduce waiting times at seaports, provide clearance systems, reduce freight costs, facilitate cross border transactions and reduce empty container movements.

According to Klink (2000) cited in Mwemezi and Huang (2012), by investing in inland terminals (such as inland dry ports) and taking part in their operations, a seaport can establish its presence in the hinterlands as extended gateway and logistics centre. And an understanding of the expectations and demands of port customers would offer port operators insight concerning the competitive advantage they would have over global competition if inland dry ports are introduced as logistics centres and extended gateways with all the associated value added services.

Literature Review and Conceptual Framework

Conceptual Clarification

The Concept of Inland Dry Port

An inland dry port is an inland terminal with strong transport connections to the seaport. Its development is gaining global traction owing to the complexity of modern freight distribution. Different motivations exist for the establishment of IDPs. Such motivations can originate either from the interest of seaport operators (concessionaires) or from the interest of hinterland entities (e.g. municipalities).

According to ESCAP (2013), "a dry port provides services for the handling and temporary storage of containers, general and/or bulk cargoes that enters or leaves the dry port by any mode of transport such as road, railways, inland waterways or airports". This implies that a dry port is an inland intermodal terminal linked by road or rail to a seaport and it operates as a centre for the trans-shipment of cargo to inland destinations.

In the view of Roso & Lumsden (2009), the establishment and implementation of a dry port within a seaport's captive hinterland tends to increase the seaport's terminal capacity. Along with the introduction of dry port comes the prospect of increasing productivity since the seaport will be able to attract bigger container ships.

UNESCAP (2015) asserts that the emergence of Inland dry ports has improved seaport competitiveness by reducing traffic congestion, improving Logistics Performance Index (LPI) and increasing capacity. Hence, Shi and Li, 2016 cited in Olah et al. (2017) opine that in addition to reducing the seaport's spatial and environmental pressure and lessening the congestion of highway transport, the main purpose of an inland dry port is to extend the port's hinterland by improving the facilities of a given inland distribution centre, which closely integrate the maritime terminals and inland freight depots.

Inland dry port operations have definite impacts on seaport competitiveness such as the ability to (1) enhance seaport performance, (2) increase service variations for seaports, (3) improve seaport-hinterland proximity, (4) increase seaport trade volume and (5) enhance seaport capacity. By and large, these outcomes also include the ability to increase service variations for seaports and improve seaport-hinterland proximity (Jeevan et al., 2017).

In both the United States and Europe, the role of dry ports in sustaining container volume growth, encouraging congestion reduction, and facilitating port expansion has been validated in studies carried out by Barnard 2009b; Mongelluzzo 2011 ; Morton 2007 ; Sowinski 2008 cited in Zeng et al. (2013). For instance, European ports capitalized on the economic downturn that was experienced in 2008 (during the global economic meltdown) to invest in inland ports in order to guard against a reoccurrence of congestion (Barnard 2009b cited in Zeng et al. (2013). And in the United States, because many ports have limited possibilities for the physical expansion their premises, they resort to off-site dry port facilities, which allow for continued volume growth (Allen 2008, Boyd 2011 cited in Zeng et al., 2013). In the same way in China, dry ports provide avenues to relieve challenges associated with capacity constraints and resultant congestion (Cullinane and Wang 2007; Zeng and Yang 2012 cited in Zeng et al. (2013).

With transport development steadily shifting inland after a phase that had focused on the development of port terminals and maritime shipping networks, the following drivers have been identified as contributing to the introduction and growth of inland dry ports: the complexity of modern freight distribution, the increased focus on intermodal transport solutions and capacity issues (Roso et al., 2009).

At the initial phase, trucking tended to be sufficient in the development of inland freight distribution systems, but at some level of heightened activity, diminishing returns such as congestion, energy consumption and empty movements became strong incentives to consider the establishment of inland terminals as the next step in regional freight planning (Notteboom et al. (2020). Consequently, Roso et al. (2009) argue that a well applied inland dry port concept can help to shift freight volumes from road to more energy efficient traffic modes (such as rail freight transport) that are less harmful to the environment, relieve seaport cities from some congestion, make goods handling more efficient in seaports and facilitate improved logistics solutions for shippers in the port's hinterland. Rail freight transport over long distance has been identified as being ideal for large bulk flows to and fro inland dry ports (Wiegmans et al., 2015).

When a seaport invests in inland terminals as logistics centres, and participates in their operations, it directly establishes itself in the hinterland. For instance, it was the rise in coastal production cost in China that compelled producers to move inland in order to remain competitive with other Asian countries. Thus, Chinese seaports have taken the cue to develop IDPs as logistics centres in order to compete for hinterland access (Zeng et al., 2013).

Inland Dry Ports as Logistics Centres

As a component of a logistics system, inland dry ports function as logistics centres and can serve the maritime industry by offering certain services (receiving imports from the seaports and dispatching exports to the seaports). By so doing, inland dry ports are able to optimize logistics capability in Nigeria.

An inland dry port as a logistics centre is the hub of a specific area where all the activities relating to transport, logistics and goods distribution are carried out on commercial basis by various operators. Other functions of inland dry ports as logistics centres are customs and document clearance, temporary storage of cargo and servicing and repair facilities of containers (Menegaki & Alexopoulous, 2017)

New logistics solutions created by the establishment of inland dry ports as logistics centre in rural areas would make the hinterland more attractive for the establishment of new businesses, leading to the development of the area and providing new job opportunities for the local inhabitants (Roso, Woxenius and Lumsden (2009) cited in Roso & Lumsden, 2009). As logistics centres, inland dry ports have numerous benefits.

Potential Benefits of Implementing Inland Dry Ports in Nigeria

Inland dry ports exist to boost markets for freight transport. The concept of inland dry port has generated great benefits globally and has proved to provide logistics efficiency, low environmental impact and high logistics quality. According to Khaslavskaya and Roso (2020), the following benefits have resulted from the implementation/availability of dry ports.

Benefits of Inland Dry Ports with Respect to Transport operators and shippers in Nigeria

The potential benefits of inland dry ports with respect to transport operators and shippers which are applicable to Nigeria are as follows:

- (1) Optimized logistics (shorter time and lower costs)/lead time reduction,
- (2) Total transportation/logistics cost minimization/decrease/reduction due to optimized design of hinterland transportation leg
- (3) Obtaining added value through vertical integration
- (4) Improved rail–sea intermodal capacity
- (5) Increased seaport–hinterland accessibility
- (6) Improved hinterland network
- (7) Reduction in border transit delays
- (8) Lowered customs costs
- (8) Reduction in external transportation costs
- (9) Revenue source (private interest)
- (10) Lower door-to-door freight rates/tariffs
- (11) Increased railway share
- (12) Good services for shippers and transport operators
- (13) Improved customer service
- (14) Reduced external costs associated with road congestion/associated accidents
- (15) Elimination of congestion and waiting time at a seaport
- (16) Cost reduction due to lower CO₂ emissions/efficient use of energy
- (17) Elimination of forwarding fees
- (18) Elimination of demurrage and late documentation fees
- (19) Improved quality of life
- (20) Reduced risk of road accidents
- (21) Reduced congestion in seaport cities
- (22) Less traffic
- (23) Reduced CO₂ emissions along roads and seaports
- (24) Facilitating international trade
- (25) Increased reliability for shippers
- (26) Reduces customs costs
- (27) improves rail-sea intermodal capacity
- (28) minimizes transportation time

Benefits of Inland Dry Ports with Respect to Seaports

(1) Secure and expand hinterland (2) Increase reliability of seaport (3) Reduced CO₂ emissions at seaport area and local roads (4) Increased seaport throughput/capacity (5) Releasing expensive land at a seaport (6) Increased market share

Benefits of Inland Dry Ports with Respect to West/Central African Sub Region

(1) Obtaining added value through job creation (public interest) (2) Stimulation of national business (3) Regional development/creating new economic clusters (4) Smaller infrastructure investments (5) Stimulation of international business. It is the immense benefits of inland dry ports in the aforementioned aspects and more that inspired the establishment of IDPS in Nigeria.

The Introduction of Inland Dry Ports in Nigeria

In the view of Notteboom et al. (2020), empirical evidence abounds to show that port infrastructure investment projects encourage economic development and are vital when a port is close to its operational capacity. Given such circumstances however, lack of investments will clearly result in additional externalities, such as congestion, which will undoubtedly undermine the competitiveness of a whole region, talk less of a nation (Notteboom and Rodrigue, 2009). This was the rationale for the introduction of inland dry ports (which are considered as part of the port system) in Nigeria, when the major seaports in Lagos could no longer be expanded due to space constraints (Adejumo, 2020).

The introduction of inland dry ports in Nigeria is geared towards improving the cost-efficiency and the capacity of the transportation system besides the benefits of increased job opportunities and a modal shift to rail from road transport which discourages pollution and road traffic congestion (Nguyen et al., 2021).

The introduction and implementation of inland dry ports as logistics centres in Nigeria came in the heels of logistics operational constraints faced by Lagos seaports (Adejumo, 2020). This is what Notteboom and Rodrigue (2009) refer to as massification of flows in networks, through a concentration of cargo (which leads to cargo congestion) on a limited set of ports of call (Lagos ports) and associated trunk lines to the hinterland, which has created the right condition for inland dry ports to appear in the hinterland.

The introduction of inland dry port in Nigeria aims to attract the prospects of increasing productivity given that the seaports will be in position to attract bigger container ships. The implementation of the inland dry ports (which are connected to rail transport service) will eliminate seaport's congestion, which usually results when numerous trucks are on the road. This is because one train can substitute for some 35 trucks in Europe. The resultant reduction in the number of trucks on the roads would mean congestion, accidents, road maintenance costs and local pollution would be reduced as well (Roso & Lumsden, 2009).

IDPs in Nigeria are faced with the major challenge of efficient transport connection to the seaport owing to the absence of a functional rail transport system linking the port city to other parts of Nigeria and the deplorable road network, which is made worse by the lack of inland waterways transport service as an alternative.

The establishment of inland dry ports in Nigeria emphasizes the importance of logistics in order to organize the resulting complex freight distribution system which emanated from port congestion. However, the poor condition of port hinterland connections in Nigeria which accounts for the high cost of freight distribution to the hinterland has not helped the IDPs to ameliorate the port congestion witnessed in Lagos ports (Adejumo, 2020).

Generally, Nigeria's transport network is mostly in a state of disrepair as a result of inadequate investment in transport infrastructure over the decades, ineffective policies and plans. For instance, Tin Can Port and the Lagos Port Complex have always been known for inadequate cargo handling equipment. This is with the result of avoidable delays. However, when goods are eventually cleared at the ports, the absence of functional freight rail transport services compel shippers to haul them over poor and congested roads to the hinterland where they are based. These factors invariably lead to accidents, breakdowns and further delays (Business & Maritime West Africa, 2019).

Therefore, the absence of functional rail track to and from the ports has led to huge logistics crises for port users in Nigeria over the years. When over 5,000 trucks, plus numerous other commercial and private vehicles, seek access to the Lagos ports on a daily basis, the result is chaos. The port and its access roads were designed and constructed to accommodate only about 1,500 trucks daily (Lagos Chamber of Commerce and Industry, 2018). However, currently high and rising cost of trucking is prohibitive, ranging between N250, 000 and N300, 000 in a journey from the port to Lagos mainland. Previously, the cost was between N60, 000 and N80, 000 about a year ago (Business & Maritime West Africa, 2019).

Over all, the costs associated with ineffective and inefficient national transportation and logistics systems in Nigeria showed that the Nigerian economy loses an estimated revenue of N3.46 trillion annually (Lagos Chamber of Commerce and Industry, 2018). This cost implication for the inefficient transport system in Nigeria poses a huge challenge for the operation of inland dry ports in the country.

The current emphasis on road infrastructure projects for freight and passenger movement in Nigeria has its limitations, with heavy cost implications. For one thing, rail freight and inland water transport over long distance is ideal for bulky freight flows to and fro the IDPs (Wiegman et al., 2015). Hence, an integrated freight logistics and supply chain management approach is needed to enhance the operations of inland dry ports because it would promote efficient inland freight distribution in Nigeria.

Even though the concept of a dry port ought to bring numerous benefits to actors of the transport system, yet there are many challenges facing the implementation of same in Nigeria. The most common impediments are land constraints, infrastructure deficit, poor port hinterland connections, transport lack of capital to expand and modernize, environmental and institutional impediments (Eto et al., 2022). If these challenges are surmounted, the prospects of inland dry ports in Nigeria would be bright.

Prospects of Inland Dry Ports in Nigeria

Nigeria stands to gain immensely from establishing and operating functional inland dry ports. In the view of Mohammed (2019), inland dry ports have a strong role to play in assisting to make the maritime sector a key driver of the national economy. The author argues from the perspective of when a seaport faces international competition from its neighbours. This would make the seaports to depend on the dry ports to expand the scope of international port competition by granting access to hinterland markets.

Since land-locked countries depend on neighbouring maritime countries to gain access to overseas markets, efficient services at dry ports would attract such land-locked countries that have need for maritime transport services. Mohammed (2019) further points out that Niger and Chad are landlocked countries that have need to gain access to overseas markets through seaport facilities. The Republic of Chad is landlocked but its main route to the sea is by road to:

- (a) Maiduguri and then by rail to Port Harcourt, Nigeria
- (b) Ngaoundere and then by rail to Duala, Cameroun
- (c) Across the Sahara Desert to Libya

The need for the Republic of Chad, which is a land-linked country, to gain access to overseas market offers marketing opportunities for Nigerian seaports, but not without functional IDPs in the hinterland. Therefore, exploiting the needs of landlocked countries for maritime transport services (through the operations of inland dry ports) presents huge market opportunities for maritime nations like Nigeria in order to improve the GDP and the national economy generally. The gains would be extraordinary if the IDPs are allowed to function as extended gateways that replicate the services of seaports in the hinterland.

Nigerian Inland Dry Ports As Extended Gateways

UNESCAP (2015) defines a gateway as a link between different networks and as gateways; seaports can be classified as receiving or dispatching nodes in a network. However, inland dry ports as extended gateways are introduced in the hinterlands with the aim of optimizing the logistics capability.

As extended gateways, inland dry ports are established so that transport flows to seaports can be properly controlled and adjusted to avoid congestion which disrupts the supply chain flow. By so doing, port congestion can be minimized (Mwemezi & Huang, 2012). Hence, Brooks et al. (2014) opine that inland dry ports as extended gateways are being developed in many parts of the world in response to land-side port capacity constraints.

Several landlocked developing countries (and countries that have vast hinterland that are far removed from the sea) are continuously faced with the challenge of physical isolation, supply chain related barriers from the sea and the high costs of trading with the rest of the world (United Nations Economic Commission for Africa, 2011 cited in Eto et al., 2022). In order to surmount the challenges associated with being landlocked, the inland dry port concept evolved to serve as extended gateway. Inland dry ports as extended gateways also evolved out of the challenges that faced existing sea ports, which the original gateway (i.e. due to the increase in size and capacity of container vessels). Seaports increasingly faced the challenge of inability to handle import and export cargo in a regular manner. This often resulted in congestion at different sea ports owing to long waiting time of trucks and haulage vehicles (Woxenious et al, 2004 cited in Wherikhe & Zhihong, 2015) hence the need for inland dry ports as extended gateways, which function as seaports located in the hinterland, albeit without sea.

As extended gateway, Roso et al. (2009) defined inland dry port as “an inland intermodal terminal, directly connected to seaports with high capacity transport means, where customers can leave and pick up their standardized units as if directly from a seaport”. Furthermore, Klink (2000) cited in Mwemezi and Huang (2012), is of the view that by investing in inland dry ports as extended gateways and participating their operations, a seaport can establish itself in inland regions. This is the essence of establishing inland dry ports in Nigeria, which would be of international importance if the idea of a regional framework for the development, design, planning and operation of dry ports would be espoused by the Nigerian government and accepted by the sub region.

Suggested Regional Approach to Establishing Standards and Principles for the Development and Operation of Inland Dry Ports in Nigeria

The promotion and development of inland dry ports (IDPs) of international importance in Asia is based on certain standards and principles. These IDPs are to serve as reliable avenues to establish an international integrated intermodal transport and logistics system within Asia and between Asia and its neighbouring regions. Hence, the Intergovernmental Agreement on Dry Ports was opened for signature at Bangkok on November 7 and 8, 2013 and entered into force on April 23, 2016 (ESCAP, 2013).

As of February 1, 2020, 14 Economic and Social Commission for Asia and the Pacific (ESCAP) member States were Parties to the Agreement and this covers over 245 dry ports in Asia (ESCAP, 2013). The Intergovernmental Agreement on Dry Ports organized by the Economic and Social Commission for Asia and the Pacific provides a uniform definition of a dry port, which measures up to international standard and importance. The Agreement further identifies the network of existing and prospective dry ports of importance for international transport operations and provides guiding principles for their development and operation (ESCAP, 2013).

One of the reasons shipping companies are yet to recognize the IDPs in Nigeria, judging from their failure to issue through bill of lading both for import and export (Hellenic Shipping, 2020), is because there is no regional body like the Economic and Social Commission for Asia and the Pacific (ESCAP) to spell out guiding principles and standards for the development and operation of dry ports in the country. The low level of patronage experienced by inland dry ports in Nigeria has not changed despite the Federal Government's pronouncement of the dry ports as port of origin and destination for sea freight. This is a clear signal that Nigeria needs international collaboration in order get global recognition for her IDPs (Eto et al., 2022).

The reason IDPs have been conferred with international importance by Economic and Social Commission for Asia and the Pacific (ESCAP), with sure plans to push the development of dry ports to the top of the region's transport agenda is because they are considered as crucial means to establish an international integrated intermodal transport and logistics system within Asian countries and with its neighbouring regions (ESCAP, 2013).

Nigeria needs such regional body as the Economic and Social Commission for Asia and the Pacific with the same drive to make her IDPs to function as intended. For instance, ESCAP is renowned for implementing capacity-building activities to support countries in establishing and operating dry ports as part and parcel of a region-wide effort to develop an efficient logistics industry. And as part of its activities that focus on promoting the implementation of the Intergovernmental Agreement on Dry Ports, ESCAP formulated a Regional Framework for the Development, Design, Planning and Operation of Dry Ports of International importance (ESCAP, 2013).

The promotion of the Regional Framework was endorsed by ESCAP Resolution 74/2 adopted in 2018. The Regional Framework recognizes basic issues that affect the development and operation of IDPs and for each of these fundamental issues, it recommends a related target and provides guidance on ways to attain each target. This is specifically what Nigeria requires in the West African sub region in order to get her IDPs up and running.

The confidence behind proposing that a regional framework be adopted in order to set standards and principles for the development and operation of dry ports in the West and Central African sub-region arises from the milestone achievements by existing sub-regional organizations to which Nigeria is signatory. Some of such organizations are the Gulf of Guinea Commission (GGC), Fisheries Committee for the West Central Gulf of Guinea (FCWC), West and Central Africa Memorandum of Understanding on Port State Control (Abuja MoU) and Maritime Organization of West and Central Africa (MOWCA). Despite differences arising from their different colonial experiences and languages, and other artificial barriers, they have found common grounds to forge ahead to achieve their set goals (Eto et al., 2022).

Thus, Nigeria ought to push for a regional approach towards setting standards and principles in the development and operations of Inland Dry Ports in the West/Central African sub region, in order to gain the maximum benefits of inland freight terminals, which include recognition as port of origin and destination thereby encouraging shipping lines to issue their through bill of lading. Thus, by promoting the development of an intermodal regional network of IDPs, a sub-regional framework in West and Central African would strengthen connectivity, improve the use of current infrastructure and encourage the increase in the level of integration between the different transport modes (Eto et al., 2022).

By and large, the significance of IDPs in facilitating maritime trade and the resultant overall impact on sub-regional economy are sufficient reasons to encourage West and Central African nations (including Nigeria) to embrace a regional approach to developing and operating IDPs. Example illustrated by the Regional Framework adopted by the Economic and Social Commission for Asia and the Pacific (ESCAP) member States (which are Parties to the Intergovernmental Agreement on Dry Ports, covering over 245 dry ports in Asia – ESCAP, 2013) provides the necessary motivation.

Conclusion

The major reasons for the introduction of inland dry ports as logistics centres in Nigeria were to optimize logistics capability towards reducing congestion at the main seaports, increasing trade between the hinterland and the coast, as well as creating efficiency in services related to shipping. The benefits include accelerating national and international trade, activating intermodalism in the nation, improving seaport competitiveness, enhancing regional economic development and establishing the country's port policy. Moreover, since Nigeria is surrounded by land-locked countries (Niger and Chad), which need access to overseas markets, Nigeria can bring the sea closer to them through the services of the IDPs as extended gateways.

However, certain factors have been identified which tend to hinder inland dry ports from functioning effectively as extended gateways in Nigeria. These factors include land constraints, infrastructure deficit, poor port hinterland connections, transport lack of capital to expand and modernize, environmental and institutional impediments.

Be that as it may, the Federal Government of Nigeria could consider the need to espouse the idea of an integrated freight logistics and supply chain management in order to enhance the operations of IDPs in the country. This would enhance logistics capability in Nigeria. Additionally, in order for IDPs in Nigeria (which have been accorded the status of ports of origin and destination by the Federal Government) to gain international recognition and acceptance, a regional framework for standards and principles for the establishment and operations of IDPs is needed. This would facilitate the establishment of an international integrated intermodal transport and logistics system within the West/Central African sub region and surrounding regions such as North African and East African countries. It would also encourage shipping lines to issue their through bill of lading for imports.

REFERENCE

- Adejumo, A.I. (2020). "Challenges of Inland Container Depots in Nigeria" [Vol 73 No 1 \(2020\)](#).
- Brooks, M.R., Pallis, T.E. & Perkins, S. (2014). Port Investment and container Shipping Markets. International Transport Forum. Discussion Paper 2014. <https://www.academia.edu>.
- Business & Maritime West Africa (2019) "\$300m Worth of Cashew Nut Trapped in Apapa Gridlock". news@businessandmaritimewestafrica.com.
- Lagos Chamber of Commerce and Industry (2018). Costs of Maritime Port Challenges in Nigeria", September, 2018
- ESCAP (2013). Intergovernmental Agreement on Dry Ports. Working Party on Intermodal Transport and Logistics. Pan-European Development in Intermodal Transport and Transport Policies. Fifty-sixth Session, Geneva, 21-22 October, 2013.
- Eto, G.M., Akpoghomeh, O.S. and Otto, G. (2022). Challenges and Prospects to the Complementary Role of Inland Dry Ports in Serving the Hinterland of Nigeria. African Journal for the Psychological Study of Social Issues. 25 (1), 12-24, <https://www.ajpssi.org>.
- Hellenic Shipping (2020). Why Dry Port Are Dry. <https://www.hellenicshippingnews.com/why-dry-ports-are-dry/>. Accessed 16 January, 2021
- Jeevan, J., Salleh, N., Loke, K.B. & Saharuddin, A.H. (2017). Preparation of dry ports for a Competitive environment in the container seaport system: A process benchmarking approach. International Journal of e-Navigation and Maritime Economy 7, 019–033.
- Menegaki, A.M. & Alexopoulos, A.B. (2017). Evolution of Logistics Centre and Value Added Services Offered in Port Areas and the Importance of Marketing. Springer International Publishing AG.
- Mohammed, R. (2019). Port Competition: The Dry Port Factor. Nigerian Ports Today. 5 (23),52.
- Nguyen, C.L., Thai, V.V., Nguyen, D.M. & Tran D.(2021). Evaluating the role of dry ports in the port-hinterland settings: Conceptual framework and the case of Vietnam. The Asian Journal of Shipping and Logistics. 37 (4), 307-320.
- Notteboom, T. & Rodrigue, J-P (2009). Inland Terminals, Regions and Supply Chains. Dry Port Development in Asia and other Regions: Theory and Practice, United Nations Economic and Social Commission for Asia and the Pacific. www.academia.edu. Accessed 6 March, 2023.
- Notteboom, T., Pallis, A., & Rodrigue, J-P. (2020) Port Economics, Management and Policy, New York: Routledge.
- Olah, J., Nestler, S., Nobel, T. & Popp, J. (2017). Ranking of Dry Ports in Europe – Benchmarking. Periodica Polytechnica Transportation Engineering.

Roso, V., Woxenius, J. & Lumsden, K. (2009). The Dry Port Concept: Connecting Container Seaports with the Hinterland. *Journal of Transport Geography*. 17: 338-345. <http://doi.org/10.1016/j.jtransgeo.2008.10.008>.

Roso, V. & Lumsden, K. (2009). The Dry Port Concept: Moving Seaport Activities Inland? *Transport and Communications Bulletin for Asia and the Pacific*, Volume 78, pp 87 – 101.

Roso, V. & Lumsden, K. (2010). A Review of Dry Ports. *International Journal of Maritime Economics and Logistics*. 12 (2), 196-213.

UNESCAP (2015). Policies and Issues Relating to Dry Ports. Werikhe, G.W. & Zhihong, J. (2015). A Comparative Study of Dry Ports in East Africa and China. 5, 2. www.iiste.org. Accessed 14 April, 2021.

Wiegmans, B., Witte, P.E., & Spit, T (2015). Inland Port Performance: A Statistical Analysis of Dutch Inland Ports. *European Transport Conference*, 29 September – 1 October, 2014

Zeng, Q., Maloni, M.J., Paul, J.A. & Yang, Z. (2013). Dry Port Development in China: Motivations, Challenges, and Opportunities. *Transportation Journal* 2013. https://www.researchgate.net/publication/259746771_Dry_Port_Development_in_China_Motivations_Challenges_and_Opportunities.

