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Intermodal transportation and improvement of legal/physical structure in Nigeria

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Abstract
Intermodal transportation is the movement of goods using multiple modes of transportation, such as ships, trucks, and trains. The goods remain in the same container throughout the journey. In Nigeria today, the efficient and effective movement of goods is very crucial in today's competitive environment. suffering from the growing challenges of inland freight transportation and crippling logistics costs which limit her competitive ability in the global economy. This paper aims at assessing the roles of intermodal transportation and the improvement of legal/physical structure in Nigeria. The cost and quality of intermodal transport and logistics services are increasingly relevant for the participation of developing countries in the globalized economy. The availability and quality of a country's physical infrastructure provides the basis for its economic and social development. It is not possible to achieve development or poverty eradication without building the appropriate infrastructure. It is often pointed out that the considerable backwardness of physical infrastructure in Nigeria poses limitations to international competitiveness, regional trade, investment, poverty reduction and development potentials.

Keywords: Intermodal transportation, Shipping. Infrastructure, Freight, Port

Introduction

Intermodal transportation is a method of transporting goods using different means of carriage to reach its final destination. The cargo stays in the same container throughout the entire journey, even when switching between transport modalities, thanks to standardised containerization that comply with the International Organization for Standardization (ISO). These containers are easily transferred between ships, barges, trains, and trucks, reducing loading and unloading times, minimising cargo damage, and enhancing security. This process leverages the strengths of different transportation modes to achieve an efficient, cost-effective, and environmentally friendly transfer of goods. Since many shippers or consignees do not have direct rail or barge terminal access, often a combination of transport modes is used to leverage the strength of each example, rail combined (rail as the main leg and truck for final delivery) or barge combined with truck services.

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Nigeria has huge opportunities in the transportation sector to generate revenue, create jobs, and facilitate movement for business and leisure. Unfortunately, over the years, we have not been able to take advantage of these opportunities largely because of inadequate infrastructure, high operating costs, weak or suboptimal regulations, limited skilled capacity, financial difficulties, and more recently, the insecurity. These challenges cut across all transportation sectors including rail, road, aviation, and maritime. To successfully develop a multimodal transport system, we first need to understand why these challenges have persisted and then proffer workable solutions. In this article, I identify 5 cross-cutting legal and policy failures. I have also outlined legal and policy priorities for transportation in Nigeria. Integrated transport system is the harmonious coordination of all modes of transport to achieve the conveyance of persons, goods and services from the point of embarkment to the point of destination. For example, a journey from one's home to work place may take the form of combination of trekking, motorbike, bus on one hand, another journey say, from Lagos to Abuja, may take in addition to the above, air transport. Cargo services both at the sea and airports are operated through the land – maritime land and land – aviation – land system respectively Badejo, (2001). The necessity of transport as a means of time space utility cannot be overemphasized. As a derived function which transport is, the socio-economic life of the people determines to what use transport will be put, this is also with the consideration of population size, geography of problems. Non-existence or incoherent integration of transport modes in a harmonious manner for both economic and social purposes has resulted in avoidable anguish to people, especially the low-income class. The concept of intermodal freight transport of combining two or more modes to form an integrated transport chain aimed at achieving operationally efficient and cost-effective delivery of goods in an environmentally sustainable manner from their point of origin to their final destination. The fundamental idea of intermodal transportation is to consolidate loads for efficient long-haul transportation (for example by rail or large ocean vessels), while taking advantage of the efficiency of local pickup and delivery operations by trucks. This explains the importance of container-based transportation.

According to Badejo, (2001), integration of various modes in a harmonious manner is a panacea for industrialization and a big source of sustainable employment. Keiran, (2005) posited that lack of modal integration in transport has led to indiscriminate use of road tankers which has led to overpricing, accident, delay, infrastructure decay and political killing of the rail system. Nigerian cities, towns and rural communities are endowed with various afore-stated characteristics; natural, human, economic and social; ironically, the various modes of transport that can blend the use of the integrated system in accordance to prevailing circumstances to achieve the desired space utility in a harmonious manner has not been fully practiced.

According to Badejo, it is quite obvious that only one form of transportation mode (road) is persistently used even though the threshold requirements that can make the use of other modes possible are available. Simpson (2013), observed that evolution of the various modes of transport had brought more and better meanings to life and living and that without transport, the world,

particularly Africa (on which emphasis has been placed) would have remained primitive and uncomfortable Simpson, (2013). In the last one century, various transport and their threshold facilities have been developed in different shapes and volumes, but the utility of most modes has either been erratic or inexplicably ignored Simpson, (1980). This then brought a whole lot of inconvenient atmospheres in terms of modal over-dependence, rendering other modes either underutilized or inefficient, lack of infrastructural and capacity building for other modes, weakness or outright deformation of facilities built for un-used modes, over-use and incessant damage to predominantly used mode, exploitation, economic and environmental negativities as a result of moribund or inefficient sub-modes, corruption, and so on. Most or all of the above negativities can be overcome through efficiently utilized integrated transport system. Adewole, (2002) declared that accidents are better prevented than handled.

Overview of Intermodal Transport in Nigeria

Integrated transport is the transportation of goods under a single contract, but performed with at least two or three different means of transport. The carrier is liable for the entire carriage, though performed by several modes of transport (rail, sea, air, and road). The carrier does not need to possess all the means of transport (Muller, 2011). It is also known as combined transport; the carriage is often performed by sub-carriers (referred to in legal language as "actual carriers"). The carrier is responsible for the entire practice. Freight forwarders have become important Multimodal Transport Operations (MTOs); they have moved away from their traditional role as agents for the sender, accepting a greater liability as carriers. Large sea carriers have also evolved into Multimodal Transport Operations (MOTOs); they provide customers with so-called door-to-door service. The sea carrier offers transport from the sender's premises (usually located inland) to the receiver's premises (also usually situated inland), rather than offering traditional tackle-to-tackle or pier-to-pier service Donor (2011).

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Transport Operations (MTO's) not in the possession of a sea vessel (even though the transport includes a sea leg) are referred to as Non-Vessel Operating carriers (NVOC) in common law countries (especially the United States). Paul (2000). Multimodal transport developed in connection with the "container revolution" of the 1960s and 70s; as of 2011, containerized transports are by far the most important multimodal consignments. However, it is important to remember that multimodal transport is not equivalent to container transport; multimodal transport is feasible without any form of container. The Transport Operations (MTOs) works on behalf of the supplier; it assures the supplier and the buyer that their goods will be effectively managed and supplied. Teordo (2006).

Cross-cutting legal and policy failures

Intermodal transportation, while efficient, faces limitations and policy failures. These include;

1. **Over-centralisation and federal dominance** – The federal government currently dominates the entire transport sector, not effectively engaging states and local governments. This denies states and especially local communities the opportunity to participate in tackling pressing transport challenges like insecurity.

   The fifth alteration to the 1999 Constitution, which now allows States to participate in rail transportation is a step in the right direction. However, a lot more devolution of transportation powers needs to take place. States should be allowed to manage inland waterways, federal intra-state roads, etc.
2. **No harmonised policy on transportation** – Since Independence, Nigeria through the Federal Ministry of Transportation has developed at least 7 transport policy documents, some of which include: the 1965 Statement of Policy on Transport; the 1993 Transport Policy for Nigeria; the 2003 Draft National Transport Policy Document; the 2008 Draft National Transport Policy; the 2010 Draft National Transport Policy; the 2013 Draft National Transport Policy; and the 2021 Draft National Transport Policy (being the latest). Most of these have remained as drafts and were not implemented. Each state and transport sector (Aviation, Rail, Road, Maritime) has its own policies, most of which sometimes contradict each other Muller, (2011).
3. **Overlapping institutional mandates –** Nigeria's transport sector currently has too many regulatory agencies with unclear responsibilities. The result is competition over funding and resources, weak inter-agency coordination, administrative bottlenecks between agencies, inter-agency frictions over operational areas, etc. This makes coordination extremely difficult. For example, there is a conflict between the Nigerian Maritime Administration and Safety Agency and the Nigerian Ports Authority (NIMASA) over wreck removal; NIMASA and the National Inland Waterways Authority (NIWA) are also in conflict over who controls the inland waterways. The same applies down the line among the other agencies. Donnor (2011).

4. **Weak Enforcement and Implementation –** Enforcement and implementation of policies, laws, and regulations in the transport sector are often lacking due to corruption, inadequate capacity, and insufficient funding. Several airports, airlines, and maritime operators flout stipulated safety standards in their operations, landing procedures, and maintenance schedules due to oversight gaps. Vandalism and trespassing of railway tracks, equipment, and properties is rampant as there is deficient security and enforcement to protect such transport infrastructure

5. **Inadequate private sector engagement –** This is mostly a result of complex regulatory requirements, limited incentives, and poor contract enforcement. Policies and regulations governing transportation are crafted without sufficient private sector inputs and perspectives, leading to business-unfriendly policies. There is minimal private sector participation in the development of inland water transport infrastructure and services, leading to the underutilization of Nigeria's vast river systems. Additionally, private companies play negligible roles in railway operations, leaving rail transportation underfunded and inefficient, apart from select attempts at railway concessions. Most federal roads are funded solely by the government, with very little private sector involvement through public-private partnerships (PPPs), which leaves the roads in poor shape. Badejo (2001).

6. **Legal and policy legislation**

Harmonized transportation policy supported by legislation – Nigeria would benefit greatly from the development of a harmonized national transportation policy that is supported by legislation, and which integrates all levels of government and the private sector. The Federal Ministry of Transport should play a coordinating role in this regard. Such a multimodal policy would facilitate coordinated infrastructure development, balanced transport investments across regions, unified regulatory standards, robust planning from shared data forecasts, and increased private sector capital. This would eliminate duplicitous efforts through synchronized complementary build out of assets like roads, rails, airports, and seaports. An overarching set of operational, safety, and customer service regulations would also allow better sector oversight. This, in turn, would improve efficiency, quality of service, safety, and cost optimization for both passenger and freight movement by consolidating the strengths of public agencies and private companies across aviation, land, and water transportation. Bio, (2009).

Options for the Legal and Policy Framework

1. **Update existing legislation** – There is an urgent need to update existing legislation governing the various transportation sectors to enable much-needed modernization. Key laws requiring amendment include – the antiquated 1955 Railways Act to allow private concessions and public-private partnerships in railways; the 1954 Ports Authority Act to repeal constraints on private port operators and increase privatization; the 2006 Civil

Aviation Act to empower the NCAA regulatory agency to enforce stricter safety standards; the 2004 Highway Development Act to attract private infrastructure investors through fairer returns; and the 2004 Inland Waterways Act to provide impetus for private sector partnerships in boosting inland water freight and passenger transportation channels. Ebong (2009).

2. **Enact pending legislation before the National Assembly** – There are several pivotal transport sector reform bills pending before Nigeria's National Assembly that need to be urgently passed to enable a comprehensive revamp. These include – the National Transport Commission Bill to formulate integrated policies across all transport modes and manage safety regulations and consumer protections; the Ports and Harbours Bill to commercialize ports operations and drive efficiency through privatizations; the Railway Development Authority Bill to setup an independent agency that can expand the railway network via private investments; the Road Sector Reform Bill to increase private sector participation in road infrastructure projects; and the National Transport Policy Bill to institute an overarching policy that interlinks aviation, rail, maritime and inland water transport strategies using global best practices customised for Nigeria. Kieran (2002).
3. **Streamline regulatory institutions** – Nigeria needs to streamline the complex array of regulatory institutions governing the transportation sector to improve efficiency and reduce costs. This can be achieved by consolidating all road transport agencies under a Federal Highways Authority; merging aviation bodies like FAAN, NCAA and NAMA within a unified Nigerian Aviation Commission; privatising ports management while an expanded Ports Commission oversees regulations; expanding the Rail Transport Safety Commission into a broader oversight mandate; instituting a private sector-supported Automotive Control Authority for vehicular inspection regimes; and setting up an apex Transportation Commission/Ministry to coordinate policies and data sharing across the consolidated entities – covering aspects like infrastructure integration, safety/security assurances, operational efficiency and service delivery enhancements for a holistic advancement of Nigeria's aviation, rail, road, maritime and inland water transport networks. Muller (2011).
4. **Privatize and commercialize through PPP** – This promises immense benefits including – injecting billions of dollars of private capital annually to bridge huge public infrastructure funding gaps; driving major efficiency improvements in cost optimisation, operational excellence and service quality; enhancing technology utilization for customer experience, safety and transparency; reducing public sector budgetary and operational burdens to focus more on policy oversight; and injecting world-class technical expertise, managerial competencies and global best practices to holistically transform Nigerian transportation. Abayomi (2010).
5. **Incentivise transport education and growth of maintenance**, repair and overhaul (MRO) facilities. Nigeria needs to incentivise transport education and growth of

Maintenance, Repair and Overhaul (MRO) facilities by providing tax rebates and import duty waivers for certified training institutes and MRO centres; subsidizing enrolment fees for technical transport courses via a dedicated Fund to aid affordability; allocating free land or preferential leases at airports and seaports to attract global MRO players; making MRO experience mandates for licensing renewals to compel local facility usage; implementing preferential local content in tenders for contractors evidencing skills transfer; and extending export incentives and tax credits for indigenous MRO firms to support their expansion – all towards addressing the strategic skill gap challenges and strengthening maintenance capabilities vital for advancement of Nigeria's aviation, rail, road and maritime transport sectors. Bio (2009).

6. **Strategy on insecurity.** Nigeria requires a well-coordinated strategy between federal and state agencies to tackle endemic insecurity in the transport sector via setting up a multi-agency joint taskforce for intelligence sharing and unified patrols; installing sophisticated surveillance systems like sensors, drones and AI-based analytics software integrated for proactive threat response; incentivizing community participation for intelligence gathering on risks; reviewing insurance policies and compensation models to support operators suffering losses; criminalizing activities like rail vandalism etc. to enforce maximum deterrence penalties; and training specialized security units dedicated to safeguarding critical airport, railway, maritime and highway transport infrastructure. O'niel (2004).

Types of Intermodal transportation

Direct truck

This method combines ships for ocean transport with trucks for interlinkages. It's a common choice for international shipping — when speed is not a major concern, but cost-effectiveness is desired.

Direct rail

It leverages trains for road transport and ships for overseas movement. It is a cost-effective solution for large cargo volumes travelling long distances internationally. Direct rail is only possible if the shipper/consignee is directly linked to a rail terminal or wants to receive the container in an inland depot / terminal that is rail connected.

Rail combined

Utilises the efficiency of trains for long hauls as with direct rail, but with the flexibility of trucks for initial pick-up and final delivery. This expands the geographical coverage as shippers/consignees do not need to have a rail access, the container is transferred from the rail head to the truck to make initial pick up or final delivery inlands. Usoro (2006).

Direct barge

Typically used to move goods between international seaports and inland terminals accessible by rivers, canals, and other inland waterways. It involves the use of large ocean

vessels and smaller barges. It can only connect directly to shippers/consignees if they own a barge terminal as part of their factory set up. United Nations (2006).

Barge combined

Similar to rail combined, barge combined transport moves goods across various regions, including coastal and inland waterways, with initial pick up or final delivery via truck on road networks. It is particularly useful for moving goods from coastal ports to inland waterway terminals and onwards to their final destination using trucks. Raph (2008).

Physical Infrastructural Development of Intermodal transportation

Integrated transport is an organ through which logistics supply chain management can function effectively (Donner, 2011). The effectiveness of integrated transport depends on the state of infrastructure. The physical infrastructure need be developed. Development of railway system, airport and sea port structures/facilities, construction and repair of road network and their interconnectivity will to a large extent improve intermodal transport. It is common to see rail and sea port, airport and road interface in many countries of the world where intermodal transport is in full practice. Germany, America, Sweden and Finland are living examples. Given the scope of this paper, our discussion will center on integrated transport in Nigeria, examining the state of physical and legal infrastructure. Integrated transport in Nigeria centers around key Government agencies, that is; The Nigeria Ports Authority (NPA), Nigeria Shippers Council (NSC), The Nigerian Railway Corporation (NRC), Maritime Academy of Nigeria (MAN) National Inland Waterways Authority (NIWA), Nigerian Maritime Administration and Safety Agency (NIMASA) and recently the Nigeria blue economy as the supervisory ministry.

The Nigerian Railway Corporation (NRC) works under the supervision of the Federal Ministry of Transport. The ministry of Marine Blue economy has the responsibility of formulating and implementing government policies for the ministry on matters that relate Nigeria and international organizations. Integrated transport is not having much impact in Nigeria due to lack of government will to provide and maintain infrastructure. This dislocates the just in time (JIT) supply chain management. According to Ebong (2008), every road and bridge are in a state of disrepair. Poor roads may be causing frequent accidents especially during rainy season on the federal roads, yet, they are not motorable from north to south, and east to west to facilitate integrated transport.

Nigeria also has 4,660km standard and narrow gauges call network; yet none is connected to the sea port or the air to provide an unbroken link for integrated transport. The idea of rail as integrated transport link in Nigeria is for passengers (Abayomi, 2010). The creation of a new ministry of the marine and blue economy separates the basic modes of intermodal transportation. On critical observation, the Railway Corporation and roads which provides the basic legs in the intermodal/integrated transport system happens to be grouped under the ministry of transportation making policies and control a lot more difficult as the authorities' rests on two different bodies with different mandate. This explains the much of policy inconsistencies/incoherence in the operation of intermodals in Nigeria.

The price of the vast majority of treaded goods is exogenous for developing countries. If the shipping of imports becomes more expensive, higher inflation ensues as a result of the increased cost of imported goods: in the case of intermediate and capital goods, this also increases the costs of local production. If export freight costs increase, the result is a drop in earnings for the exporting country or simply the loss of a market, depending on the elasticity of demand and the availability of substitutes.

Econometric estimates suggest that the doubling of an individual country's transport costs leads to a drop in its trade of 80 per cent or even more. Spending on transport is also increasing because of improved quality of service, especially greater dependability and "just in time" (JIT) delivery. As a result, the inventory component within the overall cost of logistics declines, while the transport component rises. In the case of Nigeria, for instance, it is estimated that during the two decades up to 2002, spending on transport rose by 160 per cent, while in 1982 inventory spending was still higher than spending on transport, today spending on transport is almost double that of inventory carrying cost.

Legal Infrastructure Development in Nigeria Intermodal Transport.

The legal infrastructure needs to be developed for intermodal transport to be meaningful. There are series of international legislation that affects intermodal transport, but full implementation has always been a problem. The legislative arm of government should draft laws for road, rail and port usage in Nigeria. Integrated transport should be governed by enabling domesticated laws. There are artificial charge and excessive delays at the ports and roads for want of gratification before documents or trucks could have a free passage on the highways. Poor communication network also creates a problem making it difficult for monitoring.

Development of legal infrastructure in integrated transport is inevitable. Many countries have put in efforts to reduce or eliminate tariff barriers, trade inhibitions enabling capital to move freely between states in the international arena. The United States for example have sought to reduce domestic impediments in transportation to optimize the unobstructed transit of commodities between inland origin and oversea destinations. Intermodal transport innovation has been essentially of two kinds, (1) technological innovation, enabling commodities and individuals to move with greater speed, efficiency and economy; and (2), regulate innovation by federal agencies responsible for regulating the rates and routes of international carriers.

Statutory and regulatory innovations have also contributed to the growth of intermodal activities (United Nations, 2006). During the signing of the intermodal surface transport efficiency act of 1991 in America, it was noted that intermodal transportation system can only enhance efficiency in meeting key economic, energy and environmental challenges of the coming decades, the nation cannot meet all the demands through continued reliance on separate, isolated modes of transportation. As the physical structures improve, the legal rules covering carrier's liability for loss or damage in transit be developed on a mode-by-mode basis (O'Nail, 2004).

Lack of laws and enforcement capacity creates this dislocation in the intermodal operations. The international chamber of commerce (ICC) agreed to establish a joint special committee to facilitate free flow of transport and trade. The exemption and responsibility clause make it clear on whose liability, in the event of delays in discharge and demurrage (Usoro, 2006). From a legal stand point, integrated transport creates several problems. The unimodal transport is currently government by different basses for liability and different limitations for the carrier (Ralph, 2008).

Conclusion

Having analyzed the Intermodal transport situation in Nigeria, integrated transport is the key that can bring about efficiency in movement of humans, goods and freight. Some goods are not meant to go by roads but by rail or pipe lines, example cement dust, petroleum products, bulk goods etc. In Nigeria, every good is moved by road. With integrated transport, Nigerian roads will work well with less traffic. The roads are constructed to carry 30 tons of goods but the trailer drivers ignore these limits due to lack of legislation, and carry up to 60 tons causing sever wear and tear. The physical and legal infrastructure need to be improved for inter modal transport to be effective the world over. Increased competition and private sector participation empirically tend to encourage investment in infrastructure and the introduction of new technologies. Nigeria has enormous potentials to advance its multimodal transportation networks across aviation, rail, road, maritime, and inland waterways. However, several structural issues such as over-centralization, fragmentation, weak institutions, inadequate infrastructure, and insecurity have severely constrained tapping into those opportunities. Implementing the outlined legal and policy priorities focused on greater harmonization, updating legislative frameworks, consolidating regulatory bodies, increased private sector participation, capacity building, and security improvements promises to set Nigeria firmly on the path towards modern, efficient, integrated, and world-class transport amenities. The time is now for Nigeria to make these pivotal unified, collaborative, and progressive reforms that put in place the enabling conditions for transport operators, investors, and customers alike even as the marine blue economy is persuading for favorable policies.

Suggestions

Intermodal transportation as the name suggests, is a process involving the movement of weighty and voluminous goods using more than one transport means such as Truck, Rail, Airline, and Ship from the Shipper to the Consignee. It is a chain process that begins with the Truck being loaded with Goods, moved to the rail, to the Port, and back to the Truck in order to complete the process.

With the Intermodal Transport System in Nigeria, there's a high level of guarantee that your goods will not be manipulated by third parties and there's also greater safety. For intermodal transport system to be effective in Nigeria, the following are suggested;

1. Nigeria, although the most populous and heterogeneous country in Africa is sadly operating a uni-modal transport system as 90-percent of freights are transported by road. Therefore, there is a need to fully harness the intermodal transport system as this will greatly improve freight transportation in the country, as well as reduce traffic congestion, thereby ensuring safe movement of goods from shippers to consignees.
2. .The state of infrastructure in the Nigerian transport sector calls for serious attention both from the government and the private sector. The transport sector is a viable area for investment and the Federal government should consider developing a new national transport policy to create a world class transportation system in Nigeria. To achieve this, the Federal government of Nigeria should set targets for the Nigerian Railway Corporation (NRC) to improve on rail transportation, the Nigerian Ports Authority (NPA) should be positioned and funded to compete with bigger ports in the world through improved services, management efficiency, and modern port facilities, the Nigeria Inland Waterways Authority (NIWA) should acquire new passenger/roro vessels for short sea/coastal transportation.
3. Nigerian Maritime Administration and Safety Agency (NIMASA) supervising shipping activities in Nigeria should come out with policies and enabling laws in line with international conventions to direct the future of shipping in Nigeria. There must be a strong relationship between the transport ministry and the Nigerian blue economy ministry in terms of policy formulation framework.
4. The Nigerian Shippers Council (NSC) should work hard to protect the interest of shippers.
5. Maritime Academy of Nigeria (MAN) Oron, should improve on the quality of trained manpower and teaching staff through training and retraining of academic staff towards attainment of Standard Training Certification and Watch Keeping (STCW) Manilas, 2010. When all these suggestions are set to function, then intermodal/integrated transport and logistics supply chain management will be effective in Nigeria (Ebong. 2008).

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