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Analysis of the Effect of Freight Forwarding Practices on the Efficiency of Cargo Handling Operations

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Abstract

The research findings on the analysis of the effect of freight forwarding practices on the efficiency of cargo handling operations were analyzed based on the data from the socio-economic background of the company staffs and the effects of freight forwarding practices on the efficiency of cargo handling operations in apapa port was also studied. The data were analyzed using descriptive statistics.

The results of the findings revealed the predominant male population over the female population in the company. The overall data collected on the age range of the respondents revealed that the company had more professionals with between 36-45 years. The respondents were majorly university degree holders. Majority of the respondents were freight forwarders. The overall data collected on the years of service of the respondents revealed that majority of the

company staffs have been working there for 6-10 years. Furthermore, the respondent 'strongly agree' that freight forwarding practice has influence on the efficiency of the cargo handling operations and rated the service efficiency of the freight forwarders as good. However, the data revealed that majority of the respondent rate their level of satisfaction as 'generally good'. The respondents also 'agree' that technology strategy is a factor influencing the operations of freight forwarders and also 'strongly agree' that inadequate cargo handling equipment is a major factor. Majority of the respondents agreed that the freight forwarders affect the level of port efficiency, freight forwarding practices has effect on the bottleneck or delays in port and also that cargo handlers have an impact on the delays in ports.

Keywords: District Level, Civil Servants, Motivation, Work: Hai Phong City

1. Introduction

1.1 Background of the Study

The International trade and its development have brought about the rise demand for freight transport networks. It has very specific requirements and operates in a nature which is unique to the world of logistics. It helps to offer suppliers and customers more flexibility, and allow for expedited shipments within time- constrained environments (Enarsson, 2006)^[5]. This has given industry the ability to reduce their inventories, allow seasonal goods to be available all year round, and the ability to provide rapid emergency support to industry and populations, where critical components or humanitarian resources are required swiftly and efficiently (Rushton, *et al.* 2010)^[31]. In order to achieve this great task the effect of freight forwarding practices on the productivity of cargo handling operations in Nigerian ports in the maritime sub-sector cannot be over emphasized.

Freight forwarding is the coordination and shipment of goods from one place to another via a single or multiple carriers via air, marine, rail or highway. The principles of freight forwarding are premised on the efficient and cost-effective transfer of goods that are maintained in good condition throughout their travels (Kayode, 2017)^[13]. To accomplish this, freight forwarders become experts in managing the logistics necessary to ensure that goods arrive on time. Freight forwarder are individual who, as a regular business, assembles and combines small shipments into one lot and takes the responsibility for the transportation of such property from the place of receipt to the place of destination (Nagornyy, *et al.* 2002)^[22]. To have a successful trade and shipping in expanding globalized markets, it means having the right tools at your disposal.

Freight forwarders play a very important role for exporters such as; International documentation and packaging, carrier and routing information, export license assistance, marine insurance rates and coverage, hazardous materials shipping compliance

information and warehouse and distribution services (Ram, 2009)^[29].

According to Feraminifera market research report (2016)^[7], Many Freight Forwarders are multi-national while many are local / regional service stations that address the local needs. Freight forwarders act as an intermediary between the client and various transportation services. Sending products from one international destination to another involves a multitude of carriers, requirements and legalities. A freight forwarding service handles the considerable logistics of this task for the client, relieving what would otherwise be a formidable burden.

Freight forwarding services guarantee that products will get to the proper destination by an agreed upon date, and in good condition. The freight forwarding service utilizes established relationships with carriers of all kinds, from air freighters and trucking companies, to rail freighters and ocean liners. Freight forwarders negotiate the best possible price to move the product along the most economical route by working out various bids and choosing the one that best balances speed, cost and reliability. A freight forwarding service generally provides one or more estimates to the client along with advisement, when necessary. Considerations that affect price will range from origin and destination to special requirements, for example the transport of potentially hazardous materials. Assuming the client accepts the forwarder's bid, the freight is readied for shipping. The freight forwarder then undertakes the responsibility of arranging the transport from point of origin to destination (Mostafa, 2015)^[20].

Cargo Handling Operations: Cargo handling as an activity has evolved from being purely manually driven to an activity that is performed using the latest materials equipment money can buy. It should be noted that freight forwarders play an important role in the transportation of cargoes from the point of origin to the point of destination by monitoring and protecting the movement of such cargo so as to ensure that the proper and right equipment are being used. In shipping, personnel are also aware of the various considerations that need to be kept in mind to perform cargo handling operations on ships with utmost safety knowing the essential safety features, and making appropriate use of materials handling equipment and also providing a conducive atmosphere in order to be able to handle cargo safely on ships (Penny, 2017)^[28].

According to Japan International Cooperation Agency (2017)^[12], a lot of terminal or port cargo handling equipment is provided to facilitate movement of the cargo to and from the ship's side and the transit shed, warehouse, barge, railway wagon or road vehicle. These include two-wheeled hand barrows and four-wheeled trucks mechanically propelled and mechanically propelled tractors for hauling four wheeled trailers. RO-RO trailers are moved by tug-masters or ro-ro tractors. There are also belt conveyors electrically operated, or rollers, all perhaps extending from the quayside to the transit shed, warehouse, railway wagon or road vehicle. Containers are loaded and unloaded by means of the quayside container cranes, i.e. container gantries also called shiptainers. Transtainers or stacking cranes, straddle carriers, van carriers, front and side loading fork-lift trucks are used for moving and stacking containers within the terminal up to five-high, i.e. five containers one above the other. Mechanically powered straddle carriers are designed to distribute containers on the

quay and on the terminal. Fork lift trucks (FLT) are mechanically operated and fitted in front a platform in the shape of two prongs of a fork; lifting capacity varies from 1 to 45 tons. Clamps for reels and bales are provided on some fork lift trucks. On the docks various types of dockside cranes, level-luffing cranes, mobile cranes etc. are used for moving and lifting packages. All the vertical cargo movements are conducted by the lifting gear (lift-on/lift-off equipment). Roll-on/roll-off cargoes, i.e. containers and heavy loads on trailers, roll on and off the RO-RO ship via stern, bow or quarter ramps. They are lifted to various decks on board by means of scissor-supported platforms.

The freight forwarding practices plays a vital role on the productivity of cargo handling operations in ports due to its significant inspection of the goods on transit. Shipping lines is an essential part of Nigeria's trade, which provides intermediate service input for Nigerian's merchandise trade merchandise. A freight forwarder or forwarding agent who is also known as a non-vessel operating common carrier (NVOCC), in more simpler tense, is a person or company that organizes shipments for individuals or corporations to get goods from the manufacturer or producer to a market, customer or final point of distribution in good condition. Forwarders contract with a carrier or often multiple carriers to move the goods. A forwarder does not move the goods but acts as an expert in the logistics network. These carriers can use a variety of shipping modes, including ships, airplanes, trucks, and railroads, and often multiple modes for a single shipment. International freight forwarders typically handle international shipments. International freight forwarders have additional expertise in preparing and processing customs and other documentation and performing activities pertaining to international shipments (Hyung, 2011)^[10].

Information typically reviewed by a freight forwarder includes the commercial invoice, shipper's export declaration, bill of lading and other documents required by the carrier or country of export, import, and/or transshipment. Much of this information is now processed in a paperless environment. The FIATA (Fédération Internationale des Associations de Transitaires et Assimilés) shorthand description of the freight forwarder as the 'Architect of Transport' illustrates the commercial position of the forwarder relative to its client and his cargo. In Europe, some forwarders specialize in 'niche' areas such as rail-freight, and collection and deliveries around a large port. The original function of the forwarder was to arrange for carriage by contracting with various carriers. Forwarder responsibilities included advice on documentation, customs requirements in the country of destination and also to ensure that the cargo gets to the final destination under a good condition. His correspondent agent overseas looked after his customers' goods and kept him informed about matters that would affect movement of goods. In modern times, the forwarder accepts the same responsibilities (Mohd, 2009)^[18]. It operates either as a domestic carrier or otherwise with a corresponding agent overseas or with his own branch-office. In a single transaction, the forwarder may be acting as a carrier (principal) or as an agent for his customer or both.

1.2 Statement of the Problem

The primary function of a seaport is to transfer cargo between maritime and inland transport, quickly, efficiently

and at a reasonable cost (Stephens and Ukpere, 2011) [33], with the aid of various equipment designed to handle specific types of cargo for transshipment. The increasing demand from customers for faster and cheaper deliveries has amplified the rise in demand for freight transport networks. Freight forwarding companies have to face the fluctuating demand on the transportation market. The efficiency of terminal operations is important for cargo transshipment that will ensure Nigeria ports comply with the 48 hours cargo clearance rule of the International Maritime Organisation (IMO). However, Igbokwe (2013) [11] suggests that there has been little improvement over time on the efficiency and productivity of Nigeria port management in meeting the IMO stipulation on cargo clearance. Past studies were extensive in that they covered both port and shipping operations of different maritime nations of the world. Olaogbebikan *et al.* (2014) [26] carried out an evaluation of the performance of Nigerian ports before and after concession policy of the year 2006. The study found that cargo has continued to increase from 2006 probably as a result of the concession policy. Ndikoms (2013) evaluation of the challenges and opportunities for shipping lines services in Nigeria concluded that a significant relationship existed between government policies and shipping operations; the activities of pirates and the profitability of shipping lines; and that adequate cargo handling machines led to faster turn-round time of vessels at seaports. Using Apapa Port Complex as a case study, Stephens and Ukpere (2011) [33], linked delays at seaports in Nigeria to inadequate functional cargo handling equipment as the most critical factor causing delays at the port. The researchers concluded as follows: “though the private operators have invested resources in the procurement of cargo handling equipment in both quantity and quality, the result is not yet significant because private terminal operators still rely mostly on the out-dated and obsolete equipment inherited from Nigerian ports authority (NPA) during the concession arrangement”. It is evident that private terminal operators no longer depend on the out-dated and obsolete equipment inherited from NPA as the results of their invested has yielded into equipment with new technologies that requires special technical know-how. The high technical demand of the new equipment is throwing a lot of challenges at efficient operation of cargo handling equipment at the ports terminals.

As a result of the inefficiency, this research is very important as it examine the effects of freight forwarding practices on cargo handling operations, the factors influencing the effectiveness of cargo handling and the factors influencing the operation of freight forwarders in Apapa port.

1.3 Research Questions

- What are the effects of freight forwarding practices on cargo handling operations in Apapa ports?
- What are the factors influencing the effectiveness of cargo handling in Apapa port?
- What are the factors influencing the operation of freight forwarders in Apapa port.?

1.4 Aim and Objectives of the Study

1.4.1 The Aim of the Study

The aim of the research is to analysis the effect of freight

forwarding practices on the efficiency of cargo handling operations.

1.4.2 Objectives of the Study

1. To examine the effect of freight forwarding practices on cargo handling operations in Apapa ports.
2. To assess the factors influencing the effectiveness of cargo handling in Apapa port.
3. To determine the factors influencing the operation of freight forwarders in Apapa port.

1.5 Research Hypothesis

H0: Freight forwarding practices does not affect the productivity of cargo handling operations in Nigerian ports.

H0: Freight forwarding practices do not promote the efficiency of Nigerian ports.

1.6 Significance of the Study

This research work is to analysis the effect of freight forwarding practices on the efficiency of cargo handling operations so as to identify means by which the operations can be improved. It also entails an investigation on the problems hindering the effectiveness of freight forward practices and to also assess how the Nigeria ports especially in the area of cargo handling can be efficient without the services of freight forwarders. It is necessary to investigate into this as a result of the increasing demand from customers for faster and cheaper deliveries and the inefficiencies in the Nigeria ports.

1.7 Justification / Scope of the Study

This research focuses on the activities of clearing and forwarding agents, NPA, freight forwarding agent and other in the Apapa port complex. Since we are still a developing country under foreign investment and internal market and we do not have enough resources to meet even our consumption so there is a need to meet our own usage by exporting and importing worldwide. This project is therefore justified by providing better conceptualization of freight forwarding practices on the productivity of cargo handling operations in Nigerian ports using the Apapa port complex as a case study.

This research will give clear image of the benefits and relationship of freight forwarding practices on cargo handling operations. The findings of this study will help to understand the importance of freight forwarder in every economy and shipping industry and how they can be used effectively.

1.8 Research Limitations

The limitation to this research is basically inadequate funds that tend to reduce the efficiency of the researcher in sourcing for more relevant materials, literature or information and in the process of data collection.

1.9 The Study Area

1.9.1 Historical Background of Lagos State

Lagos is one of the largest cities on the African continent and was very much the former capital of Nigeria before it was moved to Abuja. It is located in the South-Western Nigeria it is bound to the west by the Republic of Benin, to the north and east by Ogun state with the Atlantic Ocean providing a coastline on the south.

Before the Portuguese name of Lagos had been adopted, Lagos initial name was Eko which referred mainly to the island. The first to settle in Eko were the Aworis. The Awori hunters and fishermen had originally come from Ile-Ife to the coast. The name Eko comes either from the Yoruba "Okò" (cassava farm) or "Eko" (war camp). Over 650 years ago, the Oba of Benin sent warriors to Eko who were received in a welcoming manner by the residing Awori fishermen. The Benin Prince, Ado, who led the war party, was asked to become their leader. From that point on, Eko belonged to the kingdom of the Oba of Benin.

1.9.2 Location and Geographical Background

Lagos state Nigeria, lies on a coordinates of Latitude: $6^{\circ}27'14''\text{N}$ and Longitude: $3^{\circ}23'40''\text{E}$ at an altitude of 11m above mean sea level. It has a population of 9,013,534 based on the 2006 census. Lagos has a total of 3577 square kilometres, 787 square kilometres is made up of lagoon and creeks. Lagos State is arguably the most economically important state of the country,^[7] containing Lagos, the nation's largest urban area. It is a major financial centre and would be the fifth largest economy in Africa, if it were a country.

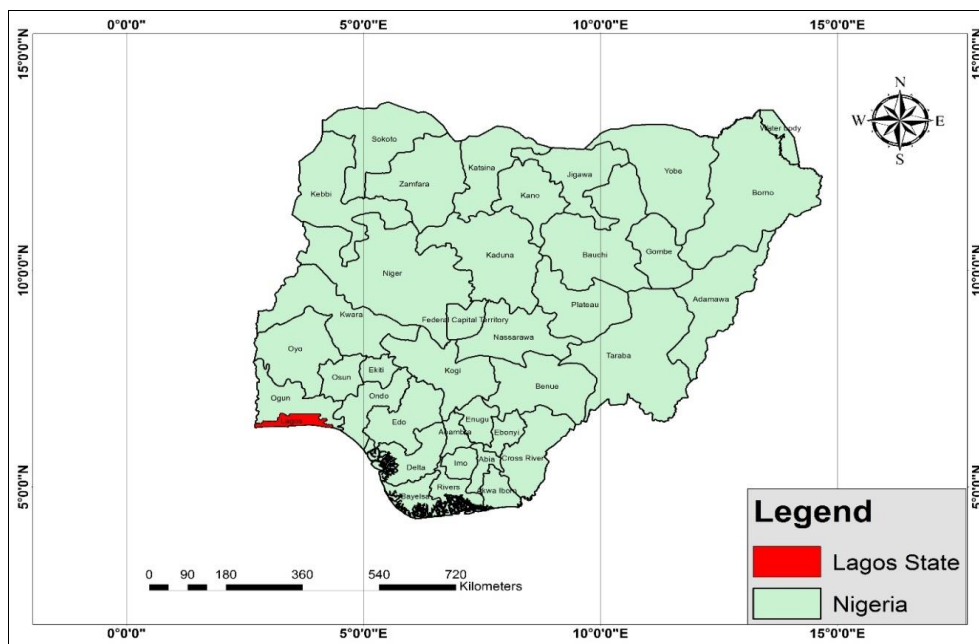


Fig 1: Map of Nigeria showing Lagos State

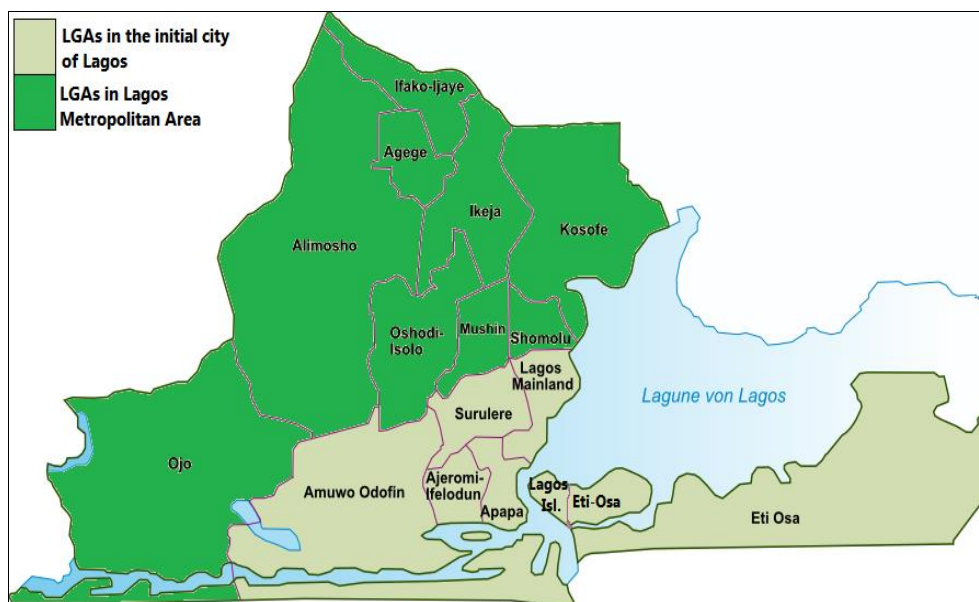


Fig 2: Map of Lagos State showing Apapa the study area

1.9.3 Economic of Lagos State

Lagos State is a major economic centre of Nigeria. It would be the fifth largest economy in Africa if it were a country. Its total generated revenue in 2017 was around ₦334 billion (equivalent to US\$920 million), growing by 10.43% compared to 2016.

1.10 Definition of Terms

- **Freight Forwarding:** This is systematic, well calculated process whereby freight (cargo) forwarder carries out his assigned responsibility of taking goods in his custody from the port of origin to the port of destination. It might also be from one ware house to

another. This also reflects a process which freight is taken to berth to its final destination.

- Sea Port: A sea port is an area where there are facilities for berthing or anchoring ships and where there are equipment for the transfer of goods from ship to shore or from ship to ship. The port is an interface between the Land and the river.
- Transit Cargo: This is the movement of cargo destined for or coming from a foreign country but physically passing through another country.

2. Literature Review

Several studies had also been undertaken by erudite researchers across different maritime economies of the world. Past studies were extensive in that they covered both port and shipping operations of different maritime nations of the world. Olaogbeikan *et al.* (2014) ^[26] carried out an evaluation of the performance of Nigerian ports before and after concession policy of the year 2006. The study found that cargo has continued to increase from 2006 probably as a result of the concession policy. Ndikoms (2013) evaluation of the challenges and opportunities for shipping lines services in Nigeria concluded that a significant relationship existed between government policies and shipping operations; the activities of pirates and the profitability of shipping lines; and that adequate cargo handling machines led to faster turn-round time of vessels at seaports. The focus of the study of Stephens and Ukpere (2011) ^[33] was to establish the relationship between land transport systems in the country of destination and the turn-around time, capacity utilisation of port infrastructure, facilities and cargo-handling equipment and general port performance.

2.1 Conceptual Framework

Freight transport demand may be understood as derived demand, resulting, however, from complex structures and processes. Transport activities are concomitantly planned with activities occurring at the origin, destination, and also at all intermediate stages to the extent that production, consumption and freight distribution are jointly considered and integrated transport demand is progressively replacing the traditional derived transport demand (Litman, 2009) ^[15]. The conceptual framework of a freight forwarders intermediary perspective based on New International Economics and Intermediation Theory of the firm will be developed. The three basic concepts include: Property Rights Theory, Transaction Cost Theory and Principal Agent Theory. The shipping industry is very important in the international economy because it carries a large portion of world trade (Nyema, 2014). The Shippers' interests in relation to shipping services agree with the public interest and shippers need to required profit-maximizes generally and the shipping lines offer the best-possible service for the lowest-possible price.

2.2 Theoretical Framework

The transport industry undertakes nothing more than the mere movement of persons and things from one place to another. It constitutes one of the most important activities in every standard civilization.

2.2.1 Transportation as a Flow

There are differences between transport and traffic. Transport is to carry or bear from one place to another; to remove; to convey while traffic is to pass goods and commodities from one person to another for an equivalent in

goods or money; to buy or sell goods; to barter; to trade. Transport is also an act of transporting; conveyance while traffic is pedestrians or vehicles on roads, or the flux or passage thereof. In freight transportation market, the interplay between the actors can be considered supply and demand actions in which the transport operators or forwarders supply and the transport buyers consume. The focus of this research is on transport operators who supply a mass transit services and also provide movement of students within the state. The uppermost layer consists of students that are moved to different nodes (Ogunsola, 2014) ^[24].

2.2.2 Transportation as a Chain

Transportation refers to the movement of product from one location to another as it makes its way from the beginning of a supply chain to the customer. A supply chain is a network of bodies that work towards providing a good or service for the final consumers. It is an embodiment of the planning and management procedures involved in sourcing, procurement and logistics management. Many manufacturers and retailers have found that they can use state of the art supply chain management to reduce inventory and warehousing costs while speeding up delivery to the end customer. Any supply chain's success is closely linked to the appropriate use of transportation. Most organizations rely on supply chains to help them reach their end user market; they rely on outside parties for effective marketing strategies that aid customer satisfaction. Supply chains also include coordinating and collaborating with supply intermediaries, third party service providers or customers. It integrates the management of supply and demand within and across companies. Effective management of a supply chain equates to managing business relationships among companies and their supply chain partners which include customers and suppliers.

2.2.3 Urban Transportation Characteristics

Urban transport is a collection of modes of transport, which are available to the public irrespective of ownership. It includes road-based mode like conventional buses, Para transit vehicles, human and animal powered vehicles, cycle and walking, rail-based models like light rail transit, heavy rail system, street tramway, and rapid transit system. Virtually everything we do relies on transportation. Trade within and between different regions is vital to economic development and directly depends on transportation (Kulash 1999).

In developing countries, the primary importance of urban transport is to move large numbers of people with considerable flexibility in order to meet mobility demand, particularly access for employment throughout the city. However, existing public transport capacities in developing countries do not satisfy the demand for a number of reasons: the quality of travel on public transport is poor; roads are badly maintained and managed; and costs of travel are high for the poor to make regular use of the urban mass transport system.

Mass transit is a common carrier service, provided for the movement of passenger in a large scale by public or private system. Urban mass transit is an arrangement, which facilitates the quick transportation of masses of people from one place to another. Urban mass transit is any transportation system that can transport large transit numbers of passenger from forty and above at a time and for which operations are regulated by time schedules fixed routes and stops. Urban mass transit has also been explained as urban phenomena; it is about moving tens of thousands of

commuter rapidly from one point to another in a city, with minimum of disruption. An urban mass transit system is one that can move a large number of people rapidly from one point to another with minimum of disruption.

2.2.4 Challenges of Urban Transportation in Nigeria

Transport remains a non-negotiable instrument of city development and functioning as the urban centres worldwide rely on efficient transportation for functional efficiency. An important feature of urbanization in Nigeria is that of rapid growth and uncontrolled horizontal motion of city. All these, coupled with inadequate transport infrastructure and services has dramatized urban transportation into chaotic, complex and almost intractable nature. Generally, Nigeria's transport system revealed a sector suffering from a warped developmental approach thus constituting overwhelming challenges on urban transportation.

The transportation system in urban centres of Nigeria is beset with numerous challenges. Generally, the analysis of Nigeria's transport system revealed a sector suffering from warped or defective developmental approach (Badejo, 2011). There is evidence of skewed modal development tilted in favour of road transportation to the disadvantage of other means of transportation. The urban transport challenges in Nigeria today include traffic congestion, parking problems, accidents and environmental pollution. In some major cities, vehicles are seen crawling on the roads especially in both the morning and evening peak periods. This amounts to daily loss of time and energy in our various urban centres.

2.3 Empirical Review

Using Apapa Port Complex as a case study, Emaghara and Ndikom (2012) linked delays at seaports in Nigeria to inadequate functional cargo handling equipment as the most critical factor causing delays at the port. The researchers concluded as follows: "though the private operators have invested resources in the procurement of cargo handling equipment in both quantity and quality, the result is not yet significant because private terminal operators still rely mostly on the out-dated and obsolete equipment inherited from Nigerian ports authority (NPA) during the concession arrangement". It is evident that private terminal operators no longer depend on the out-dated and obsolete equipment inherited from NPA as the results of their invested has yielded into equipment with new technologies that requires special technical know-how. The high technical demand of the new equipment is throwing a lot of challenges at efficient operation of cargo handling equipment at the ports terminals.

Adebayo (2005) ^[1] identified cumbersome clearing system as one of the problems of port efficiency in Nigeria. According to Adebayo (2005) ^[1] the cargo clearing system which depends on manual transactions or paper and physical movements of documents to and from various processing centres spread across vast locations within and outside the ports is obsolete. He also decried the situation whereby the nation depends on trucks rather than rail transport for mass movement of hinterland bound goods from the ports. The situation is aggravated by the absence of designated holding areas for trucks to park, awaiting their turn to load in the port.

Uzoanya (2000) ^[34] is of the view that the presence of so many government agencies in the port, all performing the

same duty of physical examination of cargo causes delay in cargo clearances as well as high cost of doing business in Nigerian ports. According to Uzoanya, these illegal government agencies engage in money extortions from clearing agents and shippers thereby escalating the cost of clearing goods in the port. He compared the delay witnessed in clearing goods in both Cotonou and Lagos port ports as three days in Cotonou as against seven days or more in Lagos port.

Gwandu (2000) ^[8] attributed the inability of Nigerian ports to deliver customers friendly services to corruption. According to Gwandu, corruption is the greatest headache the ports in Nigeria have to tackle in order to remain relevant to the economic growth. Delivering a paper titled "Eradication Of Corruption and Sharp practices in the Seaports," he posited that Nigeria aspirations of capturing all her foreign trade through her ports and playing a leading role in maritime industry in the West and Central African sub region can only be achieved in an atmosphere devoid of corrupt practices.

2.4 The Freight Forwarding Business

The freight forwarding business is the business of planning, arranging, coordinating, and articulating the logistics process that are involved in moving goods from point of origin, where they are not economically needed and where they are considered less economical relevant, to a port of destination where they are in high demand and their relative economic importance is considered greater. Freight forwarding practices usually starts at the port of sail, where export formalities are computed by the assigned freight forwarder, assessed and valued in conformity with international rules and regulations for exports, and also in line with the consequence's specifications, through the provision of an appropriate mode of transport for the affreightment of the goods to the port of destination or discharge (Ndikom, 2011) ^[23]. At the port of destination, the freight forwarding practices especially in terms of cargo handling operations ensures that the cargo or goods are delivered in good condition with respect to the standard and efficiency of cargo handling equipment used.

2.5 Freight Forwarding In Nigeria

Freight forwarding practices or operations in Nigeria, like in any other place in the world, is seen as a noble and respectable profession. It is as old as man himself and as wide as shipping activities, it is a core component of shipping operation. Indeed, it is a component of both shipping and maritime activities, without it, the delivery process would be less meaningful and much cumbersome. It is the vital Link between the consequence and the consignor in import-export trade. It is also vital to the logistics supply-chain and physical distribution of goods in port operations. Hence, there is no way port trade (transaction and services) can function optimally, without the good functioning of freight forwarding practices (Ndikom, 2011) ^[23].

A freight forwarder is a professional business manager of time, men, money and resources within and without the consignee of the port. He ensures that the assets and resources committed to him are managed in a most efficient way, he ensures that goods are sources rightly, packaged through a formidable and suitable transport system especially with the use of modernized and sophisticated cargo handling equipment. He ensures that the goods are

safely delivered at the right time, place and condition according to the consignee specification.

As a good manager of men and resources, he ensures that appropriate communication links are created and established at all levels within the operation at all times, to have an enduring good working relationship between workers and the management team, reflecting a high degree of synergy, harmonious working relationship and efficiency. The freight forwarding takes off burdens from the consignee and ensures that the right decisions are taken as relating to his imports, in conformity to his specified quality and quantity. Freight forwarding is an essential component in all import-export trade transactions. Freight forwarders play a very important role for exporters such as; International documentation and packaging, carrier and routing information, export license assistance, marine insurance rates and coverage, hazardous materials shipping compliance information and warehouse and distribution services (Ram, 2009) [29].

2.5.1 Essential of Freight Forwarding In Nigeria

Since the Nigeria port authority took over, the Nigeria ports in the late 50's which are the cardinal component of its economic life as a nation, the industry and its operations have not fared well, to say the least, it has been regrettable and hope – dashing all the way due largely to lack of an enduring policy framework, the industry has been infested with a lot of operational vices and sharp practices, culminating in under – invoicing, under declaration and so on, and thereby leading to capital flight. Furthermore, air freight is often combined with other modes of transport, which allows the use of more remote and less congested airports (Zhang and Zhang, 2002) [35].

The freight forwarding profession was not insulated from these operational vices. Financial implication was also felt (even though at a different level.) Freight forwarding all over the world is a noble and respected profession, being is a formidable link between the consignee, shippers (exporters) customs (and other government agencies) and the consignee. But here in Nigeria, the operational modalities of freight forwarding are quite distinct from what are obtainable elsewhere, especially from economic of the world. They are seen as fraudulent in the manner they carry on their business with customs and other government agencies.

Yet everyone admit that they are cardinal to port operation and the maritime industry without them, there cannot be actualization of trade supply chain (That is physical distribution and delivery process of import and export). The essential of freight forwarding in the import/ export delivery process, therefore cannot be overemphasize as it is: The vital link in the delivery process of import and exports, the go between for the consignee and agents in the port system, a practice, through which goods are processed, sourced and inspected according to the consignee's contract, provides consolidation for all import and exports, Represents the consignee when it comes to custom clearance of goods, has a system for paying all port charge, dues and rates on behalf of the consignee, take the burden of import complication of the consignee, it is so important that without it the importer documentation and delivery process would be impossible, ensure that goods are delivered safely at the right time and place and ensure proper storage and warehousing of the goods at the port destination.

2.6 Functions of Freight Forwarders

A freight forwarder assembles and consolidates shipments and utilizes an other regulated carrier for the line-haul movement (Morash, 1987) [19].

The function of a freight forwarder can differ depending onto the type, size, and nature of the relationship with its partners. The functions include: Quoting steam ship rates, obtaining necessary vessel space, preparing commercial invoices, obtaining export licenses, issuing export declarations for the shipper, preparing certificates of origin, obtaining and preparing consular invoices, compiling ocean bills of lading, compiling air waybills, obtaining insurance, paying freight charges, presenting documents to the bank, obtaining port warehouse space, racing and expediting shipments and collecting and submitting money for shipments (Murphy *et al.* 1992) [21].

2.7 Cargo Handling Equipment

According to House (2007) [9], several ships have been constructed with side loading facilities for specific commodities, that is, paper and forestry products, on the Baltic trades. Watertight hull openings work in conjunction with internal elevators to move cargoes to differing deck levels. These openings, shell doors as such, may function as a loading ramp or platform depending on cargo and designation and fork lift trucks being engaged on board the vessel to position cargo parcels. A lot of terminal or port cargo handling equipment is provided to facilitate movement of the cargo to and from the ship's side and the transit shed, warehouse, barge, railway wagon or road vehicle. Some cargo equipment to include the followings: cranes, Gantry crane, derricks, forklifts, dockside cranes, level-luffing cranes and mobile cranes etc. In shipping, personnel are also aware of the various considerations that need to be kept in mind to perform cargo handling operations on ships with utmost safety knowing the essential safety features, and making appropriate use of materials handling equipment and also providing a conducive atmosphere in order to be able to handle cargo safely on ships (Penny, 2017) [28].

2.7.1 The Concept of Automated Handling

Another steadily growing and increasingly important application in terminal handling revolves around the concept of automated operations. With increasing demand for accurate and fast intermodal solutions, automated handling at terminals is becoming an important aspect worth considering by terminals with the capability and willingness to automate handling. The majority of the innovative maritime technologies are based on special/dedicated vessel types, innovative quay-to-ship transshipment devices and aims at a high automation level.

Automation is used here to refer mainly to the control mechanism of the handling equipments i.e. how much degree of attention the equipment or system demands from a human operator. An automated system will be autonomous with respect to the right container location, $p(x,y,z)$, at the right time, t , within a given field of operation. Such a system usually receives an initiating command from a human operator (e.g. successful vessel berthing) and proceeds with subsequent operations with very little or no interference from the human operator until a terminating criterion or criteria is reached, Automated Guided Vehicles (AGVs) provides a classical example. The output depends very little

on the operator as opposed to manually operated systems whose output depends to a greater extent on the operator. Different handling systems are automated to different extents. Proponent of automated handling argues that successful automation does not only boast performance but goes a long way to alleviate capacity constraints associated with manned operations e.g. the Delta Sea-Land Terminal at Rotterdam has invested in a fully integrated and automated system between ships and stacking areas with an expected performance of about 50 TEUs per hour, almost doubling the usual output of 15 to 35 TEUs per hour (Kay, 2017) ^[14]. The situation with SSS is difficult since different technologies developed independently must come into play. Often, there turn to be a need for more automation in handling systems competing among each other to reduce operational cost and time delay at terminals. Consequently depending on the extent of automation, we can categorise handling systems into various levels automated, semi-automated, non-automated.

According to *Material Handling and Logistics U.S. Roadmap (2014)* ^[16], However, to keep it simple and for the case study we have considered, we shall only consider automated and non-automated handling systems. However, ongoing advances in sensing, machine intelligence, and robotics have made it possible to fully automate an increasing number of handling tasks.

2.7.2 Automated Handling Equipments

Systems output performance does not depend much on the operator. Some examples includes but not limited to;

1.) Automated Guided Vehicle Systems (AGVS).

AGVs enable material movement across a wide variety of industries such as chemicals, hospitals, paper, food, pharmaceutical etc and are increasingly in use today by the maritime industries for transferring containers. Some AGVs move along a guide-path which can be modified easily. They are driverless, automatically controlled, capable of loading, transporting, and unloading without human intervention.



Source: Savant Automation

Fig 3: Automated Guided Vehicle Systems (AGVS)

The primary advantages of AGVs over manually operated vehicles are labour reduction and enhanced ability to route and track cargo. AGVs have been seen to be useful for horizontal material handling between AS/RS and ship cranes on one hand, and between AS/RS and truck and train docks on the other hand. One main disadvantage with AGVs, is that it is difficult to attain high system safety when AGVs operate at high speed and are intermixed with pedestrians or, perhaps, non-automated vehicles adding to the initial high

investment cost. The vehicles have to be designed individually according to the specific conditions of the environment they are used in (Schulze and Wüllner 2006) ^[32].

2.) Automated Storage and Retrieval Multi-Storey Systems AS/RS in Container Terminals (Computainer).

This is a storage system that uses fixed-path storage and a retrieval machine running on one or more rails between fixed arrays of storage racks. AS/RS can also interface directly with an AGV system, so as to reduce manual labour requirement. Though AS/RS systems have been widely used for warehousing operations cargo, they could be a major priority for ports with limited space due to their efficient space utilization. They are used at the Hamburg CTA terminal. The technology is distinguished by shorter cycle times, automatic retrieval and reshuffling of containers in yard, efficient space utilization (reducing by 1/3 to 1/2), easy expandability and flexibility. Simulate the implementation of automated container terminals to analyze the impacts on in land transport.

According to *Material handling industry of America (2012)* ^[17], an automated storage and retrieval system (ASRS or AS/RS) consists of a variety of computer-controlled systems for automatically placing and retrieving loads from defined storage locations.

3.) Automated Crane Systems

They are unmanned rail mounted stacking cranes which span a number of rows with containers. They can either be used for loading/unloading (quay cranes) or in the yard (yard cranes). An example is the Automated Stacking Cranes (ASCs) and some types of Rubber Tyred Gantry Cranes (RTGs). The ACSs systems are equipped with sensors such as cameras and machine vision systems. Several terminals make use of ASCs such as container terminal Altenwerder in Hamburg and Europe Combined Terminals in Rotterdam. The use of GPS technology also provides RTG with auto travelling and auto steering capabilities. STS container crane productivity has always been one of the critical components of terminal productivity. But the crane is only one of the terminal elements that control production. Within the next decade crane productivity may become the limiting component of the terminal production (Bhimani, and Sisson, 2002) ^[2].



Source: Kenocranes Equipment

Fig 4: Rubber Tired Gantry Cranes

4.) Krupp Fast Handling System.

An automated system designed specifically for intermodal rail terminal but which can be adapted to marine terminals. Claims from the manufacturer¹⁸ regards the system's handling capability as fast, (short waiting time for trucks), comparatively less space requirements with a high rack channelling device and a channelling vehicle.

2.7.3 Non-Automated Handling Equipments

These are equipments with output performance depending much on the operator. Some examples include;

1.) Mafis and Semi-trailers

Mafis are wheeled metal platforms with simple mechanism and no engine. The platforms are made with such a strong metal that heavy containers (2 TEU) can be placed on top and hooked up to a tractor (tugmaster) that can drive the container without any need for lifting. Such systems are economically cheap in terminals with sufficient land.



Source: Adtong Mafi Trailers

Fig 5: Mafi roll trailer

Over a distance of about 400 meters and no congestion, a mafi can transfer one container in about 8 minutes reaching a performance of about 7 to 8 moves an hour. The low performance is associated to the time used to hook the mafi with the tractor. Semi-trailers are similar to mafis, except that they have rubber tyres instead of wheels and so can be hooked up to a road truck.

2.) Tugmaster

A tugmaster is a type of yard vehicle in the form of a tractor used to operate passive equipments such as mafis or semi-trailers. The mafi or semi-trailer is secured to the tugmaster which can be used to tow the mafi and its payload on and off the ship for loading and unloading operations. Its performance is therefore similar to that of the mafis described above. Tug Masters commands the powerful boats used to assist ship movements in ports and harbours. The Tugmaster is a high-wing braced monoplane with a fixed tailwheel landing gear and powered by a de Havilland Gipsy Major engine (Ellison 1966)^[3].



Source: Kenocranes Equipment

Fig 6: Tug Master

2.8 Role of Freight Forwarders in Cargo Handling and Transfer Operations

The role of freight forwarding in cargo handling and transfer operations cannot be overemphasized. Cargo handling procedure comprises the presentation of documents of import/export cargo to customs, Nigerian Port authority, shipping companies, NIMASA's shipping unit, among others, for processing of the said papers and making necessary payments in line with international best practices. It also involves cargo clearance procedures and movement of goods from each documentation process point in the port, through the gate of final delivery of same, to the doorsteps of the consignee, through a well coordinated transport mode. Most cargo handling and transfer activities cannot be possible in a port without the coordinating agent in the handling and transfer operation of cargo to be offloaded or loaded, in a agreement with the manifest declaration and bill of lading. It is his duty to ensure that his client's goods brought into the port of discharge are handled well by moving them into safe places (transit sheds and port warehouses) for onward processing and documentation in the port (Ndikom, 2011)^[23].

3. Research Methodology

3.1 Research Design

The conceptual structures within which research is conducted is regarded as the research design, it constitutes the blueprint for the collection, measurement, and analysis of data. Research design is known as "a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings".

This research methodology is designed to obtain data on the analysis of the effect of freight forwarding practices on the efficiency of cargo handling operations. It described the source of data to be used, sampling data method, population of the study, sampling frame, sampling size, sampling techniques, and data collection instruments, method of data collection, and tools for data analysis.

3.2 Research Population

It is for the benefit of the population that researches are done. However, due to the large sizes of population, researches often cannot test every individual in the population because it is too expensive and time consuming that is why researches rely on sampling techniques. The target populations are the freight forwarders, cargo handling facility operators and staffs of Nigeria Port Authority at Apapa port complex of Nigeria and a total of 140 correspondences would be sampled.

3.3 Sampling Frame

A sample is assessed to be adequate by how well such sample represent the whole population of participants from which the sample is drawn without been bias. However, the aim of the research is to analysis the effect of freight forwarding practices on the efficiency of cargo handling operations. The sampling frame would cover the Apapa port complex of Nigeria.

3.4 Sample Size

The sample representing the statistical sample of observation considered. The sample size is always denoted by the n and it is always a positive integer. The sample size refers to the number of items to be chosen from the

population to form the sample. An optimum sample may be described as the one that satisfies the requirement of representativeness, flexibility, efficiency and reliability. The Apapa port in Lagos has a total of 2356 clearing forwarding professionals (Oniyide, 2017) ^[25].

Going by Eniola *et al.* (2013) ^[6] as they employed the use of descriptive statistics in analysis of data. The formula used to determine the sample size is Yamane's Formula which is designated as follows:

$$n = \frac{N}{1 + N(e^2)}$$

Therefore, N = total population, the sampling size estimated was regarded as "n" while "e" was used as the level of precision or standard accuracy.

Where:

n = Sample size

N = Population = 1,356

e = Level of precision in % = level of precision or sampling error at 0.08

$$n = \frac{2356}{1 + [356(0.08^2)]}$$

Sample Size, n = 150 questionnaires

The sample size of 150 was chosen from the total population to be effective since all the population cannot be sample, which is gotten from the Yamane's formula and also backed up with interviews to respondents selected in order to get the actual facts and figures needed in assessing the scheme. This was drawn from the Apapa port located in Lagos State.

Table 1: Sample Size for Apapa port located in Lagos State

S. No	Respondent	Population
1	Freight Forwarder (F/F)	70
2	Cargo Handling Facility Operators	50
3	Staffs of MAERSK LINE	30
Total		150

Source: Authors field work

3.5 Sampling Technique

The sampling method used for this research is systematic sampling technique. The process of systematic sampling typically involves first selecting a fixed starting point in the larger population and then obtaining subsequent observations by using a constant interval between samples taken. Hence, if the total population was 1,000, a random systematic sampling of 100 data points within that population would involve observing every 10th data point.

3.6 Data Collection Instrument

The instruments used in getting data for this research include; questionnaires, camera and personal observation.

1. Questionnaires: Questionnaires will be designed to get information from respondents on their socio-economic

characteristics and other important information. The interview questionnaire is collected in the form of a survey. The survey collected gives descriptive information about freight forwarders.

2. Photographs: Digital camera will be used to take photographs of some operations in the port.
3. Personal Observation: The researcher will also observe the various activities going on in the port.
4. Interview: A structured interview was conducted on voluntary basis.

3.7 Sources of Data

The data used for this research work was collected from both primary and secondary sources.

3.7.1 Primary Sources

A proportion of the needed data for this research work were generated by the researcher, information and data were obtained from the target population at the site. For on site assessments of the condition respondent were adopted in this work in an attempt to using formal, structural questionnaire. This was complemented by photographic means and higher response rate were associated with research questionnaire instrument which involves face to face meeting with the respondents. In this work in an attempt to explore the advantages of personal contact rate are often associated with this method, specifically the questionnaire Population were a mix of descriptive and analytical question.

3.7.2 Secondary Data Source

Another source for obtaining data for this research work is the secondary source. Data are collected through organizational records. Secondary data analysis saves time. This source of data collection is essential since it is impossible to conduct a new survey that can capture past changes and development. Such information as census have a degree of validity and reliability, institutions such as ministry of environment and the population commission are consulted for this data.

3.7.3 Data Requirements

This study examines the effect of freight forwarding practices on the production of cargo handling operations.

3.8 Methods for Data Analysis

Objective 1: The effect of freight forwarding practices on cargo handling operations in Apapa port where examined using descriptive statistics to express the information gathered in forms of charts, table, graphs etc.

Objective 2: The factors influencing the effectiveness of cargo handling in Apapa port were identified using various descriptive statistics.

Objective 3: The factors influencing the operation of freight forwarders in Apapa port were determine using descriptive statistics.

4. Data Analysis, Presentation and Discussion of Findings

4.1 Socio-Economic Characteristics of Respondents

Table 2: Personal Profile of the Respondents

Variables		Frequency	Percentage (%)
Gender	Male	115	77
	Female	35	23
	Total	150	100
Age Group of Respondents	16-25 Years	27	18
	26-35 Years	30	20
	36-45 Years	57	38
	46-55 Years	26	17
	Above 55 Years	10	7
	Total	150	100
Organization	Freight Forwarding (F/F)	70	47
	Maersk Line Cargo Handling	30	20
	Nigeria Port Authority	40	27
	Others	10	6
	Total	150	100
Level of Education	Secondary School certificate	23	15
	Higher National Diploma	25	17
	University Degree	78	52
	Masters Degree and above	24	16
	Total	150	100
Years of Experience	1 – 5 years	44	29
	6 – 10 years	68	45
	11-15 years	26	18
	Above 15 years	12	8
	Total	150	100

Source: Researcher's Fieldwork, 2018

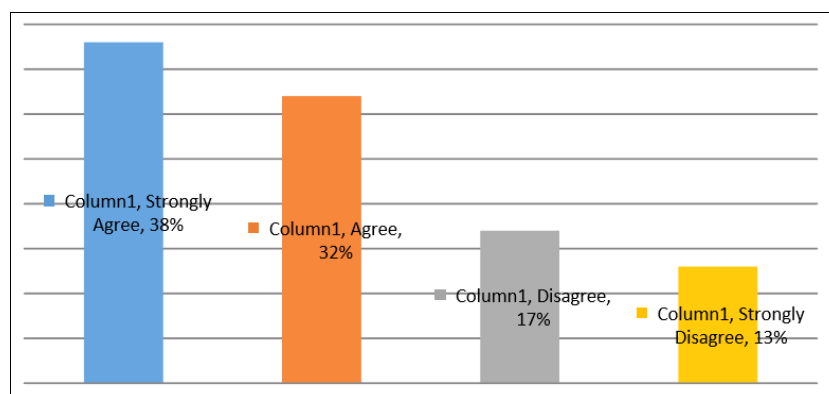
The personal profile of the respondents sampled in the company is clearly shown in Table 2 above. The respondents were predominantly male at 77% over the female at 23%, indicating that majority of the respondents were male. The overall data collected on the age range of the respondents revealed that the company had more professionals with between 36-45 years at 38%. Those between 16 -25 years were 18%, others were 26-35 years at 20%, 46-55 years at 17% and those above 55years were 7%. The respondents had different academic qualifications with the highest number of professionals having a university degree at 52%, 15% possess secondary school certificate, 17% having Higher National Diploma and 16% posses masters degree and above. The respondents were majorly university degree holders. Majority of the respondents were Freight forwarders at 47%, 20% work with Maersk line cargo handling, 27% with Nigeria Port Authority and other organization at 6%.

The overall data collected on the years of service of the respondents revealed that majority of the company staffs have been working there for 6-10 years at 45%, those that have been there for above 15years at 8% were revealed to be the least, 11-15 years at 18% and 1-5 years were 29%.

4.2 Analysis of the Effects of Freight Forwarding Practices on the Efficiency of Cargo Handling Operations in Apapa Port

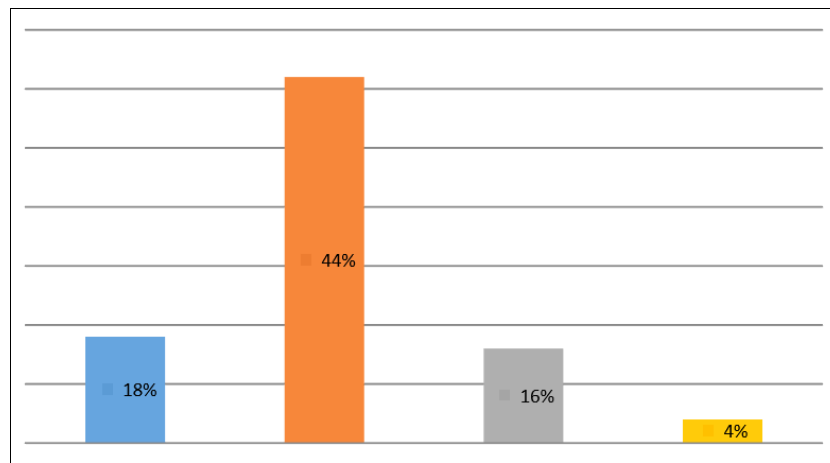
4.2.1 Influence of freight forwarding practices on the efficiency of cargo handling operations in Nigeria ports

Fig 7 below shows that majority of the respondent at 38% 'strongly agree' that freight forwarding practice has influence on the efficiency of the cargo handling operations. However, 32% of the respondent 'agree', 17% of the respondents 'disagree' and the least number of respondents at 13% 'strongly disagree'.



Source: Researcher's Fieldwork, 2018

Fig 7: Influence of freight forwarding practices on the efficiency of cargo handling operations in Nigeria ports



Source: Researcher's Fieldwork, 2018

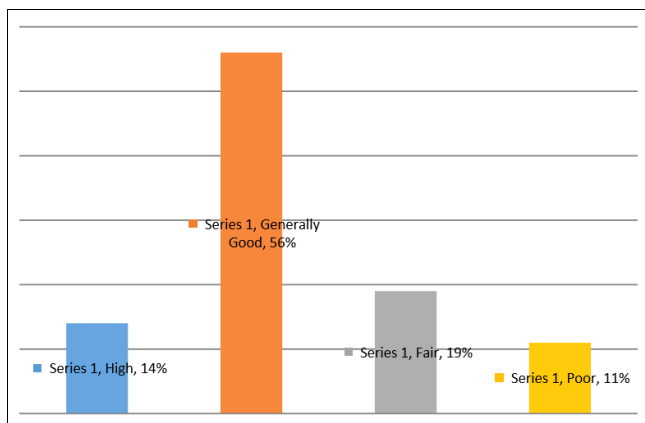
Fig 8: Rating of the Facilities Provided to the Customers

4.2.2 Rating of the Service Efficiency of the Freight Forwarders

As shown in Fig 8 above, the rating of the service efficiency of the freight forwarders can be easily seen. The company staffs at 44%, rated the service efficiency of the freight forwarders at as good. Others ratings were very good at 18%, fair at 16% and the least rating at 4% were poor.

4.2.3 Level of Satisfaction with the Freight Forwarders

As shown in Fig 9 below, 56% of the respondents representing the majority rate their level of satisfaction with the freight forwarders as 'generally good', 19% of the respondents rate their level of satisfaction with the freight forwarders as 'fair', 14% of the respondents rate their level of satisfaction as 'high' and 11% of the respondents rate their level of satisfaction with the freight forwarders as 'poor'. This data revealed that majority of the respondent rate their level of satisfaction as 'generally good'.



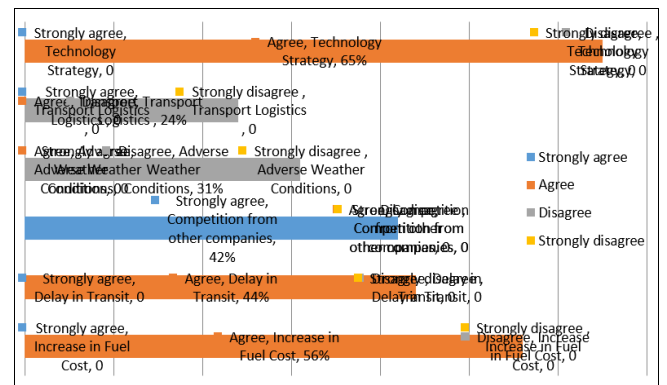
Source: Researcher's Fieldwork, 2018

Fig 9: Level of Satisfaction with the Freight Forwarders

4.2.4 Factors influencing the Operations of Freight Forwarders

Fig 10 represents respondents' opinion on the factors influencing the operations of freight forwarders. Majority of the respondents with 65% 'agree' that technology strategy is a factor influencing the operations of freight forwarders, others were delay in transit at 44% and increase in fuel price at 56%. Some of the respondents 'disagree' at 31% that adverse weather conditions and 24% with transport logistics affect the operation of freight forwarders. However, some of

the respondents at 42% 'strongly agree' that competition from other companies is a major factor.

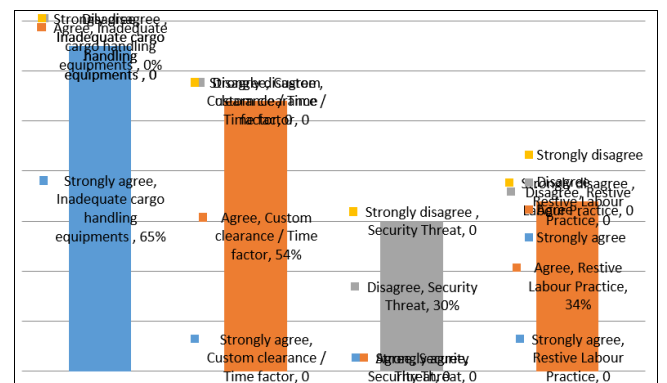


Source: Researcher's Fieldwork, 2018

Fig 10: Factors influencing the Operations of Freight Forwarders

4.2.5 Factors Influencing the Effectiveness of Cargo Handling in Apapa Ports

The factors influencing the effectiveness of cargo handling in apapa ports can be seen in Fig 11 below. Majority of the respondents with 65% 'strongly agree' that inadequate cargo handling equipment is a major factor. Some of the respondents 'agree' at 54% that custom clearance/ time factor and 34% with restive labour practice are major factors. However, some of respondents at 30% 'disagree' that security threat is a major factor.

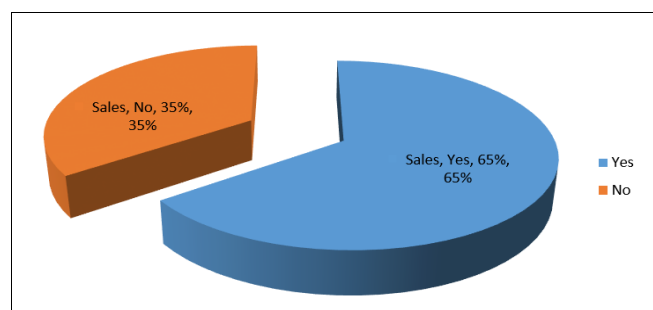


Source: Researcher's Fieldwork, 2018

Fig 11: Factors Influencing the Effectiveness of Cargo Handling in Apapa Ports

4.6 How the Operational Practice of Freight Forwarders on Cargo Handling Operations affect the Level of Port Efficiency

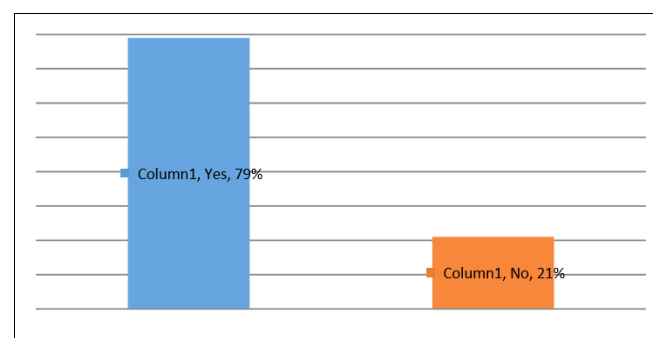
As shown in Fig 12 below, the operational practice of freight forwarders on cargo handling operations and its effect on the level of port efficiency can be seen. Majority of the respondents at 65% agreed that the freight forwarders affect the level of port efficiency while 35% believes it does not have any effect.



Source: Researcher's Fieldwork, 2018

Fig 12: Factors Influencing the Effectiveness of Cargo Handling in Apapa Ports

4.2.7 Effect of freight forwarding practices on bottleneck or delays in the port

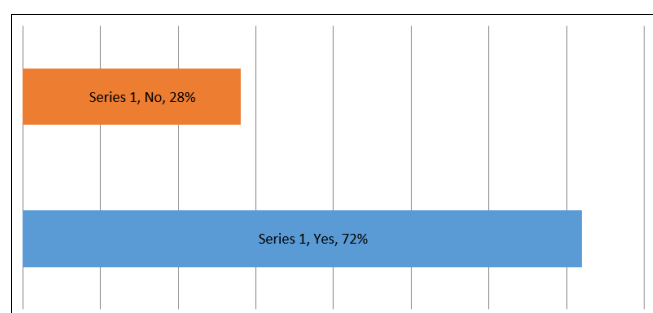


Source: Researcher's Fieldwork, 2018

Fig 13: Effect of freight forwarding practices on bottleneck or delays in the port

As shown in Fig 13 above, majority of the respondents at 79% agreed that freight forwarding practices has effect on the bottleneck or delays in port while 21% believes it does not have any direct effect.

4.2.8 Effect of Cargo Handlers on Bottleneck and Delays in the Port



Source: Researcher's Fieldwork, 2018

Fig 14: Effect of Cargo Handlers on Bottleneck and Delays in the Port

This research shows that cargo handlers affect the bottleneck and causes delays in ports. Majority of the respondent at 72% agrees that cargo handlers has an impact on the delays in ports, however 28% of the respondents disagree with this as shown in Fig 14.

5. Summary of Findings, Conclusion and Recommendations

5.1 Introduction to Chapter Five

This chapter gives an accurate analysis of the results of data collected from respondents with reference to the objectives stated to achieve the desired purpose of the study. This chapter forms the concluding part of the study and comprises three sections which are: the summary of findings, conclusion and recommendations.

5.2 Summary of Findings

The research findings on the analysis of the effect of freight forwarding practices on the efficiency of cargo handling operations were analyzed based on the data from the socio-economic background of the company staffs and the effects of freight forwarding practices on the efficiency of cargo handling operations in apapa port was also studied. The data were analyzed using descriptive statistics.

The results of the findings revealed the predominant male population over the female population in the company. The overall data collected on the age range of the respondents revealed that the company had more professionals with between 36-45 years. The respondents were majorly university degree holders. Majority of the respondents were freight forwarders. The overall data collected on the years of service of the respondents revealed that majority of the company staffs have been working there for 6-10 years. Furthermore, the respondent 'strongly agree' that freight forwarding practice has influence on the efficiency of the cargo handling operations and rated the service efficiency of the freight forwarders as good. However, the data revealed that majority of the respondent rate their level of satisfaction as 'generally good'. The respondents also 'agree' that technology strategy is a factor influencing the operations of freight forwarders and also 'strongly agree' that inadequate cargo handling equipment is a major factor. Majority of the respondents agreed that the freight forwarders affect the level of port efficiency, freight forwarding practices has effect on the bottleneck or delays in port and also that cargo handlers has an impact on the delays in ports.

5.3 Conclusion

This study has been able to analysis the effect of freight forwarding practices on the efficiency of cargo handling operations. In achieving this, the study examined the socioeconomic background of the respondents and the effects of freight forwarding practices on the efficiency of cargo handling operations in Apapa port. Based on these findings, it has been shown that freight forwarding practices has significant effects on the efficiency of cargo handling equipment. The factors influencing the effectiveness of cargo handling in Apapa port include inadequate cargo handling equipments and infrastructures, custom clearance / time factor, security threat and restive labour practice. The factors influencing the operation of freight forwarders in Apapa port are increase in fuel cost, delay in transit, competition from other companies, adverse weather conditions, transport logistics and technology strategy.

5.4 Recommendation

As shown by the established findings from this study, it is important to apply strategies that could be applied to address the problems identified on freight forwarding practices and the efficiency of cargo handling operations. Based on this, the following recommendations are made to enhance cargo handling operations.

- Adequate cargo handling equipments and infrastructures should be provided at ports to increase the effectiveness of cargo handling operations.
- Alternative means should be provided to reduce the time spent on custom clearance.
- There should be an improvement on the technology strategies implemented at the port for more efficient operations.

5.5 Contributions to Knowledge

This research work has been able to prove without any doubt that freight forwarding practices has effect on the efficiency of cargo handling operations.

5.6 Planning Implications

Transportation has been a major point of concern in developing countries including Nigeria. This study reveals that the operations of freight forwarding practices has significant effect on the efficiency of cargo handling operations and as a result more attention should be given to ports to limit transportation problems.

5.7 Areas for Further Study

Various efficient studies should be carried out on freight forwarding and cargo handling operations in ports so as to solve various transportation problems.

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