

CONTAINERIZATION: A MODERN TOOL FOR EASY SEA TRANSPORTATION AND THE CHALLENGES IN NIGERIA

By

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Abstract

Containerization simply means the use of a container to pack goods either for export or import. It could be used for any type of goods whether wet, dry and even for liquid ones, as there are modern containers specifically built to transport liquid products like petroleum and gas. Also, it can be used for any means of transportation as in vehicles for road, airplanes for air, rail tracks for trains, and ships for the seas, which is our focus. Though containers are in different sizes, they generally contain large quantities of goods and so are very good for transportation of commodities that are plenteous and going to long distance places. Their purpose is to evacuate such commodities on time with less stress by not running a long distance several times as in where a container is not used. Despite the above, containerization has its own challenges, which might appear to outweigh its benefits. From our findings, reports have it that containers are being used for human trafficking, drug smuggling, amongst other illegal activities, which have resulted in several lives being lost. The essence of this research was to show that though very useful in modern day sea transportation, containerization has several challenges that arise if it is not used properly. Therefore, it is recommended that containerization should be used for the purpose they are meant for and not otherwise. Again, the laws and regulations applicable to containerization in this country, should be strictly enforced and made to be complied with and punishment met out to offenders

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accordingly where there is any breach of the laws and regulations.

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1. Introduction

The word transportation can be used in different ways and topics to mean different things. It is used in various ways to designate the process, means or systems by which objects of social importance move through space.¹ Transportation includes moving these objects, through an energy consuming medium, through an environmental medium. Thus, transportation involves moving products from an origin, such as a factory, plant, or workshop, to a destination, such as a warehouse, customer, or retail store. In a supply chain or logistics business, transportation is moving everything that leaves one place to another. This could mean moving something from the manufacturer to the distributor or from the distributor to the customer.² Transportation can be by air, water, rail, highway, pipeline, or cable route, using aircraft, ships, trains, trucks, and telecommunication equipment as the mode of transportation.³

However, for the purpose of this article, the term is limited to the transportation or movement of people or goods in particular. Accordingly, transportation has been defined as the movement of goods and people from one place to another and the various means by which this movement is accomplished.⁴ Transportation means the act, process, or state of moving or transporting. It is the activity of moving goods or people from one place to another. Again,

¹ J. Smith, Social Aspects of Transport <<https://www.encyclopedia.com-transport> > accessed 24 March 2025.

² R. O'Byrne, what is transfer? <<https://www.logisticsbureau.com> > accessed 24 March 2025.

³ Ibid.

⁴ Encyclopedia Britannica, Transport <<https://www.britannica.com-transport> > accessed 24 March 2025.

transportation is defined as a carrier's movement of people, goods, or products from one place to another. It is a means to move from one place to another.⁵

There are many means and modes of transportation. Means of transportation is any of the different types of transportation that are used to move goods and people from one place to another while the mode of transportation is the path used for the movement. However, both terms are often used interchangeably because they go together. Means of transportation include automobile, bus, train, airplane, ship, and so on, while mode of transportation refers to road, air, sea, rail or ocean. There are five main modes of transportation, namely road, rail, sea, air, and multimodal or intermodal transportation. Multimodal or intermodal transportation simply means a combination of other modes of transport to move goods or people.⁶ Each of these modes of transportation has its own advantages and disadvantages. The importance of transportation is that it facilitates trade, commerce, and communication that enhance civilization through the interaction of different peoples. Maritime transport is the basis of this article, of which it is necessary to emphasize its various characteristics.

i. Intermodal Transport

Intermodal transportation is also known as multimodal transportation, shipping, or carriage. This means the carriage of goods by at least two different modes of transport, one of which is sea transport on the basis of a single contract of carriage from a place in a country where the intermodal transport operator transports the goods to a place designated for delivery in a different country.⁷ It also means the transportation of goods using more than one mode of

⁵ R. Beard, Transportation <<https://www.yourdictionary.com-transport> > accessed 24 March 2025.

⁶ M. Philpott, what are the different methods of transportation in logistics? <<https://www.philburn.com> > accessed 24 March 2025.

⁷ African Charter of Maritime Transport Amended, Article 1.

transportation, usually more than one carrier. For example, goods may first be transported by air or sea, and then by rail or truck to their destination.⁸ Global freight movement is a critical component of the global freight transportation system that includes ocean, coastal, river, rail, land, and air freight.⁹ In some cases, the freight transportation network connects cities in multiple ways, acting as modular substitutes. The prime example is containerized short sea freight, where the carrier or logistics provider has some degree of choice in how to move freight between locations. However, international shipping is often a complement to other modes of transport. This is especially true for intercontinental container shipments and liquid and dry bulk cargo such as oil and grains. Here, international shipping connects highways, railways, inland waterways, sea and coastal routes.¹⁰

Mode selection, particularly for the movement of containerized goods, involves balancing trade-offs in facilitating trade between global companies and nations. In today's global economy, the competing factors have been time, cost, and reliability of delivery. Low cost modes may be less preferable than faster modes if the payload is very time sensitive. However, the slower, lower-cost modes often carry much larger loads, and with proper planning, these modes can reliably deliver larger quantities to meet just-in-time inventory needs. Just like in a relay race, all modes are needed to deliver containerized cargo from the start line to the finish line.¹¹

There are many advantages to multimodal transportation, making it the backbone of the global supply chain and logistics industry. However, some problems and situations are unavoidable due to the

⁸ B.A. Garner, *Black's Law Dictionary* (11th edn. Thomas Reuters, 2019) 1112.

⁹ J.J Corbett and J. Winebrake, *Effects of Globalization on International Shipping Activity*, Paper presented to the Global Forum on Transport and Environment in a Globalizing World, November 10-12, 2008, Guadalajara, Mexico.

¹⁰ (n6)

¹¹ (n9)

long distance involved. There are some advantages and disadvantages to using multimodal transportation.

These are some of the advantages of multimodal transport:¹²

- a. **Reduced Costs:** Less handling means lower costs. Intermodal fares are generally more predictable. Choosing to transport freight by rail as part of intermodal transport is a particularly good way to reduce costs, as it consumes less fuel when traveling long distances.
- b. **Fast Service:** Intermodal transportation is an excellent way to reduce cargo transit times. The use of intermodal containers also allows for the efficient transfer of goods from one mode of transport to another. Reducing loading and unloading times also makes delivery faster.
- c. **Maximum Security:** Intermodal shipping is a safe method since the merchandise is stored in the same container throughout the journey. Less handling reduces the risk of damage, while the added security provided at stations, rail tracks and ramps prevents theft.
- d. **Eco-friendly Solution:** Reducing the carbon footprint of shipping reduces the environmental damage it causes. When goods are transported using rail transport, the emission of carbon dioxide and carbon monoxide is significantly reduced. Therefore, combining the transportation of goods by rail with other modes of transport through intermodal transport could be a good way to reduce the overall carbon footprint.
- e. **Available capacity:** Since most industries use intermodal transmission, it is a very flexible source of capacity. Companies can also use reverse logistics to fill large containers.

¹² C. de Barra, What is Intermodal Freight | Meaning and benefits
< <https://www.eurosender.com/blog/en/author/claire> > accessed 2 April 2025.

Some of the disadvantages of multimodal transportation are as follows:¹³

- a. **Infrastructure costs:** Heavy cranes are needed to lift containers in different ports when the mode of transport changes. For example, when a container arrives at a seaport, it must be transported onto a flatbed, train, or truck. In addition, seaports need rail and road connections so that goods can be transported to and from the port.
- b. **Delays:** The shipping process may take longer if the selected mode of transportation is slower or if there is no direct route to the destination. In addition, the interruption of one stage of the transport can greatly affect or even stop the rest of the cargo journey.
- c. **Risk Increase:** Multimodal freight relies on more than one mode of transportation, and different carriers may manage each mode. This requires greater logistical coordination and also increases risk. Unforeseen delays due to weather conditions and equipment/technical malfunction are also possible.

ii. **Maritime Transportation**

Maritime Transportation can be referred to as water, sea, river, or ocean transportation. It can also be called maritime or cargo transport. It includes waterways and ports that carry goods and people. It also includes passenger transportation, military, defense, fisheries, or marine resource applications, and maritime support such as navigation and maintenance.¹⁴ Maritime or ocean transportation is any transportation aboard a vessel, ship, boat, barge, or ferry across international waters.¹⁵ It is the movement of

¹³C. de Barra, What is Intermodal Freight | Meaning and benefits

< <https://www.eurosender.com/blog/en/author/claire> > accessed 2 April 2025.

¹⁴REJ Schnurr & TR Walker, Shipping and Energy Use

<<https://www.sciencedirect.com-topics> > accessed 2 April 2025.

¹⁵ A. Springer, Marine Transportation <<https://www.lawinsider.com-marine> > accessed 29 August 2022.

passengers and goods over bodies of water from oceans to rivers.¹⁶ Maritime transport refers to the movement of goods and passengers by waterways. They include sailing ships or barges that pass through or over oceans and lakes, through canals, or along rivers.¹⁷ The Organization for Economic Co-operation and Development (OECD) defines maritime transport as any movement of goods and/or passengers using maritime vessels on voyages made wholly or partly at sea. Therefore,¹⁸ maritime transport involves the transport of passengers and/or goods by sea, which is often referred to as maritime cargo trade, which can be both passenger and cargo transport. Cargo shipping is a very broad term that assumes different ways of chartering cargo ships and there are some types such as tramp, liner, and special cargo. Each type of maritime cargo transport operates according to its operational processes and control procedures, which are managed and controlled by the quality management of the shipping companies and supervised by the relevant state institutions and international maritime control organizations.¹⁹

Maritime transport comprises the physical transport of goods from the supply zone to the demand zone of certain types of goods, together with all the activities necessary to support and facilitate the said transport. The shipping system has three basic components important for the movement of goods, which are the following:

- a. Fixed infrastructure such as ports or terminals
- b. Means of transportation such as ships and barges

¹⁶ J.P. Rodrigue & T. Notteboom, *Geography of Transportation Systems*

<<https://www.transportgeography.org-maritime> > accessed 2 April 2025.

¹⁷ N.N. Nizaruddin, *Introduction to Shipping* <<https://prezi.com> > accessed 2 April 2025.

¹⁸ OECD, *Glossary of Statistical Terms* <<https://stats.oecd.org-detail> > accessed 2 August 2025.

¹⁹ S. Šamija, *Shipping Management for the Purpose of Efficiency and Safety of Shipping Services* <<https://www.semanticsscholar.org> > accessed 2 April 2025.

- c. The regulatory regime necessary to ensure the effective and efficient use of vessels and fixed infrastructure.

However, carrying out cargo services involves a number of business activities, the presence of appropriate infrastructure, procedures for cargo operations, and organizational management systems, such as enterprise resource planning or an information system that integrates all processes and applications within a transportation company or organization. The efficiency of cargo services is determined by the relationship between supply and demand in the cargo market, and the management of maritime transport uses market mechanisms in regulating the relationship of supply and demand.²⁰ Maritime transportation is an integral part of the global economy, although it is less visible to the general public. The shipping system is a network of specialized vessels, the ports they visit, and the transportation infrastructure from factories to terminals, distribution centers, and markets. Maritime transport is a necessary complement and an occasional alternative to other means of transporting goods at the international level. For many goods and trade routes, there is no direct alternative to maritime trade. On other routes, such as some coastal or short sea shipping or within inland river systems, shipping can offer an alternative to road and rail, depending on cost, time, and infrastructure constraints. Other important maritime transport activities include passenger transport ferries and cruise ships, national defense i.e. maritime vessels, fishing and resource extraction, and navigation services i.e. auxiliary ship tugs, port maintenance vessels, and so on.²¹ From the foregoing, maritime transport refers to a means or mode of transport through which goods or cargoes and passengers are transported or carried by sea.

²⁰ S. Šamija, Shipping Management for the Purpose of Efficiency and Safety of Shipping Services <<https://www.semanticsscholar.org>> accessed 2 April 2025.

²¹ (n9).

Maritime transport is characterized by the need for activity and reliability, the impact on the world economic system, the very high value of property and possible damage to the transport of people and or goods. Ships are also exposed to the risks of maritime accidents caused by human factors, technical failures, cargo damage, and so on. This means that there is a need to provide a certain degree of prevention and protection against the risks of maritime accidents. Thus, since maritime transport is a service industry, it must be capable of providing a quality service to passengers and cargo, among other advantages for a shipping company. Therefore, quality, efficiency and safety are among the most important factors in shipping.²²

Freight transportation dominates shipping because there is no other way to transport large amounts of goods over long distances at low cost. There are two main types of shipping cargo, namely:

- a. Bulk Cargo: Unpackaged cargo, such as minerals e.g. oil, coal, iron ore, bauxite and grain. They are dry or liquid bulk products that rely on the use of specialized vessels such as oil tankers or crude ships and specialized ports and storage facilities. Bulk products usually contain a single origin and destination, with services subject to seasonal changes, with the exception of power transmission. It supports heavy manufacturing; which sector is the cornerstone of any economy.
- b. Break-Bulk Cargo: General cargo that has been packed in sacks, boxes, drums, especially containers, which now represents the use of bulk shipping. Bulk products often have multiple origins and destinations. They support manufacturing and retail. However, technical improvements have blurred the distinction between bulk cargo and break-bulk cargo, as both can now be consolidated onto pallets and also loaded into containers.

²² (n9).

Shipping grain and coal, which are bulk cargoes, in containers is becoming more common.²³

Maritime transport is a derivative order that sustains commercial relations. These commercial relationships are also affected by the current maritime cargo capacity. Thus, there is a level of reciprocity between trade and shipping where supply i.e. shipping and demand and trade interact. Shipping is adapting to a number of business trends. The traditional trend is the growing demand for fossil fuels, raw materials and grains, a process associated with regional economic development. However, with outsourced and offshore manufacturing, the growth of trade in spare parts and finished goods was the most common driver of change in shipping. The result was far from uniform in shipping geography, with some sites better connected than others. Not all places are directly linked to shipping, as landlocked countries, like Switzerland, face the challenge of accessing global trade. The development of transnational infrastructure, such as highways and rail corridors that give access to a port, is essential to face this challenge. Being a landlocked country does not necessarily mean that it is excluded from international trade, but in many cases, it means very high transportation costs, which can affect economic development. These costs vary according to the level of economic integration. For example, landlocked European countries have supportive trade agreements with their neighbours, while agreements between landlocked African countries are much less effective.²⁴

Maritime transport has traditionally had two disadvantages compared to other modes of transport such as road and rail, even if this comparison could be seen as wrong because they serve different markets. The first is that maritime transport has slow speeds, with

²³ J-P, Rodriguez, *Geography of Shipping*
<<https://www.researchgate.net/publication/315398501> > accessed 10 April 2025.

²⁴ Ibid.

an average of 15 knots for bulk carriers (26 km/h) and more than 20 knots (37 km/h) for container ships. The second drawback is related to delays and execution time, particularly at ports where loading and unloading takes place. This can involve several days of handling, especially when moving bulk cargo. Therefore, shipping is not attractive to shippers who need fast and reliable deliveries. Despite this, the fate of globalization and shipping remain closely intertwined. This is because global shipping supports trade flows, and more efficient shipping also helps improve domestic and international trade across seas and inland waterways.²⁵ To alleviate the previous problems, containerization for maritime transport has been developed.

iii. Container Transport

Despite the use of shipping, the shipping industry was still not very profitable as trade costs and shipping costs were high.²⁶ Therefore, before intermodal containers were used, the question was whether it made economic sense to trade using ships. The most expensive part of the operation was the process of hauling the merchandise. Goods had to be picked up by truck, each good loaded separately from the warehouse and then brought to the port where it was unloaded separately and towed to the dock. Each piece of cargo had to be stacked one on top of the other in the strangely cramped dimensions of the separate bulk ships. Goods are lost, stolen or simply left at the docks mistakenly. Loading and unloading was complicated and took time. Two-thirds of a ship's productive time was spent in port, resulting in lower levels of ship utilization.²⁷ The fact that the process was inefficient, unreliable and slow meant that shipping costs were very high.

²⁵ (n13).

²⁶ M. Levinson, *The Box: How the Shipping Container Made the World Smaller and the Global Economy Bigger* (Princeton University Press, USA, 2008).

²⁷ DM Bernhofen *et al.*, "Estimating the impacts of the container revolution on world trade," *Journal of International Economics* 98 (2016) 36-50.

Once again, the industry was as labour-intensive as it was capital-intensive, with millions of workers providing services in and around the port. The dockers were organized into gangs and had strong union support.²⁸ Since strikes occurred so frequently, higher shipping costs were incurred and the industry's ability to provide reliable service was often called into question.

Therefore, in the 1950s, a businessman Malcolm MacLean thought of the concept of the intermodal container. Concerned about cutting costs, McLean noted that road congestion was increasing and that moving goods by water could be faster with containers. As a result, he developed containers for use in sea or ocean transportation. The benefits of the container were not immediately felt because adoption was a slow process and countless changes were made to the industry. However, because the containers have been used for a long period of time, huge cost reductions and quality improvements have been seen in the shipping industry.

The use of shipping containers is governed by law in Nigeria. The Nigerian Shippers Council (NSC) Act²⁹ and its subsidiary legislations, regulates amongst others, container deposits, the use of inland container depots and container freight stations. The Shippers' Council regulates the establishment of the Inland Container Depots (ICDs) and Container Freight Stations (CFSs) in the country. The operations of these facilities are essential for the handling and storing of containers inland. Under the Act, there are penalties for offenses for non-compliance with the provisions in the Act and subsidiary legislation relating to the use and management of shipping containers, amongst others. These penalties include fines and imprisonment. This Act also addresses issues of container deposits, which are refundable upon the safe return of the container. Understandably, this arose because shipping companies are at liberty to charge deposits for the safe return of their containers and

²⁸ (n21).

²⁹ NSC Act, N133, LFN 2004

the deposits are refundable upon the return of the containers in good condition. The Nigerian Maritime Administration and Safety Agency also plays a role with respect to the use of shipping containers³⁰. The Agency enforces safety standards and regulations relating to the use and management of shipping containers. It also ensures compliance with international conventions like Safety of Life at Sea (SOLAS) with respect to the use of containers at sea. The Customs and Excise Management Act (CEMA)³¹ governs customs procedures, including the handling of containers at the ports. Under the Act, the Nigerian Customs Service ensures that proper documentation and clearance procedures are complied with during customs clearance for both imports and exports involving shipping containers. The Merchant Shipping Act (MSA)³² has a bearing to shipping containers as well as it relates to safety and security at sea of a merchant shipping vessel. Also, it deals with handling of dangerous goods and the ship master's responsibility in ship operations.³³ While the above laws do not make specific provisions in any of their sections dedicated to the usage of containers, they deal with issues of handling dangerous goods, written notice and master's or ship owner's responsibility, which are necessarily incidental with dealings in containerization. At the international level, there are two main legislations dealing with containerization. These are Convention on Safe Containers 1972, which was established and implemented by International Maritime Organization. The purpose of this Convention is to maintain a high level of safety in the transport and handling of containers by providing generally accepted test procedures and strength requirements of containers. The other international legislation on containerization is Customs Convention on Containers 1972, which is implemented by the World Customs Organization. The purpose

³⁰ NIMASA Act 2007 ss. 22, 23 & 323

³¹ CEMA No. 35, 2023

³² MSA Cap. M11, 2007

³³ *ibid* Ss. 323 & 326

of this Convention is to facilitate the international carriage of goods by containers especially as it relates to customs requirements and treatment. The above Conventions are mainly to ensure safety standards for containers and facilitate their international movement respectively in the transportation of goods. The other ancillary international legislation affecting containerization are International Convention for the Safety of Life at Sea (SOLAS) 1974, which is relevant for the overall safety of maritime transport, including container ships. There is also International Convention for the Prevention of Pollution from Ships (MARPOL) 1973/78, which addresses prevention of pollution from ships, which is equally relevant to container shipping.

The container, which is the main means of transporting the cargo used in the transport of maritime cargo, is used practically all over the world for the transport of goods. The container is the core of a highly automated system for moving goods globally, with the least cost and complexity along the way to create a new economic geography. Poor countries can benefit from this; for example, by getting rid of cheap infrastructure and taxes, for the players of freight shipping, an opportunity is created to increase the profits of this transport system. However, the location of the country is also one of the most important factors in attracting business. A good location means saving time on transportation.³⁴ The international standardization of containers occurred in 1965. The global adoption of containers has led to dramatic reductions in ocean freight costs.

The containerization was very impressive. This has resulted in shipping companies and ports being less labour intensive because a container ship can be loaded in much less time than a traditional breaking ship would require and uses much less manpower.³⁵ The world's first container crane was forty times more productive than the average productivity of the entire longshore crew or

³⁴ (n26) Chapter 1 - The World Made Box 2006.

³⁵ (n23).

stevedores.³⁶ Thus, containerization, an intermodal freight transportation system using intermodal containers, eventually displaced the many thousands of workers who were involved in unloading, loading, and sorting goods in the pre-bulk era. This lowered overall costs in the industry as less labour was needed. The development and use of advanced and highly specialized capital machinery further reduced costs.

With the advent of containerization, port operations are becoming faster and more profitable. The mega terminals accommodate huge container ships, each of which is capable of transporting thousands of containers. In addition, the handling of the containers is partially done by the computer. Cranes lift and move containers using spreaders. These changes have significantly reduced the average time a container ship spends in port and therefore lowered the costs of doing business. This is because the longer a container spends in port, the more it costs the shipping company. United Nations Conference on Trade and Development (UNCTAD) stated that the cargo transportation costs faced by shipping lines on new container ships were less than half of the transportation costs on bulk carriers. Strong evidence indicates that the cost of shipping international freight decreased with the widespread adoption of container shipping in the late 1960s.³⁷

Once again, due to containerization, the quality of the cargo service has improved. The journey between Europe and Australia was reduced by fewer days.³⁸ Consequently, major users of international shipping have moved away from bulk crushing to the more modern method of shipping. Shippers who had the option of shipping their goods had opted for container shipping. The stated preference of the shippers is strong evidence that the container was more advantageous and attractive in terms of costs. Shipping was

³⁶ (n26).

³⁷ (n23).

³⁸ (n26).

obviously cheaper with the container. The cost reductions associated with containers have attracted new companies to enter the market, which has not only led to increased competition, but also increased international trade flows while significantly increasing the volume of maritime trade³⁹.

2. Advantages of Containerization

Although containerization has many advantages for cargo distribution, it also has some challenges or drawbacks. The main advantages of containers are the following⁴⁰:

- a. **Standardization:** A container is a standard transportation product that can be handled anywhere in the world (ISO standard) by specialized means (ships, trucks, barges, wagons), equipment, and terminals. Each container has a unique identification number and volume type code, allowing it to be a unique transport unit that can be managed as such.
- b. **Flexibility:** Containers can be used to transport a variety of cargo such as commodities (coal, wheat), manufactured goods, automobiles, and refrigerated (perishable) cargo. There are modified containers for dry products, liquids (oils and chemical products) and refrigerated products. Discarded containers can be recycled and reused for other purposes.
- c. **Costs:** Container shipping provides lower transportation costs due to the advantages of standardization. Transporting the same amount of bulk cargo in a container is much more times less expensive than conventional means. The containers allow economies of scale in patterns and terminals that were not

³⁹ (n23).

⁴⁰J.P. Rodrigues, Containerization Advantages and Challenges < <https://transportgeography.org/contents/chapter5/intermodal-transportation-containerization/containerization-advantages-drawbacks/> > accessed 2 June 2023.

possible with standard crushing handling. The main cost advantages of containerization stem from lower intermodal transportation costs.

- d. **Speed:** Transshipments are few and fast and ship turnaround times have been reduced from weeks to hours in a day. Due to this characteristic of transshipment, transport chains involving containers are faster. Container shipping networks are well connected and offer a wide range of shipping options. Container ships are also faster than regular cargo ships and provide a more frequent number of port calls, allowing for constant speed.
- e. **Storage:** A container is its own warehouse that protects the merchandise it contains. This means simpler and less expensive packaging for containerized goods, especially consumer goods. Stack ability on ships and trains (double stacking) and on land (container yards) is a net advantage of containerization. With the right equipment, a container yard can increase stacking density.
- f. **Security and Protection:** The content of the container is unknown to the carriers since it can only be opened at the origin (the seller/shipper), the customs and the destination (the buyer). This means less damage and loss (theft).

3. Challenges of Containerization

The following are the main challenges or drawbacks of the containerization process:⁴¹

- a. **Site constraints:** Containers are a large consumer of terminal space mainly for storage, which means that many intermodal terminals have relocated to the urban fringe. Draft problems in the port began to arise with the introduction of larger containers,

⁴¹P. Rodrigues, Containerization Advantages and Challenges < <https://transportgeography.org/contents/chapter5/intermodal-transportation-containerization/containerization-advantages-drawbacks/> > accessed 2 June 2023.

particularly those of the post-Panamax class. A large container ship after the Panamax requires a draft of at least 13 meters.

- b. **Capital Intensity:** Container handling infrastructure and equipment (gantry cranes, storage facilities, internal roads and rail access) are significant capital investments requiring large unavailable capital funds. This requires the resources of large corporations or financial institutions. Additionally, the drive towards automation is increasing the capital intensity of intermodal terminals.
- c. **Stacking:** The complexity of arranging containers, whether on land or in patterns (container ships and double trains), requires frequent re-stacking, creating additional cost and time for terminal operators. The larger the loading unit or yard, the more complex its operational management.
- d. **Relocation:** Due to trade imbalances, many containers are moved empty. However, whether the container is full or empty, it takes up the same amount of space. The stark divergence between global production and consumption requires a reorganization of containerized assets over long distances (across oceans).
- e. **Theft and Loss:** A high-value cargo and a cargo unit that can be forced open or transported (in a truck) indicate the vulnerability level of the cargo between the terminal and the final destination. Around 1,500 containers are lost at sea each year (fall overboard), mainly due to bad weather. In relation to the above is jettison of goods in hazardous weather that could lead to either loss of the ship or the entire cargo on board. Where such a situation occurs, usually containers containing large quantities of goods are jettisoned i.e. thrown overboard to lighten the ship to manage the weather. Of course, such containers thrown away amount to thousands of dollars, which might not be fully recouped even with an insurance cover on the goods.

- f. **Illegal Trade:** A container is a tool used for the illegal trade of goods, drugs, and weapons, as well as illegal immigration rarely. This is because these goods could easily be hidden in the containers in such ways that they cannot be discovered on the container being searched. This has been the case in Nigeria, where most of the time the Nigeria Customs and other agencies of the federal government in the ports that inspect containers in the wharves or at the borders could hardly discover these dangerous drugs.
- g. **Smuggling:** Following from the above, containers aid smuggling, not only for dangerous drugs and weapons but also for genuine goods or merchandise. This arises mainly when the genuine goods and the quantity of the goods packed in a container are not correctly declared or stated in the manifest and other documents used for the importation or exportation of the goods and they slip through the check points into the markets, without the proper fees and taxes paid on them. This makes the various tiers of the government loose revenue due to them and thus affects developments.
- h. **Economic Sabotage:** This is closely derivable from the above because smuggling in goods that are either not permitted or for which the proper fees and taxes are not paid because they are hidden in containers and could not be detected amounts to economic sabotage. This is very rampant in Nigeria now as there are smuggled goods everywhere in the country. Most of these goods came into the country through containerization, which is very convenient way to bring in large quantities of goods into a country. Most of these goods are similar to the goods manufactured locally and so the smuggled goods affect both their production locally and marketing of the same. This is so because imported goods are generally preferred in the country.
- i. **Increase in Unemployment:** As shown above, smuggling leads to economic sabotage, which in turn leads to increase in

unemployment. This comes about because since foreign goods are preferred the local consumers go for them and thus the local manufacturers of similar goods are affected as their own goods are not patronized. Where this arises the business of the local manufacturers would begin to dwindle leading to losses including revenues. This would in turn normally affect those employed in those local industries as the companies could no longer keep them employed and so they would lose their jobs, thus increasing unemployment in the country.

- j. Littering of Containers: As could be seen all over the country, containers are littered all over the places. There is virtually to place in this country whether private residences, government offices, various institutions both public and private and so on that shipping containers are not found. They are being used for one thing or the other of which they are not meant for and so occupying spots where they are not supposed to be. Some of them have been in such places for a very long time and are beginning to root away, thereby causing some environmental hazards which cannot easily be detected due to our low technological scientific development to detect such hazards. These containers are expected to be in the wharves and haulage company premises to convey the goods they are meant to carry and not in several unauthorized places as shown above. The above is the order of the day in this country and is not good for the country.

4. Conclusion and Recommendations

As shown above, containerization is very good for carriage of goods by sea and indeed other means of carriage or transportation when they are properly used for what they are meant for and as required by law. The benefits are quite obvious as it is used for the transportation of goods to and fro a country which help in the development of the economy of the country like Nigeria. However, as stated above they have been misused in this country, thus leading to several problems as indicated. This stems primarily from the

wrong usage of shipping containers both within and outside the shipping industry and ports where they are meant to be used. Instead, they are being used in homes, private and public premises and institutions where their usage and management are not regulated. Thus, there are indiscriminate use of containers all over the places for what they are not supposed to be used to the detriment of the populace in general and the economy in particular. This seems not to be abating as more and more shipping containers are being removed outside the shipping industry where they are meant and needed. These ought not to be so because these are not what are expected for such containers or containerization and so should be forestalled. While the wrongful use of the shipping containers within the industry is being tackled daily by some government agencies like the Customs Service and National Drug Law Enforcement Agency, the use of the same outside the industry appears to be the main problem.

In consequence of the above, it is recommended that the governments should ensure that these shipping containers are kept within the shipping industry and used for the purposes they are meant i.e. to transport goods from one destination to the other whether long or short distances, locally or internationally. They should not be used in private homes and or offices whether private or public for other purposes. As above stated, there are no specific provisions in any section of the relevant legislation dealing with the storage and usage of shipping containers in the country. Therefore, the extant laws and regulations governing containerization or the use of containers, above stated, should be amended with specific provisions made in certain sections relating to the storage and usage of containers and the same should be strictly enforced and any person in breach of the same handed the right punishment. Also, a government agency or committee to ensure compliance and enforcement of the extant laws and regulations should be set up at the State levels to ensure that shipping containers are not removed outside the shipping industry to be stored and used elsewhere.

Further, all containers in private residences, private and public offices and places should be removed forthwith and returned to the shipping companies premises for their proper storage and usage. Those shipping containers that have deteriorated badly should be properly disposed through the re-circling of the same, which would generate revenue for the government and employment for the populace. This is to forestall environmental damages and hazards in the country, which have not been properly determined because of lack of technical capacity and technological capability to do so. The above would cleanse the environment of the hazards associated with such wrongful usages which have arisen from shipping containers being stationed in particular spots for a very long time without being used for transportation of goods as required and have thus begun to experience deterioration due to wear and tear arising from bad weather. Finally, there should be education of the general public of the proper usage of shipping containers in the shipping industry and the environmental hazards caused in their wrongful usage in homes, private and public premises and institutions, and of course the economic losses and dangers of the same to the country.