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Efficient Port Operations and the Benefits of Actors
-A case study of Tin Can Island Port, Nigeria

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Preface

Transport cost is said to contribute to 30 to 40 percent of the landed cost of goods. In most developing countries, importers as well as other port users are faced with varied problem. Excessive dues at entry points at sea ports, low service level, Constant delays, uncertainty and strong bureaucracy are the norms. All these issues can adversely affect products' channel and trade facilitation.

Developing countries stand to loose out in the rapid globalization and harmonization of trading policies due to import practices that are unattractive to global producers. Other areas where these countries can be affected are in low private sector investment. Manufacturers and investors alike are not willing to produce where gains in labour and raw material resources will be overshadowed or offset by excessive transport and logistics cost. Sea ports are major points where a significant level of this cost can be seen. Being the case, better port practices and efficiency in port operations can have a significant if not a huge positive effect on stakeholders of sea ports.

Abstract

The role and importance of a sea port can not be over-emphasized in view of the amount of cargo that is transported through seaports worldwide. Shippers and other port users are at the mercy of ports and port operators as they conduct their business.

The Tin Can Island (TCI) Port, Nigeria is the subject of this study. The port's current processes, role of statutory agencies, based on the researcher's personal observation and field data have been X-rayed. A significant delay in cargo clearance and waiting time by port users is very evident in the port. The level of service at the port leaves much to be desired as issues of speed, reliability and cost are of increasing concern.

A comparative analysis based on benchmark practices in some ports in Europe was used to identify some areas of lapses using selected port performance indicators with the aim of making recommendations to increase efficiency at the TCI Port. Inland transport infrastructure, ports equipment, technology and effective management processes and tools are some of the ways to facilitate ports operations at the TCI Port. There is a huge potential for the TCI Port if the port is better positioned as a customer oriented organization, and include market in the landlocked countries of Niger, Chad and Mali.

Keywords: Cargo handling, Port performance, Trade facilitation

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Finally, Emil Jornevald who has been very supportive during the period of this thesis and indeed during the period of my stay in Sweden is acknowledged and my gratitude is expressed. The support of my brother; Anthony Aigbe, during my study in Sweden is also acknowledged, and to many others, names too numerous to mention who I had to lean on at one time or the other during the program for which this thesis is a requirement, both in Nigeria and in Sweden; I want to express my profound gratitude.

Paul O. Aigbe

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Chapter One

Introduction

1.1 Background

The most common mode of transport in international trade is sea transport, this in view of the large amount of cargo that is transported on sea. There are more than 2000 sea ports around the world, from the ones with a single berth location handling a few hundreds tons of cargo annually to huge facilities handling about 300 million tons of cargo a year. More than 80 percent of trade with origins or destinations in tonnage is water-borne [1]

Ports are emerging more and more into service providers in the execution of trade and the movement of cargoes. This is aimed at enhancing the trade environment and making optimum use of port's facility. Smooth flow of maritime cargo not only contributes to greater development of world trade but also seeks to raise the standard of living of the people in whose domains these ports are located. Maritime freight cost has been observed to be decreasing in recent years; however, the bulk of maritime freight cost still remains relatively high in developing countries[2].

In most developing countries such as Nigeria, Transport cost consists about 35 percent of the landed cost of products[3] Apart from these costs, port service such as speed, reliability, frequencies, safety and security are of increasing concern. The above is as a result of inefficient maritime and port operations and other issues such as management, logistics and low technological inputs in these ports, giving rise to high over-head cost and low productivity level. According to the United Nation Committee on Trade and Development (UNCTAD), this inefficiency can be seen in the area of long waiting time at border crossings including ports, inappropriate fees and formalities, and unclear trade and transport rules and regulations can all become serious obstacle to trade and thereby adversely affect investment and job

[1] World bank: Trade and logistics overview
[2] See above source

[3] Ajore, E.K, Intermodality. Federal urban mass transit agency of Nigeria

creation. Developing countries depend on effective trade facilitation for their development process, they will benefit from "the new geography of trade"….If only their imports and export are not confronted with excessive transaction costs, uncertainty and delays[4]. In the country (Nigeria), where the study of the thesis has taken into account, the importance of sea-borne transport and trade cannot be over-emphasized. The country owes most of its trade to the maritime mode. In a twist, the maritime sector of the country as well as the nation's ports have suffered a long period of neglect as a consequence of the years of political instability, inadequate infrastructure, and poor management.

The ports as gateways to the nation in the transaction of trade with the outside world has been until recently not given a real attention with a view to improving the state of affairs at the ports and make them more business and customers oriented. The inefficiencies in the Nigerian sea ports culminating to other problem such congestion, excessive high cost payable by shippers and shipping companies have caused many cargoes to be diverted to neighbouring countries' port, causing the nation to loose huge revenue. In spite of the crucial role the maritime sector plays in the country's economy which handles about 80% of the country's inward and outward cargo, the Nigerian ports are rated among the least efficient in the West African region[5]

This study seeks to show the ports system, its economic significance and its role in facilitating trade. It is the aim of the researcher to evaluate current methods of operations in Tin Can Island (TCI) port with a view to identifying flaws, and then through an extensive review of literatures give insights into ways of solving the problems and later show the benefits that are accruable to the port and other actors. The study touches on areas of operations (operation for the benefit of this research include cargo handling and management activities), performance, service, and management. Other related issues has also been visited such as the ports ownership structure, the activities and perceived benefits of port's stake holders.

Stakeholders are of three categories; those recognized statutorily, such as customs and Ports Authority; those recognized as agencies whose activities are empowered by law and functions include security, safety and health such as National agency for Food and Drug

[4] UN Review On Maritime Transport

[5] OECD, Country Data- Nigeria

Administration and Control (NAFDAC), State Security Service (SSS). The third category of stakeholders are port users engaging in business and paying for port services or operating in the ports for gains e.g., freight forwarders, shippers, vessel owners etc.

1.2 Port's background

1.2.1 Nigeria Ports Authority (NPA)

The NPA is the government owned parastatal charged with the responsibility of overseeing the operations of all the nation's ports. It was established in 1954 under the port act of that year. The main functions of the NPA are:
Provide and operate cargo-handling and quay facilities,
Pilotage and stowage,
Dredging of the channel and water ways,
Provide for safe navigation into and out of the ports,
Repairs and maintenance of vessels,
Supply of water, and
Other ancillary service.

The NPA is the chief custodian of the ports in the country (Nigeria) Providing man-power, facilities and equipments to carry out the day to day legislative and operational duties. The parastatal manages thirteen ports in the entire country. The present shape of the NPA as seen today culminated from the work of a Portuguese adventurer- John'Aveiro who opened the Bight of Benin in 1485; sixty eight years later, a Briton- Captain Wydham founded it[6] This paved the way for Nigerian own maritime service which developed into the NPA inevitably creating its public service port structure model. In 1988, a degree (degree number 25) was promulgated empowering the NPA to be fully commercialized without any assistance from the government of the country. Under this development, the Nigeria Port Authority (NPA) was faced with new challenges to properly and efficiently run the operations and administration of the ports without any governmental assistance or interference and make profit as a commercial outfit remaining competitive in the West African sub region.

[6] TCI Port hand book, 2005.

The port is still inundated with the problem of long waiting time and tedious documentation process in spite of effort carried out by the authority to remedy the situation. Freight charges rank among the world's highest, a situation threatening to take huge cargo shares away from the nation's port.

1.2.2 Tin Can Island (TCI) Port.

The Tin Can Island port was built in 1977 to ease its neighbouring port – Apapa port – which was experiencing congestion at the time when the country was experiencing boom in imports and in the economy. The port comprises of two lighter terminals, associated jetties and commutates with another port, RoRo port. The installed capacity of the port is adequate with an area of 73 hectares; it also has within its scope the Ikorodu lighter terminal and associated jetties.[7] The main facilities in the port are; 11 berths of which seven of them are for dry bulk cargo. Quay length of the berth ranges from 180 to 200 meters, and the combined maximum draught of the port is put at 10.5 meters. The facilities can adequately accommodate thirteen ships at a time. The berthing facility comprises of a specialised berth for dry bulk and wheat handling and the remainder are suitable for break-bulk and general cargo with an adaptation for container operations. Liquid bulk and petroleum products are also handled at the port.

The port may not have any obvious form of competition with the other ports in the country since a central port authority is responsible for all the nation's port, however, some form of competition exists with ports of neighbouring countries like the Ivorian and Togolese ports which act as hub for cargoes destined for landlocked countries like Niger and Mali. Like many areas of the country, the maritime sector has its own share of neglect and decay. This is shown in the not so impressive delay in cargo clearance time, and the port efficiency level is still low compared to the ports in the West African sub region. This leaves many port users dissatisfied, and sometimes, needed revenues are lost as a result of cargo diversion to other more efficient ports.[8]

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[7] TCI Port Hand book, 2005

[8] Broad Street journal. See reference page.

In 2004, the number of vessels that called at the port was 504 with a gross registered tonnage of 5,410086. The TCI port has its mission as "to ensure the efficient management of port operations, optimal allocation and use of resources, diversification of sources of revenue and guaranteeing adequate returns on its investment …" [9] Whether the above mission is currently in line with the present state of affairs remains to be seen.

1.3 Problem Statement

The situation at the TCI Port has left many port users dissatisfied and the service level leaves much to be desired. Most public enterprises in the country are marred by inefficiency, low productivity and low customer service level. The TCI Port is a public service port whose management takes orders from the ministry of transport. It has a complex institutional management structure with a stiff bureaucratic bottleneck. In a bid to address some of the clear and immediate problem such as congestion, the NPA has introduced port concession to some of the ports in the country to bring in needed expertise in the area of operations. How can this impact on such issues as ports productivity, service performance and documentation? The mission of the port authority is to make the nations' port the preferred for shippers in the West African sub region.

1.4 The Study Objective

The objective of the study is to find ways or methods at enhancing ports service, productivity and performance. The study seeks to evaluate the operations at the TCI Port with the aim of recommending ways and methods in line with best practices in the port and maritime industry. The activities of some stake holders or actors will be evaluated with a view to ascertaining their roles towards an enhanced port operation. Current policies and practices at the port will be looked at to expose area of defects to legitimate trade. The researchers also intends to make recommendation based on the outcomes on the problem analyses and later show benefits that stakeholders are accruable in a more efficient port scenario.

[9] TCI Port Hand book, 2005

1.5 Research Statement

Considering the different aspects of activities that make up port operation at the port, it is important to have a clear picture of the parts of ports operation that have the most impact on trade, port service and efficiency. To do this, it is necessary to touch on the different operational issues that include; terminal operation, port infrastructure, cargo handling and the roles of some actors. To be able to get to the bottom of this, the present method of cargo handling, documentation process from custom points to cargo ownership by customer has been examined.

1.6 Scope of Research and Limitation

A study of this calibre poses a huge challenge and enormous task to carry out considering a variety of factors that can be considered on the issues of port's efficiency. To ensure that the scope of the thesis is abided by in the course of the work, some boundaries have been set. This was aimed at eliminating incoherence and possibility of drifting from the subject matter. The different issues connected to the theme of the study can each constitute own study, therefore, in order to maximize time and resources, the research perspective focused on the inward bound cargo or import. Therefore, the different issues surrounding the study have also focused on the same angle. There were consideration for only those categories of general, dry bulk and container cargoes at the TCI port, therefore the research may not consider liquid bulk and petroleum products.

Where ever possible, the researcher took into cognizance the activities at the port area alone and de-emphasized the activities outside the port parameter even though they may have impact on the area considered because doing so may make the researcher take on a daunting task for which the resources nor the time is available. Port operations which directly impact on productivity and efficient border crossing have been looked at. Issues such as environmental management has not been considered. It is worthy of note that other external bodies or factors other than those that exist within the port parameter can influence the overall process and ultimately the port's performance, however their roles will not be seriously taken into account. Basically, the scope of the Research work focused on those issues already highlighted in 1.1 of this chapter.

The data largely used in the thesis involves period from the year 2000 to the second quarter of 2005. The researcher was only able to lay hands on data which refers to this period as it concerns the case port (TCI). The choice of selected indicators also selected in the comparative analyses chapter of the report was also constrained by limitation of data, as performance measurement tools that are uniform to the ports considered could not be acquired. For instance while the TCI Port measures performance in Ship turn around time in days; the other ports selected have a more precise measurement of moves per hour or tonnes per hour. Some of the data are more used for internal process monitoring and the researcher could not get access to such information.

1.7 Structure/ outline

The work has been basically structured into four parts; the first part (chapter 1) deals with the introductory background. This contains a discussion of the role of ports in today's global trade environment and issues relating to trade and cost as influenced by the activities of ports. This part also introduced the Tin Can Island port and the authority which acts as its steward and responsible for most of the activities at the port.

Part two contains chapter 2 and chapter 3 and it comprises a review of framework theories in maritime, trade issues, and port operations and management. A brief discussion of the framework for the researcher's argument -theoretical framework of the study's subject matter - is also included in this part. Chapter 3 contains the research method and the choice of research design. It evaluates the quality of the research, the data collection techniques and a discussion of some of the problems encountered and the steps taken to counter these problems as they arose.

Part three which contains chapter 4 and 5 deals with analysis of the problem and also presents empirical data concerning the thesis and some selected ports perceived to be benchmark in port operations. Here also, a benchmark for port operations best practices was set and the focus port was evaluated based upon some performance indices. A comparative analysis of the case study port with ports of Stockholm, Gothenburg and Immingham based on the selected indicators was made.

Finally, part four which contains chapter 6 comprises of the recommendations and conclusion. A SWOT - strength, weaknesses, opportunities and threats- analysis of the case

study was performed as a prelude to the researcher's recommendation. Here, some suggestions for improvement of the port were made; this was followed by some benefits that can be obtained by the stakeholders. The method employed is descriptive data analysis; this is showing things as they are,[10] although, the work is also an initial exploratory analysis into some of the issues treated.

[10] Trochim, W.M. Research Methods knowledge Base. Cornell University

Chapter Two

Theoretical Framework

In this chapter, a theoretical background of the report has been done. This includes relevant concepts and a review of some works in the field of ports and maritime industry. It also focuses mainly on ports models and strategies, the role of ports in trade, ports functions and performance evaluation. The framework for the study involves the port's operating model, operations and the interaction of different port actors. Therefore, issues concerned will be of this structure.

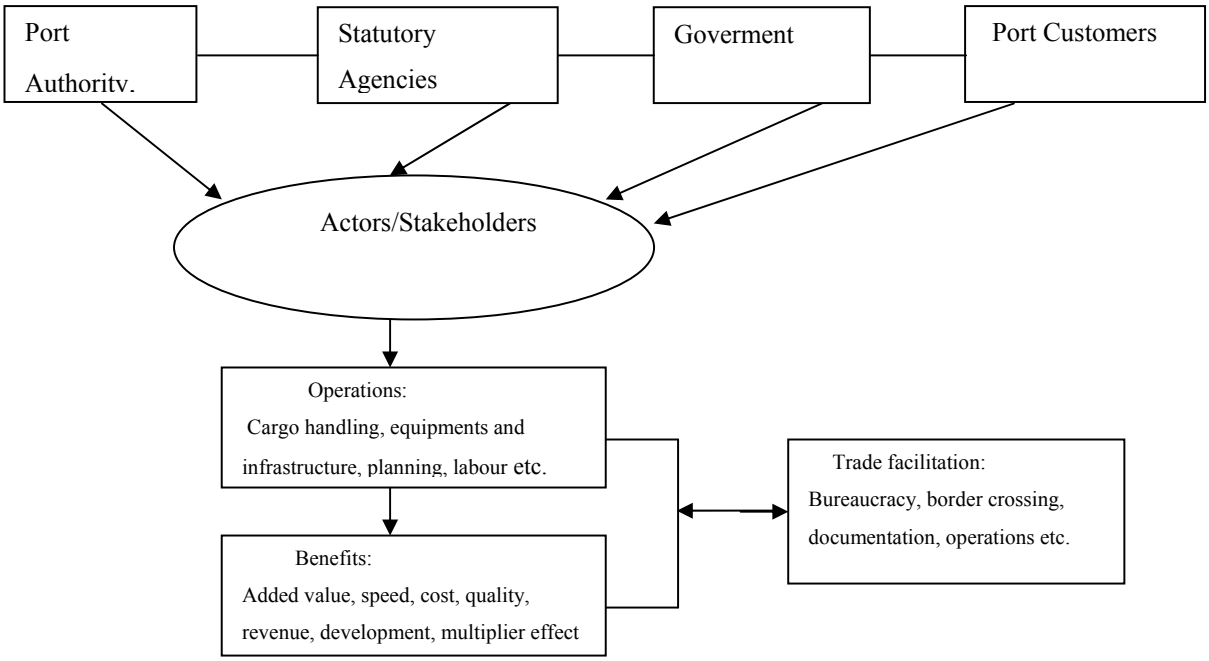

Fig 2.1 Framework Model

The different subjects (port authority, statutory agencies, and Government and port customers) form the stakeholders or actors of the port. Stakeholders are those who influence or are influenced by the ports operations and existence. The basis for actors' co-existence is the presence of the port facility. Actors perform various regulation, management, control importation, facilitation activities in the port. Operations, which involve port issues such infrastructure and management, is the used to produce services for port customers and every

actor has a role to play and a benefit to enjoy. The stakeholders or actors as will be often used interchangeably in this work include the Port authority which acts as the port operator and tasked with responsibilities that include stevedoring, dredging, safety, and pilotage service and revenue generation to the owners in this case the government of Nigeria (GON).

The statutory agencies are agencies that are established by the GON by enabling laws and include the Nigeria Custom Service (NCS). Their functions include alien control, and revenue generation for the GON in the form of tariffs and duties paid on imports and export cargoes. The Government is another actor in the community of port; they set the policies, funds the ports capital intensive projects, and earn revenues in return. The port users or customers are the most important actor in the community, as they stimulate trade, which in turn stimulates port-use as a derived demand of trade and transportation needs of the customers. Port customers include shippers, ship owners, agents, Non Vessel Operating Common Carriers (NVOCC) etc. The reason for the actors' interaction is the port, and stems from the need to create service and make profit by each of the actor or carry out statutory obligation.

Fig 2.2 shows an operational definition of actors involved in the framework.

Port Authority	This is the central organ responsible for running the port on the behalf of the country. It is established by laws and the activities and its directives comes from the ministry of transport
Statutory Agencies	These are agencies in the maritime sector that are established by enabling laws and their functions include inspection, certification, security, revenues collection or just bureaucratic functions etc. e.g. the Nigerian custom Service (NCS)
Customers	These include the different port users. E.g. shippers, freight forwarders, agents, individuals.
Government	The Government of Nigeria. Roles include provision of funds etc.

Fig. 2.2 Operational definitions of terms

The figures above (2.1 and 2.2) set the framework model in the interrelationship and connectivity of the actors in the port sector. Determining what is port efficiency, poses a number of difficulties due to a non universal definition of what indicates an efficient port or what port efficiency entails. Efficiency is the state or quality of being efficient or being

competent in performance.[11] So an efficient port would be one that is competent in operations. This definition creates another problem because performance can not be judged by a single parameter or measuring tool. De Monie identified three sets of measurements to weigh port performance on:

a. The duration of ship's stay in port;
b. The quality of cargo-handling;
c. The quality of service to inland transport vehicle during their passage through port[12].

The duration of ship's stay in port is looked at as the ship turn around time in days while output and productivity indicators are generally considered when looking at the quality of cargo handling. This is in the form of berth throughput which is the amount of cargo in tonnes handled per berth per given period of time; the ship's output measures the amount of cargo handle per ship per berth or per stated period of time.

The quality of service to inland transport vehicles in a way depends on port's infrastructure. However, since ports are only distribution centres, efficiency in ports will diminish as a result of poor country's infrastructure or the activities of statutory agencies like the customs that may be inimical to port's overall productivity. e.g., a strict and inefficient customs processes can increase the time consignees can take possession of their cargo from the time ships are berthed at the port, hence a low level of service when we view service as the time it takes for consignees to take ownership of their cargoes.

When looking at efficiency in ports, a macro perspective should be taken as that can only take all factors into cognizance. In a bid to take an all encompassing area of the port structure, relevant actors should be considered. An efficient port operation will facilitate trade, trade facilitation in a way is customer service and service can yield trade facilitation, this is the reason for the whole union and each of the actors has a benefit if the system works, the amount of benefit depends on how efficiently the system works. The reverse will yield the opposite outcome for all actors concerned.

Any of these definitions could fit the concept of a sea port; an area where there are facilities for berthing or anchoring of ships and equipments for loading and unloading of cargo from

[11] http://dictionary.reference.com/browse/efficiency
[12] De Monie. G.(1987) Measuring and Evaluating port performance and productivity

or to ships; a maritime inter modal interface or a sea land interface[13]. A port is a strategic enterprise in any region in where it is situated serving both the country and the people in the area of job creation, economic and infrastructural development and tourism. It is a community of industrial enterprises and a beehive of activities that require the presence of a port authority, customs, and other governmental agencies which perform various functions ranging from screening of cargoes to provision security. One of the functions of a port is it acts as an interface of sea inland transport providing services such as loading and dispatch operations which include storage, processing and distribution.[14]

Due to rapid globalization and the development of logistics in the business world giving rise to the concept of 'Just in Time', (JIT) the role of the sea port has increasingly become more complex. A greater dependence on the sea mode in international trade has become more imperative than it were centuries ago in view of the pulling down of trade barriers among nations, and harmonization of trade laws under the umbrella body of the World Trade Organisation. The ports are increasingly becoming logistics centres, if not a fully commercialised business venture with a significant presence of competition. Port authority and governments are forced to look beyond the traditional roles played by ports in order to march the growing trend. The model and structure of ports play some significant role in this regard.

2.1 Port Ownership structure and Management models

Ports can be classified into two perspectives of ownership structure; those whose organisations lie in the hands of a central body or port authority tasked with the responsibility of regulating investment and pricing in individual ports and the forms which are owned by local authorities or municipalities. In this form of ownership, the different ports compete against one another. There are also cases of privately owned ports.[15] In most instances, port authority is suitable in view of the roles of comprehensive planning, provision of large physical investment base, and the provision of certain political needs in the sector.[16]

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[13] Maduka, J.O, (2004). Port, safety and environmental management Concept publishers, Lagos.
[14] United Nations/ECLAC, (1999) Port Modernization: a Pyramid of Interrelated Challenges
[15] Jansson and Shneersson, (1982) Port Economic. see reference page
[16] Bardi, E.J, et al (2006) Management of Transportation, South western, USA.

Apart from these two broad classifications of ports, other forms of nomenclature exist. There are the public service port, tool port, landlord port and private service port models. This form of classification is based on the management model that is operated in the port. The World Bank recognizes four factors as dictating the choice of management model to be adopted, these are:

- The socio-economic structure of the country (e.g., market economy, open borders);
- Historical development (E.g. formal colonial structure);
- Location of port (within urban area or in isolated region); and
- Type of cargo handled.[17]

Public service ports have public traits. This is characterized by the port authority owning, operating and maintaining all port's assets. Under this arrangement, port's tasks such as cargo handling are performed by the port's own labour force or by a public company assigned by the port authority to perform the task. In the service port, authority streams downward from the state ministry of transport. This form of management model is characteristic of developing countries.

In the tool port model; ownership, operation and development of port's infrastructure including equipments for cargo handling are performed by the port authority. Under this arrangement, the staffs of the port operate all port's facilities. Onboard vessel cargo handling equipments on apron as well as on quays are carried out by private companies contracted by persons licensed by the port. In the tool ports model land and superstructures for cargo handling are made available for private companies.

A third model in port ownership is the landlord port model, here, the port authority acts as a regulatory body. It is of the nature of both private and public port orientation. Here, port operations are left to private company. Infrastructure is leased to private operating companies or to industries (e.g. terminals, cargo handling equipments) port dock labour is hired by the private company and they build maintain and operate their own superstructures at the port.

The fourth model in port management is the private service port. Under this arrangement, port land as well as regulatory functions are transferred to private bodies and in some cases

[17] World Bank Port Reform Tool Kit. Frame Work for Port Reform.

such regulators may not exist, which means the sector becomes self regulatory. Each of the four models have varying degree of merits and demerits and other factors such as social and pride may come to play in the decision of which model to adopt. However, majority of ports (medium and large size) are adopting the landlord port model. A state may be unwillingly to completely concede control of the port to private bodies in view of the strategic functions of ports.

2.2 Port Management.

A web definition of management states it is the effective utilization and coordination of resources such as capital, plant, materials, and labour to achieve defined objectives with maximum efficiency.[18] Like every facet of business enterprises, the port is not left behind in finding out the most efficient way to carry out its task through the use and coordination of resources. Maduka defined port management as a process in which all port resources-superstructure and infrastructure are well managed in order to arrive at set objective. He also adds that it is aimed at improving quality of services lowering costs and eliminating waste.[19] Whether or not the model operated in any port is tool port or landlord port, the overall objective of any port is to be efficient and to render quality service to port users.

Large ports need to deal with a number of diverse activities: the movement of ships, containers and other cargo, the loading and unloading of ships and containers, customs activities. Human resources, anchorages, channels, lighters, tugs, berths, warehouse and other storage spaces have to be allocated and released. The efficient management of a port involves managing these activities and resources, managing the flows of money involved between the agents, providing and using these resources, and providing management information.[20]

Poor structure in organization, lack or inadequate laws and regulations, or error in the information systems and data, omission in planning, absence of cost control, poor service objectives and poor maintenance of equipment are some of the deficiencies that have been

[18] http://www.google.se/search?hl=en&lr=&defl=en&q=define:management&sa=X&oi=glossary_definition&ct=title

[19] Maduka, J.O, (2004). Port, safety and environmental management Concept publishers, Lagos

[20] http://www.iist.unu.edu/newrh/II/1/2/8/page.html

identified in ports in developing countries.[21] Port managers like in any other organizations are tasked with the functions of planning, forecasting, organizing, controlling, coordinating, staffing, communicating, and motivating. Unlike some other organizational units, factors external to the ports, like national policy, government interference, corruption, technology and traffic flow play a major role in port existence. Management have to find a way to create a balance.

Management should be able to have a clear understanding of the environment in which the port does its business. A basic management tool that can be very useful in this regard is strategic management tool. This tool helps management to make rational decisions that come with the exigencies or uncertainty of the normal planning cycle inadequacies in today's business environment[22]. It involves creation, or retention, of a strategy involving the internal and external analysis by the organization

Planning in sea ports are of varied time frame. A large part of the planning schedule is of long term nature. Part of such plans include investments facilities and manpower requirement, this could cover five to ten years schedule, devising policies, and decisions on purchase of equipments or facility improvement are of medium term nature and covers about five years schedule. Planning involving port performance, operations etc could be of more short term involving from a year to a few days.[23]

2.3 Port Strategy

As a result of the spontaneous changes in the maritime sector / industry, giving rise to the emergence of new types of ships, development of freight carriers, handling technology and new cargo types tended to have stimulated improvement in the cargo handling and production systems in ports.[24] This development has resulted in specialized functions in the

[21] Maduka, J.O, (2004). Port, safety and environmental management Concept publishers, Lagos
[22] Acker, D.,(1992) Strategic Market Management. John Wiley Sons Inc. New York. USA.
[23] Thomas B.J, (1985) Operations Planning in Ports – UNCTAD Monologue on Ports Management
[24] Swedish maritime Administration 1999; cited in kristenson and Erlandsson, (2001) Can Port of Goteborg be a Transhipment Hub for the Baltic States and Russia? A comparative cost/ service analysis. Master Thesis. School of Economic and commercial Law. Goteborg University.

ports where in some cases terminals are located out of the port area so as to achieve homogeneity and specialization in operations.

Strategy is the way a port matches its capability with the opportunities in the market place to achieve set objectives. Port strategy involves the optimum utilization of port resources to achieve set objectives. Part of an organization's strategy is operation and is imbedded in operations management. Slack et al defines operation management as the way an organization produces goods and service. The essence of strategic planning is to determine how to design and implement ports strategies which could be formal management planning (or informal, in which case the environment is too turbulent for any long term planning or when the port lacks the authority to conduct planning). This is done against the backdrop of the ports Strengths, weakness, opportunity and threat (SWOT) analysis and involves how a firm uses it strength to utilize it opportunity and address its weakness to defend rising threats.[25] The steps below have been identified when undertaking a formal strategic planning;

- Define, the mission, vision, stakeholders, customers, goals and objectives, shared value
- Analyze the SWOT of the organization
- Identify the current strategies
- Evaluate the current strategy with respect to the SWOT, analysis identifying critical issues
- Select the best strategy alternatives
- Implement the strategy and monitor performance.[26]

2.3.1 The port strategy and the Balance Score Card (BSC) model[27]

The balanced scorecard is a conceptual framework that enables organizations to clarify their vision and strategy and translate them into action. It provides feedback around both the internal business processes and external outcomes in order to continuously improve

[25] Porter, M (1985) Competitive Advantage, Free press, New York
[26] SchwarzBach, H. Strategic Planning and the Balance Score Card for Effective Sea Port Management. University of Rhode Island.
[27] Arvidson, p., (1998) Balance Score Card Institute; http://www.balancedscorecard.org/basics/bsc1.html

performance and results. When carried out effectively, it can become the engine of an organization for objective actualization. Implementing a balanced scorecard methodology gives an organization a quick access to important business strategy metrics such as quality, customer satisfaction, innovation, and market share. The balanced score card views the organization from four perspectives:

The Learning and Growth Perspective

This views employee training and corporate cultural attitudes related to both individual and corporate self-improvement. It seeks to stimulate the importance of a knowledgeable people based organization which is "the only repository of knowledge". In this era of rapid technological changes and advancement, it is important for a continuous learning philosophy to be adopted in an organization. Processes will only succeed if adequately skilled and motivated employees, supplied with accurate and timely information, are driving them[28]. The frameworks suggests that employee take on new roles, skills, technology, capabilities in order to match the radical changes in both business and customers expectations

The Business Process Perspective

This perspective refers to internal business processes. Data based on this perspective allows the managers to know how business performance is running, and whether its products and services conform to customer requirements. To meet the organizational objectives and customers expectations, organizations must identify the key business processes at which they want to excel. Two types of business processes may be identified: a mission-oriented processes and support processes. Mission-oriented processes are the special functions in the enterprise, and many unique problems are encountered in these processes. The support processes are more repetitive in nature and easier to measure.

The Customer Perspective

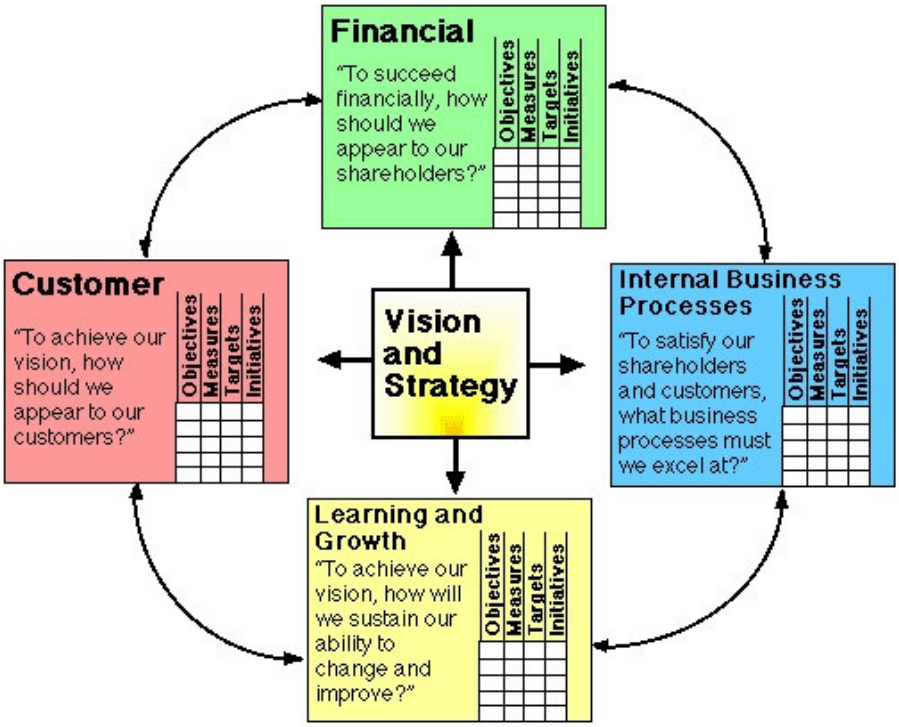
This perspective captures the ability of the organization to provide quality goods and services, effective delivery and overall customer satisfaction. Management is more and more aware of the need to have customer focus business attitude and principles. These are leading indicators: if customers are not satisfied, they will eventually find other suppliers that will

[28] http://professionals.pr.doe.gov/ma5/MA-5Web.nsf/Business/Balanced+Scorecard?OpenDocument

meet their needs. The perspective recognizes Poor performance as a leading indicator of future decline, even though the current financial picture may be satisfactory. In developing metrics for satisfaction, customers should be analyzed in terms of kinds of customers and the kinds of processes for which we are providing a product or service to those customer groups.

The Financial Perspective

This perspective captures cost efficiency, delivering maximum value to the customer. It suggests timely and accurate funding data as a priority, and managers should do whatever necessary. The notion of finance in private enterprises that are driven by commercial success differs from that of a public enterprise which takes into account how effectively and efficiently the needs of their constituencies are met.[29]



The Balance Score Card for a public organization framework

Fig. 2.3 Source: ©Paul Arveson, (1998)

Fig 22 shows the different questions posed by the each perspective in relation to the organization vision and strategy. The financial perspective questions shows that financial success comes with a customer oriented strategies and a strong will to change and improve

[29] Mattson, S. (2000) Embracing Change; Management Strategy in the E-economy Era. Intentia International, Vastra Aros. Sweden.

employees' perspective to sustain and achieve the enterprise vision. The internal business processes shows how high the level of competency to be maintained.

2.4 Operation Planning

Thomas B.J has an extensive literature on issues of Port Operations planning even though it is been around now for a while, the richness of its detail is still useful in this area. Managing the different aspects of operation at the port involves complex and varied activities that are continually changing, hence the need for a detailed plan to ensure that proper allocation of resources and effective coordination of activities are achieved. Constant changes and volatility in the market place make it more difficult to predict the future; this difficulty also affects planning and operation method in the organization.[30]

Planning ensures a smooth, balanced and cost effective flow of cargo through the berth. Organizing Operations planning varies from port to port. A central organ could be responsible for detailing the information requirements and major activities at all the berths in the port or done at the berth level. In the first case, a close cooperation between the department responsible for this task and operations department directly involved with cargo handling activities at berth level is of uttermost importance. Berth operations planning can take the forms of pre-arrival and berth allocation activities.[31]

Pre arrival planning is perhaps the most important planning activities in operations. It aims to achieve the highest productivity and efficient allocation of berth resources to reduce delays at the berth and increase ships turn-around time. If done properly, it creates a smooth and efficient cargo handling operations at the port. The decisions that have to been made here are; which berth to be allocated to the vessel for discharging or loading, how to manage men and machines to achieve a fast and cost- effective ship turn around time. All these take place before the arrival of the ship. A forecast is made of the time that it will take to handle the consignments of the vessel thereby having an idea of the time the berth will be vacant for another ship calling at the port.

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[30] Mattson, S. (2000) Embracing Change; Management Strategy in the E-economy Era. Intentia International, Vastra Aros.

[31] Thomas. B.J, (1985) Operations Planning in Ports. UNCTAD Monologue on Ports Management

Berth allocation is done based on the information that has gathered regarding the vessel. The type of cargo, ship's time and other information informs the decision on which berth to allocate to the ship. The most important aspect is to find a vacant berthing space for the ship that best suit the ship, with special handling equipments allocated if necessary so that delays will be minimized.

2.5 Port Operations

There are various steps involved in the whole maritime process aimed at bringing cargo or goods to the end customer. It involves tasks, issue and decision in the port processes, as put by Slack et al, the building blocks of all operation are facilities and Staff. Facilities include the building, equipment, plant and process technology of the operation, while staffs are those who operate, maintain, plan and manage the operation. Operation puts strategy into practice.[32] With increasing sea-born cargo volume in the world, the problem of congestion is one of the many aftermaths already hitting many ports today. Global transportation will continue to grow in importance due to the increase of manufacturing and merchandising, overseas sourcing and marketing.[33]

The duty of a port operator (port authority and terminal operator) include managing the movement of cargo to and from ships and from ships to rail or road on lorries or train, berth allocation, the documentation process that lead to the discharge of cargo and release to consignee, optimizing the flow of goods through custom control to minimize the time spent by ships in ports. These entire activities require the proper and efficient use of port facility, equipment for cargo handling, berth facilities, waterways and roads. It also entails the use of effective communications system, storage facilities, and dockworkers. The whole activities mentioned above form the bulk of port operations. The aspiration of port operator is to get cargo through the gateway of ports as fast as possible on to other modes of transport (rail or road) with a minimal cost to them and to the cargo owners.

Typical port operations from the perspective of imports and export transaction activities take the form of the movement of cargo between ships and the gate of terminal depot or wharf;

[32] Slack. N. et al (2001) Operation Management. Pearson Education LTD. Essex, England. pages, 1-11
[33] Bardi, E.J, et al (2006) Management of Transportation, South western, USA. page 253

the movement of cargo between the customer (consignee/shipper) and the gate of terminal, depot or wharf. The following cycle are observed;
Reporting the ship. (Ship's arrival),
Berthing the ships,
Stevedoring the ship (loading and unloading of cargo),
Clearing the ship (ship's departure),
Clearing the cargo: importers, customs agent,
Clearing the cargo: ships agent, NVOCC (container),
Consigning the cargo, and
Road transport.[34]

These activities require communication between the different actors such as between the ship and pilots, the customs and cargo agent, etc. Some of these activities require high quality of information to function without hitches, hence the importance of information system in the port domain to facilitate the different tasks. Broadly, information system use from the stand point of management may be stratified into Strategic planning, management control and operation control. The management information system (MIS) tools come handy in this respect and functions in this capacity:

1. Enable the business to make the right decision;
2. Improve the effectiveness of processes and their outcomes;
3. Provide timely and focused performance information;
4. Improve the productivity and effectiveness of managers and staffs[35]

Their use in the port includes:
Management of vessel arrival and departure and attendant facility management and include;
-Centralizing the management of cargo information and data
-optimize the flow and control of cargo at the terminal
-produce necessary document
-simplify reporting procedure to various agencies
-calculate changes and issue invoices
-assist in quality control

[34] Kimberley, P., (2000) Towards Port Best Practices. Egyptian Center for Economic Studies.
[35] Ward, J. Peppard, J., (2002) Strategic Planning for Information System. 3rd Edition. John Wileys and son ltd. West Sussex, England

An example of such tools is the Electronic Data Interchange (EDI) and can help port management to transfer structured data between the different port users or stakeholders. It can also facilitate automatic bill payment when financial houses like bank are connected to the system, finally it can help monitor transaction for the purpose of auditing and other.

The internet system is another tool that can help to facilitate port management and formation sharing. Ports and custom homepages can have links to accommodate customers' queries, for example, the Swedish custom (Tullverket) has the virtual system that can answer queries when logged into it.[36]

It is important to note that operations in sea ports will not take on visible successes unless it is an overall trade based. This is obvious in the transhipment and transit functions some ports play in the global trade and business network.[37] While some ports tend to enjoy some natural monopoly or lack of competition, the transhipment function is one area where the stakes of ports competitiveness is high with a big industry surrounding it which includes break bulk, distribution and consolidation, ware housing, packaging, finance, insurance and banking services.[38]

Port operations require several categories of long–lived assets, some of which are inherently more amenable to private investment and user fee recapture than others[39]. The whole community of maritime industries and enterprises will ultimately influence operations in the port. The management (or Port Authority) and dock workers, government policies, customs, port location factors (proximity to water channels, etc.), organisation involved in cargo movement and logistics are all important part of the wheels of the port operation that drive the port's engines. This is more so being that ports do not operate in isolation nor are they single entities. For instance, government attitude towards automation may be poor because the port is seen as a major source of human resource employment which result in some of hidden agenda, or decision to leave things they way they are. Cumbersome documentation

[36] http://www.tullverket.se/NR/rdonlyres/AE68E0A5-D63B-41B7-84BD-36C34A43F45F/0/importing.pdf

[37] transhipment implies that goods are received at ports and then repackaged for more convenient local transport to feeder ports or terminals or to local distribution centres, while transit implies that goods are received at a port and further transported in the same form to other ports or terminals often via road or rail

[38] Kimberley, P., (2000) Towards Port Best Practices. Egyptian Center for Economic Studies.

[39] World Bank Port Reform Tool Kit. Frame Work for Port Reform. page 103

processes can also adversely affect the way operational performance is perceived, and the information technology and use involving system integration like the of EDI (electronic data interchange) or EDIFACT (Electronic Data Interchange for Administration, Commerce, and Transport) are a *sine qua non* for efficient port operations. The above scenario makes it imperative for a macro- based approach to port operation enhancement.

2.6 Port authority and Port competition

Efficient port operation will not be achievable without a healthy competition at the port and a capable authority to handle ports processes. Ports typically provide the dredged channels, swing basins, break water, navigation facility, mooring and berth, cargo handling area and the facilities necessary to bring ships to harbour and move cargo from ships to shore. Some ports also lease lands, terminals and cranes to stevedores and in some cases engage private service providers to carry out service such as, towage, utility and pilotage services for ships. The European Union Commission defines port authority as the "state, municipal, private or public body, which is largely responsible for the task of administration, construction and sometimes the operation of port facility and in some circumstances for safety"[40]

The regulatory frame work of port should promote cost-effective use of infrastructure and machinery, encourage decision-making by staffs in their respective levels, and enable port stake holders to plan future investment.[41] However, many governments are directly or indirectly involved in port development often citing the 'growth pole' a concept related to government investment in port assets have strong direct and indirect multiplier effect in the development of the entire economy and that commitment of public resources will encourage private commercial and industrial interest. Port authorities often focus on finance and operation with the state having micro economic perspective through an effective port policy. Statutory powers of national port authority include;

- Investment: power to approve proposals for port investment in certain figure.
- Financial policy: power to set common financial objective for ports.

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[40] World Bank Port Reform Tool kit, page 98

[41] United Nations/ Economic Commission for Latin America and the Caribbean, Port Modernization: a Pyramid of Interrelated Challenges (1999)

- Tariff policy: power to regulate rates and charges as required protect the public interest.
- Labour policy: power to set standard on labour(recruitment, wage structure and qualification)
- Licensing policy: power to establish principles for license of ports employees, agents etc.
- Information and research: power to collect, collate, analyze and disseminate statistical information and to sponsor port research.
- Legal: power to act as legal adviser to local port authority.[42]

Port authority exercises huge regulatory powers relating to shipping and port operations, Issuance of by laws (rules and regulations) relating to the behaviour of vessels in the port, use of port areas and the exercise of police power are other functions of the port authority. The management structure of ports and the relationship between terminal operators and cargo handling companies with the port authority influences the pattern of port competition within and between ports.

Two main competition patterns abound in ports; intra port and inter port competition. Intra port competition which is competition within a particular port complex is often stimulated in ports by the port authority to reduce the existence of monopolies, hence increase service, however in small ports this may not be possible as only one terminal operator may exist because of the limited traffic in which case, the port authority employs their quasi-governmental powers to regulate ports charges and tariffs. Inter port competition is competition among different ports. Factors that play key roles in this form of competition are;

- Geographical location. Ports possessing this advantage have the following characteristics: proximity to one or more maritime transport route; natural deep waters with protection against waves and current with land side expansion capability; proximity to major production/consumption area; good inter-land connection involving high frequency service of rail, road, pipeline and water way.
- Financial resources: there should be sufficient finance either owned or solicited to develop and improve the port.

[42] World Bank Port Reform Tool Kit. page 99

- Institutional structure and socio economic climate. The management structure should be conducive for private sector participation and a flourished employer-employee relationship should abound.
- Efficiency and price. These factors can inform the choice of port users especially cargo owners.
- Port's image. The port should be able to display the above characteristics to enhance its image.

The port authority through the institution of port sector regulator can prevent anti competitive nature in ports such as the use of dominant position to prevent or lessen competition, threatening fair competition through cross subsidization by monopoly services of contestable services, price fixing among competitors, and other practices intended to prevent or distort competition. When inter-port competition is muted or absent, Port Authorities and/or public or private terminal owners are apt to use their monopoly market positions to raise tariffs which may justify regulation. Another taxonomy in port competition is of the inter modal form where the ports compete against other modes of transport e.g., air, road and rail this is called cross competition and is stimulated indirectly by actors outside the port sector such as inland logistics centre, shipping lines and inter-modal terminals[43].

2.7 The Role of ports in international Trade

The demand for port has been said to be derived demand in that, it is a demand set off by the need to trade. With rapid globalization occasioned by the tearing down of barriers to international trade, comes a greater demand for ports and the need for them to brace up to the occasion and be more relevant and active in the emerging scenario. Barriers to trade constitute significant impediments or difficulty to trade, trade facilitation seeks to eliminate, reduce or harmonize administrative barriers and friction that reduce efficiency and/or effect the initiation and operation of bilateral trade processes between trading partners in different countries.[44] A very large portion of the costs of trade procedures are generated in the actual cross border situation where governmental bodies are the main actor (Customs, health authorities, export license authorities, agriculture departments, Chambers of Commerce,

[43] UNCTAD, 2004. Assessment of a Seaport land Interface: an Analytical Framework. page 26
[44] Jensen Arne. Professor, Logistics and Transport Research Group. Department of Business Administration, Goteborg University

Consulates, Post Shipment Inspection (PSI) Agencies, etc). Thus the need and potential gains from facilitating customs and other administrations are great and are perhaps the most important parts to start with and focus upon, in trade facilitation.

Customs and other authorities are facing the apparently contradictory objectives of enforcing government regulations while at the same time posing the minimum obstacle to legitimate trade. The central body involved is of course the Customs, which makes sure all inward and outward bound cargo complies with existing policy. Port operations are in practice so closely related to Customs controls that procedures theoretically connected to port management (and thus perhaps the transport sector) will be included under the heading of Customs procedures.

2.7.1 Logistics function of ports

Efficiency of logistics operation and in particular of port interface is critical to export development. with the development of disciplines and tools in business to make for a better and less cumbersome means and measures of movements of goods such as supply chain management, there is a keen focus in the arrangement of transport from origin to destination with as few intermediaries and handlings as possible as the goods pass through the different node and links in the transport process or chain to get to the end user or final destination. From this perspective, ships are moving warehouses while ports are logistics and distribution centres[45] Ports perform logistics functions in the following ways as identified by Paixão and Marlow:

- Receive the goods from different modes of transport and in different types (i.e. bulk, unitised, break-bulk, etc.);
- Store the goods temporarily in port prior to, and after a ship's arrival for fulfilling formalities;
- pick up goods parked in yards especially designed for the cargo under consideration to be loaded on the right ship or on the right surface mode; and
- Despatch the goods.[46]

[45] UNCTAD. (2004). Assessment of a Seaport land Interface: an Analytical Framework
[46] Paixao, A.C, Marlow, P.B, Fourth Generation Port- a Question of Agility? International Journal of Distribution and Logistics Management. Volume 33. MCB UP ltd.

Robinson, presented a rather intellectual view about the relationship between ports, its community and trade, when he showed how the satisfaction of demand by supply through the pricing mechanism and the presence of some benefits which include profit and competitive advantage. Without trade demand, the ports and its actors would not exist.[47] Ports are nodes on the logistics chain where channel intermediaries temporarily store their cargo in the form of bulk, break-bulk or unitized loads such as a container.

Actors in the trade process desire safe, reliable and fast movements of cargo, hence the need for ports and its community including customs and regulatory bodies to effect efficiency and transparency in the discharge of their duties. These can be seen in the handling, documentation and regulatory processes at the port, however, a distinction between a logistic centre and ware house and container freight station was made by De Monie, when he portrays the main distinguishing characteristics of logistics centre as more determined by the functional attributes rather than institutional or spatial features[48].

Paixão and Marlow gave some of the drivers for change in today's business and trade environment resulting in the adoption of agile manufacturing and industries' best practices, changes in the degree of uncertainty, increased globalization of the industry, technological change and diffusion of technological knowledge, a need to manage supply chains more efficiently, faster product innovation due to increased speed-to-market demand etc. They opined that ports should become more agile with adaptation to quite response and flexible to change and the need of customers to better compete with one another while at the same time becoming key logistics centres. Ports should acquire the concept of Just in Time (JIT) entwined in the five features of flow, flexibility, short cycle time, short lead time and improved service. These features should be aimed particularly at the operations, quality, and production of the port organization[49]. When ports are so equipped, they can better function as value-added logistics centre with capability for rendering added value as diverse from value adding services of break bulk and consolidation that form the traditional sea-land interface of ports. This is vital for the success and competitiveness of a port. Port customers benefit from this role of ports because they favour combination of logistic central location

[47] Robinson, R. (2002) Ports as elements in Value-Driven Chain System: the New Paradigm. Centre for Packaging, Transportation and Storage. Australia.
[48] De Monie, G. (1987). Measuring and Evaluating port performance and productivity. UNCTAD monograph on port management.
[49] Paixão, A.C, Marlow, P.B, Fourth Generation Port- a Question of Agility? International Journal of Distribution and Logistics Management. Volume 33

where proximity of market and intermodal transport exist, which is a requirement that should be met by sea ports.[50] This can also have positive economic consequences for the hinterland. Some of the functions performed by logistics centre include;

- Storage: this is partly a ware house function of logistics centres; logistics is more concerned with a seamless flow than storage of inventory.
- Material Handling. This is seen as the opposite physical distribution. it seeks to minimize handling and an effective use of space time to enhance logistics flow, reduce cost. Material handling is done by ports equipments and structures.
- Cross docking: this assortment or mix of products in required shipment to customer. Here, the terminal or warehouse plays the role of location transfer and value adding than mere storage.
- Consolidation and break bulk: This is also a value adding service in logistics flow. In consolidation, smaller consignments are consolidated into larger volume or shipment units for onward dispatch while break bulk is the opposite routine where large shipment units are disintegrated into different shipment preference for onward transport.

Apart from offering logistical support to users, ports can also benefit a lot from an efficient and economical system. According to Stock et al, efficient logistics system is an intangible asset on a company's book. They also added that it can give an organization's a competitive edge made realistic through speed and cost reduction that can be enjoyed by a company. Logistic activities can not be easily duplicated by competitors and logistics competency holds the key to the development or maintenance of other components of the organization like logistics reengineering, employees training and empowerment, computerized information system etc.[51]

2.7.2 Ports and trade facilitation

The port plays a crucial role in the development of a country's economy, attracting global investment including strengthening relations with trading partners of other countries. As

[50] Notteboom, T.E., Rodrigue, (2005) Towards a New Phase in Port Development. Transport and Maritime Management,
[51] Stock J.R., Lambert D.M (2001) Strategic Logistics Management. 4th edition. McGraw Hills, New York.

presented earlier in this chapter, ports receive and disseminate cargo in a flow to the hinterland, in case of import this is done through prompt release of consignment to consignee through quick and efficient processing of the different stages from ship manifest to custom control and release to agent, broker or freight forwarder as the case may be. The bulk of the final cost (landed cost) of goods is influenced by the transport processes including all cost associated to customs and other ports fees or duties payable on cargo. These costs tend to be higher with the degree of border crossing procedures and bottle necks encountered in the form of delays. These bottle necks pose serious challenges to trade facilitation.

One huge issue in international trade and border crossing is that of customs documentary requirement. Lack of automation, out dated procedures and insignificant use of information technology, lack of predictability, transparency and cooperation with other governmental agencies can weigh heavily on trade facilitation.[52] The issue of how to establish effective border policing, effective control and trade facilitation is a challenge to national customs; this poses a greater challenge in developing countries. Logistics can also affect trade facilitation; this has been shown by Hausman. Developing countries too are the most affected in this regard, his report showed that for the same kind of good, it takes 93 days in Kazakhstan to export a full cargo load (FCL) 20 TEU container of cotton apparel, and in Mali it takes 67 days, while it takes only 6 days in Sweden. The cost of trade related transaction for a 20 TEU FCL container in Namibia including transport from ocean vessel to factory gate was more than 3000 United States Dollar (USD). In Georgia, slightly less than the same amount, in Germany about 813 USD, while in Sweden, slightly more than 500USD[53].

Uncompetitiveness of firms operating in the region is another set back caused by factors akin to logistics and customs inefficiencies. These are obvious in damages caused to perishable products. With the companies seeking to get their products to market as quickly and as cost efficiently as possible, this set back can pose serious consequences to firms and country's competitiveness. One way firms are affected through this is the existence of a supply gap among channel members, this a concept that refers to a situation where the total cost of

[52] African Trade Policy Centre (ATPC) 2004, Trade Facilitation; Economic Commission for Africa. Briefing No 1

[53] Hausman, W.H (2005) Global Logistics Indicator, Supply Chain Metrics and Bilateral Trade Patterns. Fifth Draft. World Bank

performing all channel flows jointly is too high and happens when one or more of the flows are performed at too high a cost.[54] Ports efficiency is also a major issue on the issue of time and cost. Many ports in developing countries lack adequate equipments for cargo handling and container operations. Some logistics indicators in the form of time, cost, complexity and risk factors according to World Bank report are;

Time indicators

Technical control clearance time (average and maximum)
Inland transport time
Total time for trade related procedures (average and maximum)
Custom inspection clearance time (average and maximum)
Time for trade document procedures (average and maximum)
Additional time due to container security initiatives
Vessel turn around time (average)
Time to resolve custom appeal
Vessel waiting time to be allocated berth

Cost indicators

Total cost for trade related procedures
Port and terminal related charges
Border control cost
Inland transport cost
Additional cost due to container security initiatives
Inland transport cost

Indicators for Complexity and Risk

Total number of documents per trade transaction
Number of documents per trade transaction
Criteria for custom inspection
Percentage of containers inspected
Level of custom inspection

[54] Coughlan, et al (2006) Marketing Channels 7th Edition. Pearson prentice Hall. New York

Number of agencies that have power to inspect goods

Number of times consignment are typically inspected

Percentage of containers electronically scanned

Percentage of containers physically scanned, etc.[55]

The curve below shows the different transaction time and cost

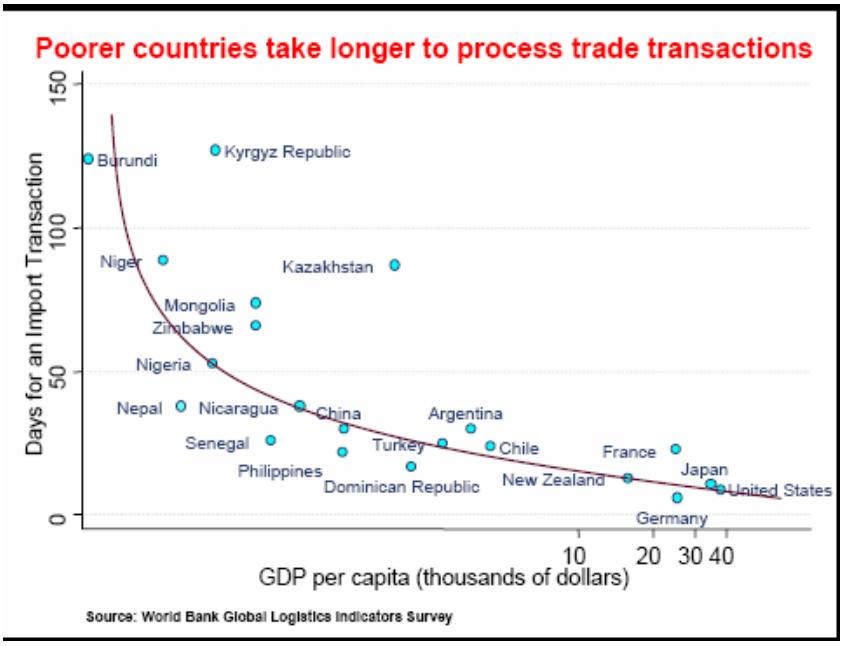

Fig 2.4[56] Global Logistics Indicator survey 1

Figure 2.3 and 2.4 illustrate the disparity between time and documentation factor between developing countries and developed ones. Developing countries request more signatures for international trade transaction, and it is typical that these countries observe a more rigid bureaucratic procedures.

[55] Hausman, W.H (2005) Global Logistics Indicator, Supply Chain Metrics and Bilateral Trade Patterns. Fifth Draft. World Bank.

[56] See http://rru.worldbank.org/Documents/Discussions/Logistics.pdf

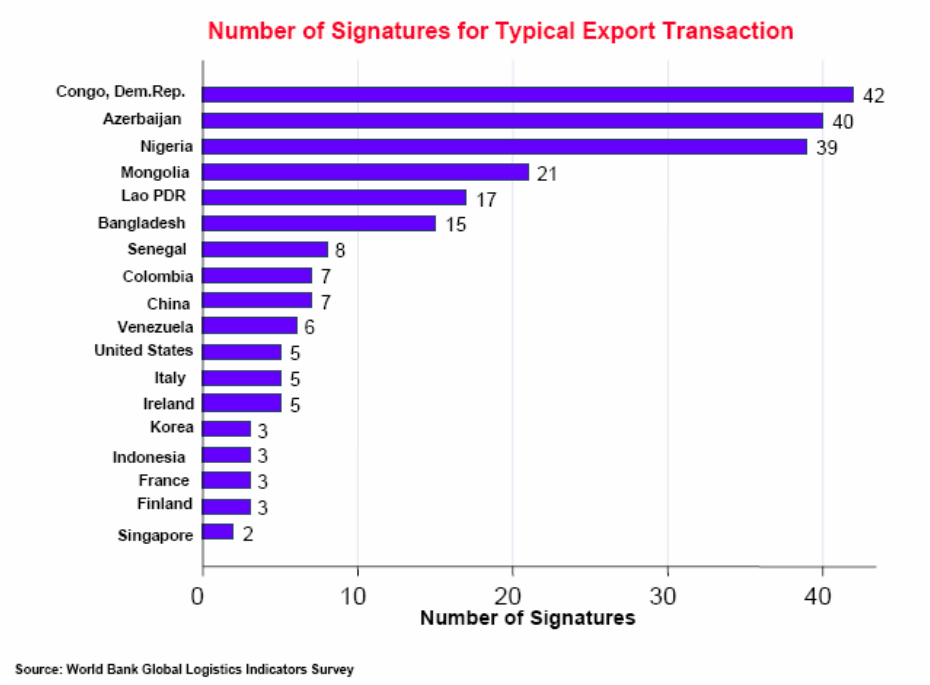

Fig 2.5 Global Logistics Indicator survey 2

Chapter Three

Research Methodology

3.1 Research Design

Owing to the nature of the thesis, a case study research design has been adopted. Case study design is used when a researcher wants to uncover causal paths and mechanisms. Case study is very versatile due to its richness of details, when identifying causal influences and interaction of effects which might not be treated as operationalized variables in a statistical study.[57] However, it is recommended that a case study design is done as a part of multi method where additional procedures are administered, for example used with the survey research method. Case study research excels at understanding complex issues or objects and can extend experience or add quality to what is already known through previous research. Case studies emphasize detailed contextual analysis of a limited number of events.[58]

In a case study design, multiple sources and techniques in the data gathering process are used. The researcher determines in advance what evidence to gather and what analysis or techniques to use and what data can answer the research questions. Data gathered is normally largely qualitative, but it may also be quantitative.[59] Qualitative research does not have to arrive at result or findings that are largely statistical in nature.[60]

The approach taken in this report is in view of the need to carry out a detailed, objective study of one research entity at one point in time. The tools for data collection that have been employed in this study include:

a. Documents; these include secondary sources of data such as published and newspapers article, (Data collected and used for a purpose other than the one intended).[61] They include annual reports and company's handbooks of all the ports considered in the report. Information from the internet was also very useful etc. The data involved in some of these

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[57] Garson, G.D. Professor of Public Administration, North Carolina University, USA. Case Studies. see reference page.
[58] Soy, S.K. (1997). The Case Study as a Research Method. University of Texas, Austin. Unpublished Paper
[59] Winston, T. (1997) Introduction to Case Study. The Qualitative Report, Volume 3
[60] Strauss, A., Corbin, J. (1990). Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage Publication, Inc
[61] Green, P.E., Tull, D.S., (1978), Research for marketing decision, Englewood cliff, prentice-Hall, Inc

documents are of quantitative nature which has been analyzed to suit the purpose of the research. Reports of independent bodies like OT African Line (OTAL) were also found to be invaluable in this area. Other secondary sources include the World Wide Web and discussion groups on the internet, academic journals etc.

b. Interview was another source of data collection techniques, this was basically primary data. Here, three forms of interview were implemented. When time was of the essence, focus interview was adopted; the interviewee is asked sets of questions with a view to giving own opinion or information about an issue or confirming data collected from other sources. In some cases, a survey based type of interview was administered where respondents answer questions which have been developed in advance, detailed and structured to meet the requirement of the researcher and the study. Respondents were also asked to make their comments on issues in line with an open ended interview type. Formats of the interview can be found in the appendix of the report.

c. The telephone was also one medium through which interview was conducted, here; confirmation of information or sources was made to increase the reliability of the research. It was also useful when it was not physically possible to conduct a face to face interview type. Particularly, the ports of Immingham, Stockholm and Gothenburg were served through the telephone medium. Data from ports handbook and reports were double checked by calling appropriate authority to confirm the information in such data.

d. Email was another medium through data was collected; this became necessary in view of the busy schedule of some of the respondents, so face to face interview or telephone interview were not feasible. Respondents were sent emails of open structure. Some times, in order to guide the respondent to the subject matter, examples were given. This enables the respondent to fully grasp the type of information being sort. 'Tullverket' in Sweden was particularly served through this medium, although port of Gothenburg, Stockholm and Immingham were also served through email based interview. Some respondents in Nigeria also had to be interview through the medium.

The researcher was also able to make an own observation during the data collection period, making both informal and formal visits to the study unit (TCI Port), while one visit was made to the Port of Gothenburg at the start of the academic program for which this thesis refers. First hand knowledge was acquired during these visits and was useful in confirming

information gathered from sources about the case study or discovering new data which have not been accommodated for in the interview.

3.2 Reliability and Validity

Reliability in a qualitative research mainly bothers on the issue of trustworthiness and is concerned with the consistency, accuracy, and predictability of research, while validity is the quality of the research. It measures the extent to which measuring techniques or process is free of error or whether the research measures what is intended to measure.[62]

The problem with conducting research in the country (Nigeria) is the extent to which data or sources of information can be relied on. It is not uncommon for conflicting reports to be published by governmental bodies mainly due to the need to create an impression on data users or government. Most governmental bodies or parastatals tend to hype their performance to make it seem that the particular ministry is not epileptic or inefficient and is giving back its money worth. There is some degree of uncertainty regarding statistics in most public organizations, sometimes due to poor audit, account and management function. In most cases, the need for good data collection and storage has not been fully appreciated largely in the public sector. This is in part due to the slow transition from paper to electronic medium and means of information storage and retrieval.

These factors can put the research at risk of bias or error both in deductive inference and conclusion, hence a low validity and reliability. However, to combat this flaw, data confirmation was carried out in almost all of the data collected. Even though this can not completely eliminate the risk of uncertainty in data, it can increase the quality of the research. Screening of data was done by comparing findings from official organizational data with information based on data from independent bodies of stake holders' sources. When interviewing officials of any public organization, more often than not, a bias state or picture other than what is obtained may be painted. This is also due to the same reason given above. Public officials are not willing to give information that shows things are not going on well with the organization, instead, the usual response is "everything is alright". So,

[62] Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. The Qualitative Report Volume 8. University of Toronto, Canada

information has been screened by weighing information of official information against other sources like in the above. Sometimes, it is a challenge to get high ranking public officers to grant interview. This action is linked to suspicion about investigation or research into their organization and a resistant posture to change. For example, agencies like the custom are very uncooperative with researchers and the media, mostly because the general public including the media is very critical of their activities and they are always fingered for various forms of malpractices. Respondents in the category of port users like the freight forwarders and custom agents are more eager to grant a consensual interview. In other ports studied in the report i.e. Port of Gothenburg, Stockholm and Immingham, their homepages were major sources of information, however, telephone or emails were used to confirm the quality of such information.

As a technique for increasing research quality, a substantial review of literature carried out in the thesis seeks to give the research substance and understanding in the subject matter. A sorting of data and information has been done during the data analysis. Write up of field notes from interview, personal observation and examination of existing secondary data was carried out. The information gathered was used to evaluate the activities and performance of the ports in all areas of interest highlighted in the objective of the study.

Chapter Four

Empirical Data Presentation and Analyses

This section illuminates the perceived problem in the TCI Port against the background of field data, observations and independent reports that have been collected at the data collection stage of this project. The chapter also touched on issues of efficiency in port business within the parameter of the thesis definition of operation, i.e. management, cargo-handling, facility (berths, storage area etc.) equipments and statutory agencies (custom) in the TCI Port. The issues x-rayed in this part are mainly internal, and throw light on the level of efficiency in the Port that exist in the port, since Efficiency measures performance and can be used to evaluate internal effectiveness.[63] This can lend insights into the performance of the TCI Port.

4.1 Capacity and Infrastructure

Main Port has a navigable channel of 200 meters wide and about 11 meters deep with a quay length of 218 meters and 8 berths. A permissible maximum ship length of about 170 metres is allowed and ships with length of 180 to 220 are allowed to berth on special occasions.[64] The TCI Port lacks the capacity for quick transfer of cargo to the hinterland on multi modality due to the non existence of rail connection to the port area. This is a necessary requirement of port efficiency as a seamless flow of goods should be strived for in ports.

The TCI Port is inadequate in view of the present and future role of ports and its definition as a four-modal nodes where ocean ships, short-sea/river ships, road and rail modes converge and where a network of water borne and land modes must exist.[65] The port also has in place a container scanner and standard cargo handling equipment although the adequacy of these equipments is in doubt and their use adversely affected by human factors

[63] Plenert, G.J (2002) International Operations Management. Copenhagen Business School Press, Copenhagen, Denmark.

[64] TCI Port hand book, 2005

[65] Charlier, J.J., Ridolfi, G. (1994) Intermodal transportation in Europe, Maritime Policy Management, Vol. 21 No.3

and non availability of proper performance audit in the form of operation planning and control.

The notable deficiency in the state of infrastructure at the TCI Port and other ports in the country is efficient inland transport infrastructure to promptly discharge or convey cargoes from the port area upon release to the end customer in the hither land. Rail connection at the port is non-existent, while inland water ways have not been fully developed as a worthy transport mode. This creates a deplorable transport infrastructure system. The state of road infrastructure can adversely contribute to the degree of inefficiency of a port. Some resultant effects are congestion as a result of slow movement of cargo from the port to the hinterland on trucks. A loss of approximately 66,000 USD has been speculated to be incurred by truck owners due to bad road infrastructure connecting the port to the hinterland.[66] These bottles necks and barriers in the port can cause trade to be lost and can have far reaching consequence for the country as does other actors. The value of trade lost or delayed is not easy to estimate and likely to hamper economic growth between countries[67]

The maximum depth of berth of about 11 meters is a bit deficient as a major challenge for many ports as we approach the future is the issue of increase size of ships. An increase form 6000, 20-foot equivalent unit (TEU) to 8000 TEU has been become a source of concern for ports as a deeper and wider berths are needed for a better competitiveness. 12 meter berth depth would be more appropriate to accommodate larger ships with little safety concerns. There is a continuing evolution of larger container and bulk ships with the aim of achieve economies of scale and a more diverse cargo mix like ‘Emma maersk’ container ship of Maersk Sealand with 11,000 TEU capacity. These factors can greatly impact on the real cost of trade in the geographical area or country as a result of extra cost of transaction due to poor transport facility and inefficiency since it is known that poor infrastructure accounts for 40 of predicted transport cost for coastal country and a ten percentage point in transport cost will set off a 20 reduction in volume of trade,[68] if this is so, the ability for the port to present the country in a good competitive posture is limited.

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[66] http://www.businessdayonline.com/?c=44&a=9386

[67] Jensen. A. Professor of Logistics and Transport, Handels School of Business Economics and Law Gothenburg University. Sweden.

[68] Plenert, G.J (2002) International Operations Management. Copenhagen Business School Press, Copenhagen, Denmark.

Another resultant scenario of bad infrastructure is that some port customers have found an excuse to engage in outright sales of their merchandize within the port facility. These port users (mainly importers) are quiet reluctant to convey their goods to own warehouses in the hinterland because in the bid to avoid cost that will arise from the menace of inland transportation seeing the profitability in such indulgence, such importers find it needless to engage the services of warehouse operators. The overall consequence is a worsening case of port infrastructural use and security as a result of chaos associated with the unregulated commercial activities within the port's facility.

4.2 Agencies and Labour.

One problem frequently identified as a main hindrance to trade facilitation is the number of stops that port customers (importers/exporters) have to make all in the name of checks or signatures for exports or imports processes. At a point in time, the number of statutory agencies whose activities are related to port function and trade were about 22, even though the relevance of some of these agencies have been questioned and some of them asked to relocate from the port area, their presence is still very visible in the Nigeria maritime sector and the port area in particular. There are presently about 12 agencies whose activities are connected to the import and export processes in and around the port facility.

The most important agency in the port in particular and international trade in general is the custom service of any country. A high level of cost incurred by port customers is related to customs activities. These take the form of different regulatory constraints, documentation processes and time related costs as a result of excessive delay due to long cargo inspection time which also puts pressure on port's infrastructure or facility when containers are stacked in ports yard awaiting custom inspection. The NCS carries a routine inspection of all cargoes; this exacerbates the inefficiency already suffered in the area of poor infrastructure and port's equipment for cargo handling. Some times, the cargo-handling equipments used in the port are also used to handle cargo meant for custom inspection; therefore, cargo owners lose precious time while this is going on. The overall effect is poor port performance. All these can pose serious bottleneck to trade and operations in the port. They have a direct relationship with efficiency in the area of cargo process time and cost as a result of delay and other unofficial cost (corruption).

Coupled with the issues above, is the port's personnel strength of 1,442 (2005 figure). With this figure, it is safe to say that the port is overmanned, and it is a reflection of a combination of factors such as; strong unionization, limited resources for modern cargo-handling equipment acquisition, poor training, poor government policy etc. A surplus labour can create redundancy and excessive waiting time in the port. As is a common feature of the Nigerian socio political environment for lip service, workers struggle to please the boss instead of doing their job. All these contribute to port inefficiency.

4.3 Cargo Process

The figure below shows the process of cargo delivery at the TCI Port.

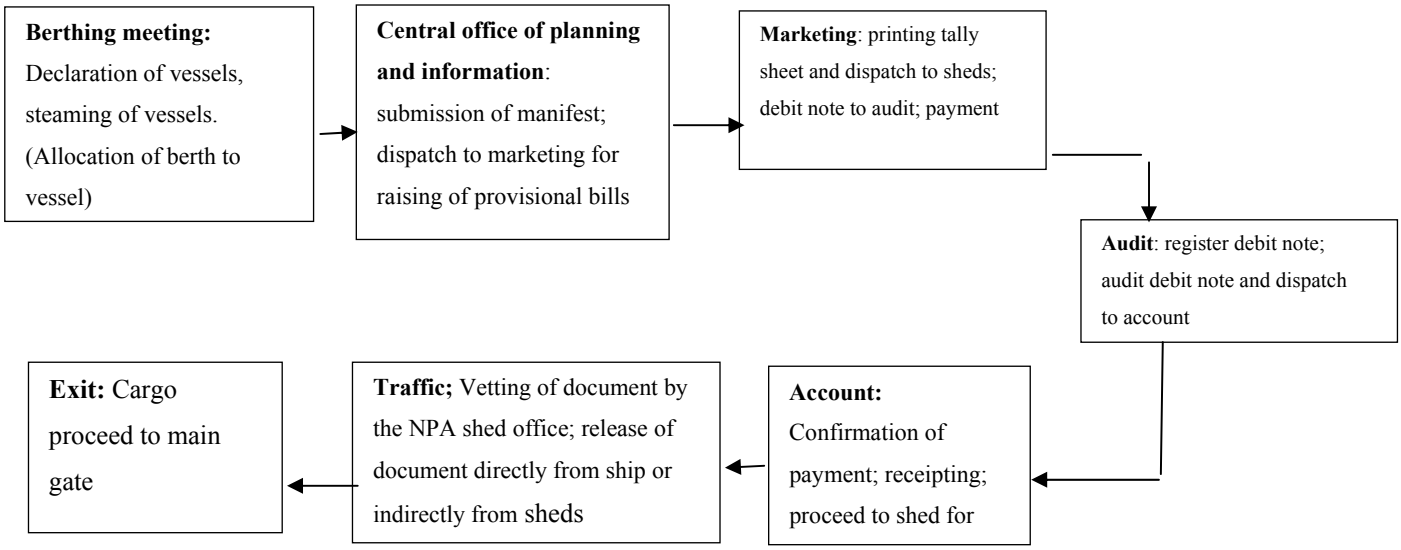

Fig. 4.1 Steps import Cargo clearance at TCI Port.

These steps are only the most important ones, as other stops may be experienced during cargo clearance process at the TCI Port. This inhibits to a large extent trade facilitation and port efficiency. There is also a high degree of time wasting at different point in the process due to laxity on the part of employees and heavy bureaucratic procedures. One major cause of the long process involved in the cargo clearance is over dependence on paper documentation processing. With a slow computerization process in the organization, bulk of the documentation process is still done in black and white hence a synergy has not been able to be achieved as would be in the case of efficient IT system like the use of EDI and other MIS tools to exchange information between the relevant bodies (agencies, port and customers)

4.4 Operations

A look at 2005 operations statistics of the TCI Port shows that there was a decrease in berth occupancy by 34.50 % from the year 2003 to 2004 representing 49% in 2004. There was also an 11.23% reduction in inward traffic from 2003 base year with a fall of 8% ship calls at the port representing 504 vessels as against 549 vessels in 2003. A capacity classification of vessel cleared in the base year (2003) shows that vessels less than 10,000 GRT was 279, 220 vessels were under 20000 GRT, 48 vessels under 30000 GRT while only one vessel had a capacity of more than 30000 GRT. Cargo throughput dropped from 4,583505 MT in 2003 to 4,079946 MT representing 10.99% in 2004.

Container traffic also had a downward plunge of 28% in 2004 from 54,868 TEUs; the container cargo throughput was 39,651 TEUs. In this year, a total of 2503 berth vacancy was reported and 1499 was occupied while 743 were not workable. From the above, 31.6% berth working berth was witnessed as a against 52.8% vacant berth occupancy which shows a considerable level of inefficiency and unproductive use of facility and a high degree of unworkable time at berth. By the second quarter of 2005, no vessel above 300000 NRT had called at the port with a total of 244 ships[69] calling. A number of factors could be responsible for the decrease% unavoidable seasonal factor, inefficiency or government regulation. Port authority may desire relatively high berth occupancy while shippers do not desire a high degree of waiting time. A good pre- ship arrival planning can help to balance this issue.

4.5 Service

With some of the problems highlighted above that are plaguing the TCI Port, such as redundant work force and tasks, strong bureaucracy and red tapes coupled with low employee training, it is easy to guess what service level can be seen at the port. Part of this is not unconnected to the excessive governmental control in the affairs of the port which is political. Every year, a monetary target is set for the port by the government. Charged with the task of accomplishing this goal are the customs and the port authority. Even though the service leaves much to be desired, the target is met with ease. The researcher is of the view that, more often than not, this rubs off on the NCS performance and can adversely create

[69] Based on TCI port annual reports

laxity and perpetuate corrupt practices among the top officials of the custom service. The motivational parameter for performance which is monetary in this case, ceases to be viable after the accomplishment of the set target, therefore a loss of zeal. This brings to question the ports dedication to the needs of its customer. With no rail connection, almost unnavigable inland water way and epileptic road haulage from the port and charges rated among worlds highest, the TCI Port has a long way to go in being competitive and attracting cargo port in the region.

A good service oriented port among other things should be quantified by how efficient its cargo handling ability is (and the capacity of its cargo handling equipments; e.g., number of tonnes of cargo handled per hour), the turn around of vessels at the port (involving how quickly berths can be allocated to ships), and the cost of doing business at the port. A high level of cost will be incurred by port users or customer if the rest of indicators favouring an efficient port are absent. For example, extra cost incurred as a result of delay of cargo clearance occasioned by flaws in operations at the port. In the case of TCI Port, the port customers are in most cases made to pay demurrage for good despite the fact that their cargo remained at the port with no fault of theirs. In this case, importers pay up to □25 a day for a 20 foot container and □35 a day for a 40 foot container as port charges (demurrage). With some of the cargo likely to spend three weeks before consignee can lay claim to their cargoes, the cost incurred will be enormous.

Some of the aftermath related to the above scenario is increase in the prices placed on the goods at the consumer level because the importer will try to transfer some of the extra cost to the next level of the channel or supply chain. Invariably, the final consumer bears the brunt of an inefficient port, not to mention the amount lost by the authority as a result of lost customers or the lost incomes by the employees directly or indirectly working in the maritime sector.

Chapter Five

Comparative Analyses

The researcher pointed out earlier in the report how he intends to evaluate the performance of the TCI Port in line with best practices. All ports strive towards a higher productivity and deliverance of better services to port users including Ship owners. With the ports operational standards continuously shifting, it is difficult to find an acceptable blue prints or methods that can be deemed as best practices. So, best practices tend to remain a mirage in terms of its constituent, however, best practices can constitute an acceptable standard in the industry. Some ports whose performance has been generally classified as high against existing technical indicators and theories such as berth occupancy ratio as extensively discussed by Alderton in his book; *Port Management and Operation*, [70] can form a benchmark for best practices.

From the foregoing, the researcher is set to analyze the TCI Port from the view point of selected indicators on which perspective the TCI Port has been analyzed in the earlier part of this chapter, they have also been presented in the literature review of this project.

The indicators for comparisons in the figure below can present an easy understanding of performance and its measurement in a port. They give insights into the productivity, level of trade facilitation and management factor in any port.

[70] Alderton, P. (1999) Port Management and Operations. Patrick Alderton, Hong Kong

Ports	Port model/ port operator(owners)	Depth of berth (meters)	output	No of employees	Medium of customs processes	Degree of customs inspection	Main equipments(container or bulk)
Tin can Island port	Public service port/ Nigerian port Authority	Bulk (and container) 9-11	7 days ship turn around time.	1442	Largely paper	Routine inspection	6 electrical portal cranes of 8-10 tonnes with an outreach of 25-28m
Port of Stockholm	Service port/ municipality	8.5-9.0	17-22 moves per hour in the container terminal, bulk ; 135-175ton Per/h	232	Largely electronic	high Alert	8 ship to shore container cranes including 2 post panamax cranes with up to 70 ton capacity
Port of Gothenburg	Landlord port/ municipality	19.6; maximum, 12; RoRo. terminal	Eight ship-to-shore container cranes (including two post-panamax cranes); 45-70 loading capacity.etc	1000	Largely electronic	High alert	Two rail-mounted container cranes. Lifting capacity: 42-35 tonnes, 22 - 37meters out-reach from line of quay, 42 m lifting height.
Port of Immingham	Private service port./Associated British port	14m Maximum, 12 container terminal	24 containers per hour	300	Largely electronic	High alert	Two 15tonne electric grabbing cranes, two 10-tonne electric cranes, two 40-45 tonne ship-to-shore containers gantry cranes

Fig 4.2. Performance comparison between TCI Port and POS, POG and POI
Source: From selected ports' homepages and information from respondents

The figure above presents the background for a comparative analysis of the performance of the TCI Port against those of selected ports in the Sweden and the United Kingdom. A look at comparative indices that have been selected reflects a major gap between the TCI Port and the ones in Sweden (port of Gothenburg (POG) and port of Stockholm (POS) and United Kingdom (port of Immingham (POI) in terms of capacity and efficiency.

TCI Port operates a public service port model and the port operator is the NPA a central organization which answers to county's ministry of transport. The other three ports (i.e., POG, POS, and POI) have adopted either municipality or private ownership model. The

public service port model is slowly falling out of favour and into obsolesce, although it is still widely used in Developing countries. In Nigeria it is characterized by high level of inefficiency which can be traced to the inability of the government to provide needed infrastructure and equipment for efficient operations. It is also fraught with heavy bureaucratic constraints, and red tapism.

The TCI Port also suffers from over-manning, low employees' skill capacity and low labour utilization. In the case of the other three ports, the port structure ensures a high level of professionalism and expertise in ports functions. In the port of Gothenburg, the municipality provides the facility, including basic infrastructure and landed property and own the port operator that carries out the main operating function of the port, however, the operator is given freedom to conduct its business. Private terminal operators in ports often excel because of the freedom to effectively harness their resources including labour and equipment capabilities and bringing in latest technology and management techniques. The outcome of this is an increased productivity in ship turn around time and quality of service through increased output and productivity. This arrangement also increases the port intra and inter ports competition hence the port's competitiveness. This is one of the factors of the porter's 'five forces model' in his Competitive advantage,[71] where firms jockeying for position can boost a country's as well as an industry's competitiveness and development.

The TCI Port has staff strength of 1442 whereas, POG, POS and POI have 1000, 232 and 300 employees respectively, yet the average ship turn around time in the other three ports is approximately 1 day, and these ports have a more diverse mix of cargo to handle and still offer a higher degree of service to customers and added value. Considering the productivity of these ports, the man-hour output is very high compared to that of TCI Port.

The other indices in the fig 4.1 (i.e. No of employees, medium of customs processes and degree of customs inspection) give an insight into some of the factors that have contributed to overall efficiency of these ports. The custom process in these countries is largely electronic medium and they have been able to offer a one stop shop for most custom cargo clearance requirement, including declaration and documentation through efficient electronic medium, example is the Swedish Custom (Tullverket). In Nigeria, the custom process is

[71] Porter, M (1985) Competitive Advantage, Free press, New York

largely paper. This contributes to a major inefficiency and delay experienced in the system. The degree of customs inspection in Nigeria is routine inspection where as, in the other countries; custom inspection is based on high alert. In Sweden, the Tullverket has a point rating system where those on the top of the 'stairways' can enjoy uninterrupted flow of their goods through custom points. Under this arrangement, companies are segmented into a 5 point system. Customs degree of cargo inspection decreases as companies move up the 'stairway'. This process ensures that cargo can easily pass through custom points thereby achieving a high degree of trade facilitation, cargo flow through ports and port efficiency.

As earlier posited in this thesis, over- manning in ports speaks much about the level of technology. This can be seen also in the figure above. The output level of cargo handling equipment at the TCI Port greatly contrasts those of POS, POI and POG. The high level output and Productivity of the handling equipment ensures swift loading and unloading of cargo from and to ships.

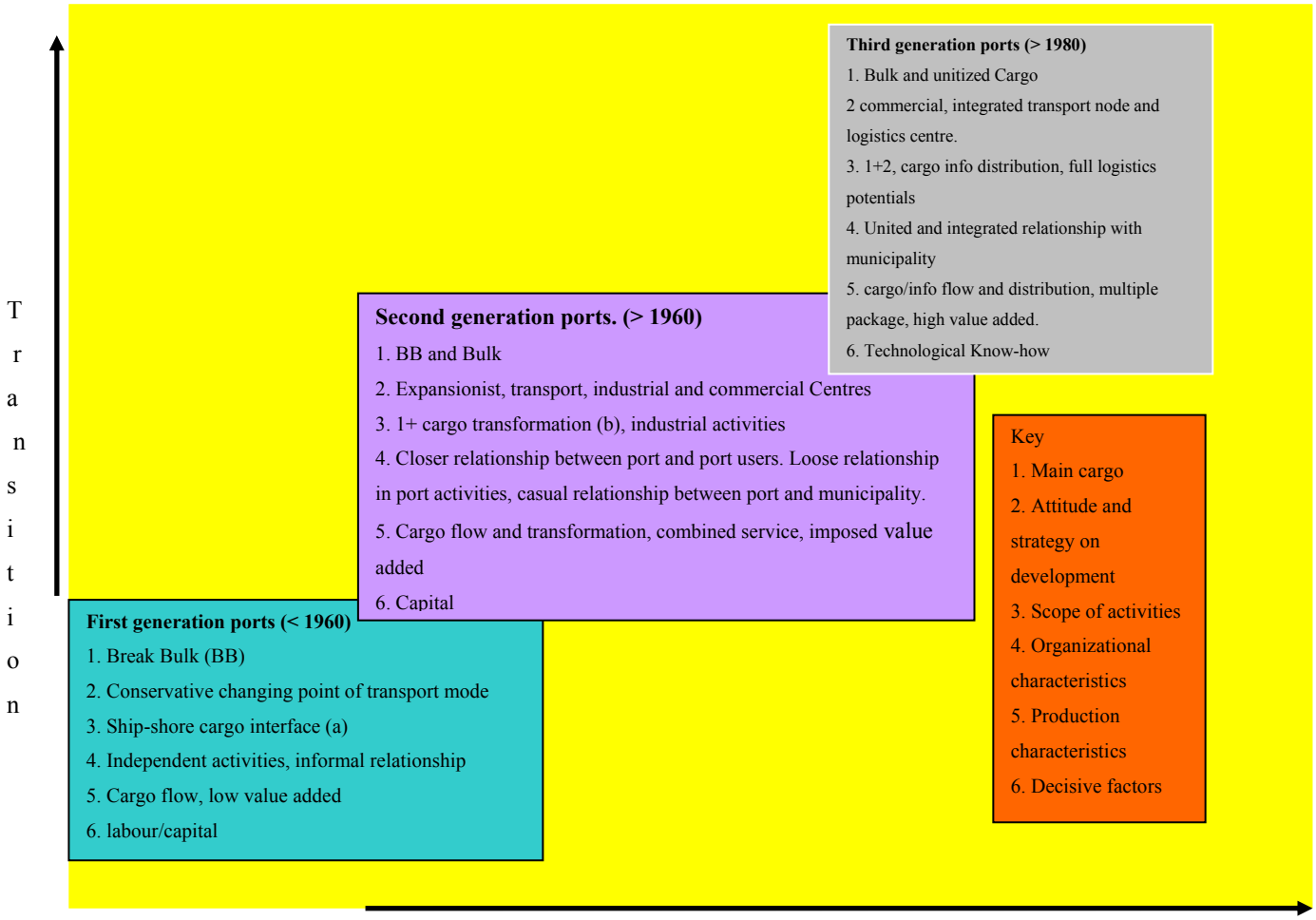

Fig 4.3[72] **Port Transition**

[72] Adapted from; Alderton. (1999) 'Port Management and Operation'. page.111

The Figure above figure shows the patterns and characteristics of how ports have evolved. Some ports are still characteristic of the post 1960 era in port development. The TCI Port would fit more in the purple block of port development (post 1960) apart from an adaptation of some of the terminal to handle containers, it is entirely characteristic of ports of the 60s. The ports of Gothenburg, Stockholm and Immingham would fit in comfortably in the post 1980 ports status. Another distinguishing index is the strategy towards development. The other three ports are effectively integrated as transport nodes and logistics centres. They also have a high level of added value a term that refers to the feeling of satisfaction by the consumer of a service or product,[73] as opposed to mere logistics value adding of consolidation and packaging sometimes carried out in ports.

While the determining factor in the TCI Port is capital, the other ports strive towards improving their knowledge and technological base to improve efficiency and customer service. Another important characteristic in the fig. 4.2 is the relationship of the ports in the post 80 era with their municipality or operating environment. Most ports that have made the transition from the 2nd generation ports to the 3rd ports usually have a united and integrated relationship with the locality in which they operate. In some cases, the cities where the ports are situated own majority of the port's shares and also own the company which acts as the port operator. This union makes the port as an organization possess strong environmental base on which to thrive. Port of Gothenburg and Stockholm share this characteristic and Immingham except that its ownership is private.

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[73] Chernatony, L.D, et al (1998)
Added Value: its nature, role and sustainability, page 39-56

Chapter Six

Conclusion and Recommendation

This chapter proceeds to proffer ways of increasing the efficiency in port operations at the TCI Port. The preceding chapter has shown the lapses of the TCI Port against some benchmark indicators from ports in Sweden and United Kingdom. Before going on to make suggestions for improvement in port operations and management at the TCI Port, it is appropriate to evaluate the port's capability to improve the ports performance with the existing framework of things. As a prelude to making a realistic recommendation, a SWOT analysis of TCI Port has been conducted with the aim of determining how much the port's strength can counter its weakness and what opportunities and threats abound for the port. The SWOT model has been touched earlier on in the theoretical framework part of this project.

6.1 SWOT Analysis of TCI Port

Strength	Weaknesses
1. Presence of supporting Industries 2. Proximity to open Waters 3. Government Funding 4. High entry barrier	1. Inadequate cargo handling equipments 2. Low employees skill and professionalism 3. Inadequate supporting inland infrastructure 4. High cost of doing business 5. Service port structure 6. Low technological and I T utilization
Opportunities	**Threats**
1. Large market 2. Large expanse of land 3. Presence of natural resources 4. Favourable political terrain 5. Country's strategic location	1. Government policy 2. Competition from neighbouring countries' ports 3. Regional integration

Fig. 6.1 SWOT Analysis of the TCI Port

Figure 5.1 shows the capability of TCI Port. Presented below is the SWOT analysis of the port.

1. The Port's Strength

i. Presence of supporting industry:

There is a large industry for the port, being situated in Lagos the commercial nerve centre of the country and a formal capital of Nigeria, there is a large supporting maritime sector and the presence of ports like Lagos complex port (Apapa port) and other associated terminals and jetties in the state. There also exist 6 other major ports in the entire country. The presence of this factor makes the TCI Port enjoy certain benefits that comes from industrial concentration like economies of size and scale.

ii Proximity to open waters.

This factor makes the ports navigable by big ships and when fully exploited, the port will be able to comfortably accommodate the largest of vessels. The ports in Lagos connect directly to the Bight of Benin in the Atlantic Ocean. As safety is a major concern of ships' crew, the large and open body of waters makes the port a delight of ship.

iii. Government funding

The provision of certain structures and equipments needed to operate a port could be capital intensive and sometimes only bodies like government can provide such funds. The structure of the TCI Port makes it to still getting financial bail outs from the GON through the ministry of transport. This makes it possible for the port to embark on certain projects knowing that fund can easily be acquired.

iv. High entry barrier.

The high cost involved for potential investors into the maritime industry is a favourable asset for the TCI Port. Port land is very scarce because of the strategic location needed to situate one. This makes it difficult for intending new entrants to participate, hence a plus existing facility. The immobility of most of the port assets also creates an entry barrier.

2. The Port's weaknesses

i. Inadequate equipments for cargo handling operations.

This is a major flaw of the port as it leads to high waiting time for port users and low output either in berth throughput or ship turn around time. Fast cargo handlers like the super post panamax cranes would have been a major strength of the port; unfortunately, they do not exist at the port. Some times, the same cargo handling equipments used at the terminals have to be redirected for the customs inspection use as earlier discussed in the report.

ii. Low employees' skills and professionalism

The TCI Port lacks professionalism in most of the employees. There is also a major lack in skills of the employees. This also creates redundancy in the port. Some of the employees are ignorant of new trends in ports operation. It was observed that some of the line staffs have a

poor attitude to work, this results in some cases to a situation of malingering. Although this is not peculiar to the employees of the TCI Port alone, it is a major set back for the port.

iii. Inadequate Supporting Inland Infrastructure

The poor supporting inland infrastructure capacity is a major weakness.

iv. High cost of doing business.

This is another weakness of the port, as well as most ports in Sub Sahara Africa. The practices at the port give rise to high operating costs with its attendant cost pushed over to port users. Bad practices creates low productivity which. A poor handling practice can create a situation where importers are forced to pay demurrage for faults which are not theirs.

v. Service port model

Many ports have since performed the transition from a public service port model to landlord port model. The later encourages greater private investment into the sector which comes with a higher efficiency and productivity. Even though the port has been earmarked for concessioning, until it is implemented, the service port posture will be the port's weakness especially since it is combined with the socio-political environment .

vi. Low IT utilization and technological know how.

There is no effective management system in place at the port. The port is slowly implementing electronic use for some operations; this is a far cry from what is obtained in ports with benchmark characteristics in the sector. These innovative operators employ tools like radio frequency Identification (RFID), EDI and web solution to increase productivity and reduce operating cost due to more integration with other actors in the sector or network.

3. The Port's Opportunities

i. Large market

There is a large market for the port. The population estimate of the country is approximately 135 million, and the country is very active in international trade. The high population factor creates a large consumer potential for foreign products, since a very large percentage of the trade is sea borne, this is a great potential for the port. There is also a thriving agricultural

sector that forms a large export pool of cargoes. Nigeria also caters for about 68 percent of the total maritime trade in West Africa.[74]

ii. Large expanse of land

The port has a large expanse of land for facility expansion to cope with future capacity need. The port has 73 hectares of land with a possibility of seaward expansion.

iii. Presence of abundant natural resources

The country is endowed with some natural resources which form a basis for industrial development and trade. This factor creates a need and demand for other markets. The petroleum sector requires an industry to service it, and this in turn requires a lot of machinery being imported from more technological advanced countries. The availability of lime stone also creates a cement industry. All these require continuous movements of cargoes in the form of general, unitized, liquid bulk and dry bulk cargoes which are low value high density cargo best suited for sea transport.

iv. Favourable political terrain

A shift in the polity of the country from a dictatorial regime to democratic administration brought with it an attendant confidence for business transaction in the country and international trade.

v. Country's strategic location

The geographical location of the country places it at borders with Chad and Niger, Mali too is geographical close to the country, all of which are landlocked countries. If the country's inland infrastructure is improved and rail connections with these counties facilitated, the port stands to improve it cargo throughput.

4. The Port's threats

i. Government Policy

In the bid to foster development of home market and domestic products and control dumping of products, the GON has continued to add to the list of prohibited items. For in stance, a ban

[74] see http://www.bpeng.org/CGI-BIN/companies/Infrastructure%20and%20Network/Ports/Nigerian%20Ports%20Authority.pdf

was placed on the importation of cars older than 8 years, this will be reduced to 5 years in the near future. All other products are also affected by this policy. This development means that such goods can not be imported into the country.

ii. Competition from Neighbouring Countries' Ports

Since the same port operator oversees the operation of all the ports in the country, the main threats technically comes from such ports as Cotonou ports in Benin Republic, which is relatively more efficient than the TCI Port. Abidjan port in Cote D'Ivoir is also a major competitor in the West African region. The port is the largest in the water and has good ports infrastructure including, specialized container terminal, rail connection to quays[75]. Tema port in Ghana is another strong contender for cargoes destined for the region.

iii Regional Integration

The threat of formidable competition from neighbouring countries' is intensified with regional integration in the West African sub region. Trade barriers and movements of goods across borders are being torn down. This means that the ports in Nigeria will not only have to struggle for cargo bound for the region but for cargo bound for the country as well, since presently these ports have been noted to be more efficient.

6.2 Recommendation

In view of the problems and constraints that been methodologically presented in this study, the researcher has come up with these recommendations. The suggestions that have been made here are based on the port's SWOT analysis, benchmark practices of the three ports which the TCI Port has been compared with and the hints from the extensive review of literature that have been touched in this work.

- The present pool of cargo handling equipments at the port is inadequate, so this area should be given attention so that speed and increased productivity can be achieved. The researcher recognizes the capital involved in such an undertaking, however, one of the port's strengths identified in the SWOT analysis, is the availability of fund from the government. As earlier discussed in the review of literature, one of the

[75] See http://www.otal.com

factors for a port's competitiveness is the availability of resources either owned or solicited. A state of the art cargo handling equipment for load on load off (LoLo) operations like the super post panamax cranes can boost productivity in handling, hence increase port's efficiency.

- The Management of the port should acquire and implement the use of more effective management tools such as strategic planning tools. The balance score card is one model that can prove to be invaluable in organization's planning and performance monitoring. This should be done with proper employees' management, training and development. When properly executed, redundancy at work place will be reduced this can increase manpower productivity.

- Operations management should be given serious priority with a view to increasing berth occupancy and berth throughput. This will reduce the not so impressive berth occupancy of 47%. Proper ship's arrival planning can reduce the number of unworkable berths and still reduce ships waiting time to berth. This trade off will be beneficial to both port and ships calling at the port.

- It is difficult to achieve real successes in operation and increased port performance without proper implementation of MIS. The benefits of an MIS tool such as EDI have been highlighted earlier in the work. Fast transfer of information between terminal operators, port managements and statutory agencies like the custom is instrumental to proper collaboration among these parts hence increased efficiency. The use of paper medium for most of the information transfer and retrieval can adversely hamper or distort information, hence efficiency at the port.

- The port management attitude should shift from the perception of the port as a mere service provider and traditional sea- shore interface service provider to one of facilitator of trade. Since ports services are trade based, and its demand is derived demand i.e. it stems from the need to trade. When this role of port is fully appreciated, it can set the stage for trade facilitation and port efficiency. The aftermath is increased service; this should not only be what the cost perception of the service delivered is, but extra value derived by the customers in the form of added value. This can be a major competitive weapon for the Port.

- Ports nowadays use a more accountable and productivity measurements for their operations. The port of Immingham and Stockholm measures their output in tonnes per hour in bulk terminal and moves per hour in the container terminal. These quantifiers can give terminal operators or the port a more precise and traceable productivity or output level.

- The customs activities at the port should be more flexible to facilitate trade. The present routine inspection carried out by the custom should be discarded and more efficient methods adopted. If the custom processes are not flexible and efficient, it will always rub off on the activities of the port. For instance, block container stacking at the port is as a result of a slow custom inspection process even though poor handling is also a contributor.

- The GON should develop and improve the country's inland infrastructure of rail and water ways mode, this will not only enable swift transfer of cargo from the port to the hinterland but can greatly contribute to the ports productivity and reduction in congestion both in the port and on road. This situation can increase the efficiency and competitiveness, hence able to attract cargo bound for the country and her landlocked neighbours.

6.2 Benefits of Actors

Some of the benefits that are accruable to the different actors have been enumerated below. The interaction of actors in the port sector and the functions of activities of the port itself have been shown in figure 2.1. Stake holders or actors are those which influence or are influenced by the activities of the port functions or operations.

The Port (as an organization)

1. The port will increase its handling capacity as a result of provision of adequate cargo handling equipment. With an installation of more productive cranes like post panamax cranes with up to 70 ton capacity, the ports productivity will improve drastically. This means that more cargo per ton hour in the bulk or general cargo

terminal or moves per hour in the container terminal can be handled. This also have the effect of reducing the high operating cost of the port.

2. An effective strategic planning can also improve the utilization of ports resources. Proper tools like the use of the balance score card can help to coordinate, control and improve all the managerial components in the port. This will increase employees' productivity and reduce redundancy. A more professionalized working environment will be created.
3. The port will become more competitive and its ability to attract cargo will improve. This will increase the revenue and better utilization of the port's facility and infrastructure. For instance, the berth occupancy ratio (time a berth is occupied divided by the time the berth is available for a considered period).
4. Effective use of MIS tools in the port and between the port and other actors has the effect of cost and time savings in the processing of documents. A proper networking and collaboration and control among all parties will be established.
5. The port will be best positioned for the challenges of the future arising form the evolution of larger vessels which require a deeper draught and larger berth or buoys. This will also increase the port's competitiveness.
6. The port stands to gain a lot from the provision of logistic service and other value adding services.

Government

1. One benefit of the government is increased revenue. When the port is more efficient, it will attract more cargo. The increased revenue realized form the duties and fees payable on the cargoes and ships will be a plus for the government.
2. Since the port is not an isolated industry but a community of actors, a better positioned port will create other service firms within the industry; this will attract increased private sector participation.
3. The people will be able to see a better price on goods since the present price of most import or import related goods are influenced by the cost incurred during the inward movement of cargo.
4. Efficiency in the maritime sector in the country can cause rapid development and gains as a result of increased amount of trade that will be conducted with other

countries. Trade that otherwise would be lost can be conducted and value enjoyed both by the country and its populace.

Statutory Agencies

1. A network system with the port can facilitate the activities of statutory agencies. This is information sharing via the use of tools like the EDI. The number of stops during cargo processing will be reduced as some of the information presently demanded will be shared by the ports and the other actors in the system. Output will also increase in these organizations.
2. The use of IT system will set the stage for effective and efficient custom processes. The 'stair way' system that is used by the Swedish custom would not be feasible without an effective IT system in place.

Port customers

1. The cost of doing business will be reduced since the present costing method would change allowing for a more customer and service costing policy. Cost will also reduce for the freight forwarders and inland transport operator like trucking companies and they will be able to give a better price to customers.
2. Delay presently experienced by the cargo owners and other port users will be greatly minimized. This will increase the time it takes for them to get their goods to the market place.
3. The quality of service perception will change and the port users will enjoy a more user friendly port and the advantages associated with it like ease in conducting business with the port. Predictability of port processes will allow port users to be able to optimize their processes like transportation
4. Cost will also reduce for importers who have to currently go through neighbouring countries' ports due the inefficiency experienced at ports in the country. The quality of service received by these importers in these ports is dimmed by the high logistics cost encountered in bringing the wares to the country.

The Public

1. The multiplier effect will take a more visible dimension when the port has achieved its full potential.
2. Efficient inland transport can create employment for the public; it can also reduce stagnation and increase traffic flow and consequently cargo flow.
3. Closely associated with the multiplier effect is the growth that will come into place when the port functions efficiently. The ability of the port to attract cargo is linked to the level of growth.
4. Employment rate will also grow
5. Reduction in the cost of products therefore more value for money.

6.3 Conclusion

The TCI Port has been shown to be bedevilled with many problems which include operating inadequacies, incompetence and lapses in its management. Highlighted in the research are cargo handling issues, redundancy and information system flaws. All these have adversely made the port inefficient with far reaching consequences for the port users and the public. Poor port infrastructure, cargo handling equipments and the country's inland transport infrastructure are major contributors to the poor performance of the port. The role of statutory agencies especially customs were also touched. Poor management practices and information tools are main causes of delay, employees' redundancy and contribute to the port's low productivity and efficiency.

Some selected indicators have been used to measure and compare the port's performance with some benchmark practices in the port industry, the chosen ports were the ports of Gothenburg, Stockholm and Immingham. A SWOT and comparative analysis of the ports was carried out which was followed by recommendation and perceived benefits that will be accrued with adaptation of methods in line with suggested recommendations. The port stands to increase productivity, attract more cargo, increase revenue to the government, reduce its operating cost and finally increase its competitiveness in the West Africa sub region. The port users including the public all have some benefits which come by way of reduced logistics costs and employments.

To properly fit into ports of the future, the port should improve it infrastructural base. The inadequacies of the 10.5 metres draught at berth has been shown earlier in the work. As capacity, mass and sizes of ships are being increased; the port should be prepared to meet these challenges. The present infrastructural state of the TCI Port will be inadequate to properly function in the near future; consequently, a better handling technology and deeper harbour would have to be built.

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Interview

Annelie Olnils

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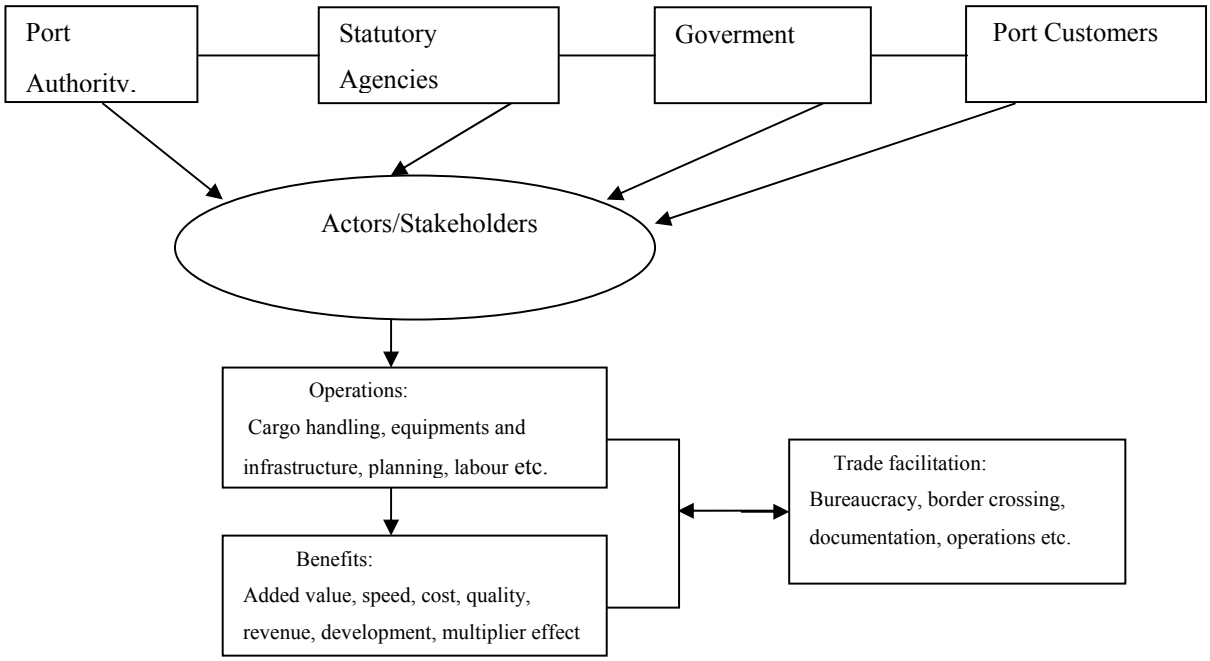
Chief Port Pubic Affairs Officer

Tom Jeynes

Manager, container Terminal. Port of Immingham, UK

Appendix

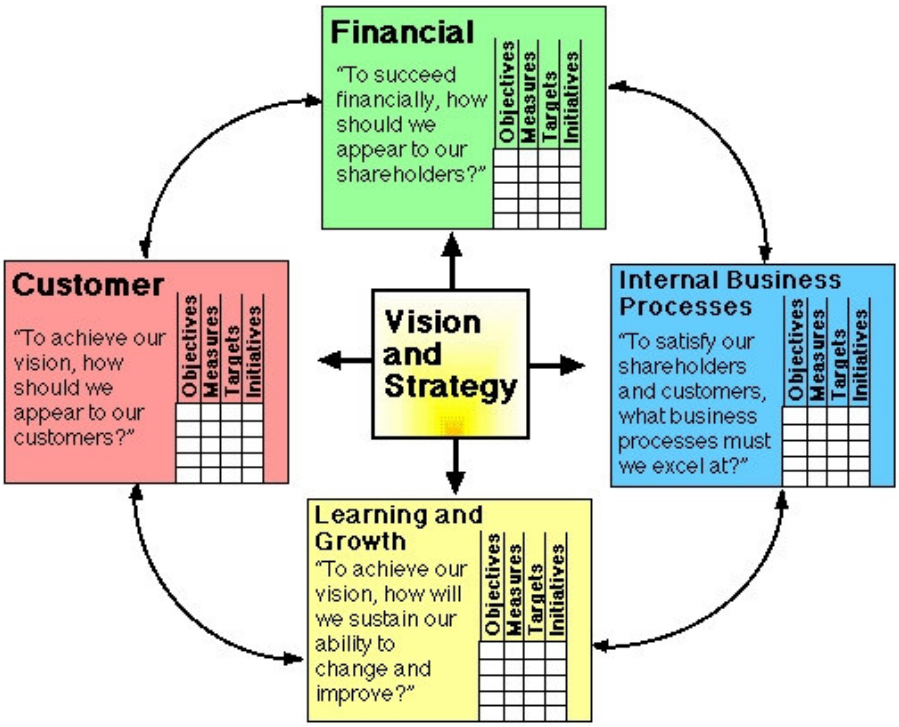
Figures



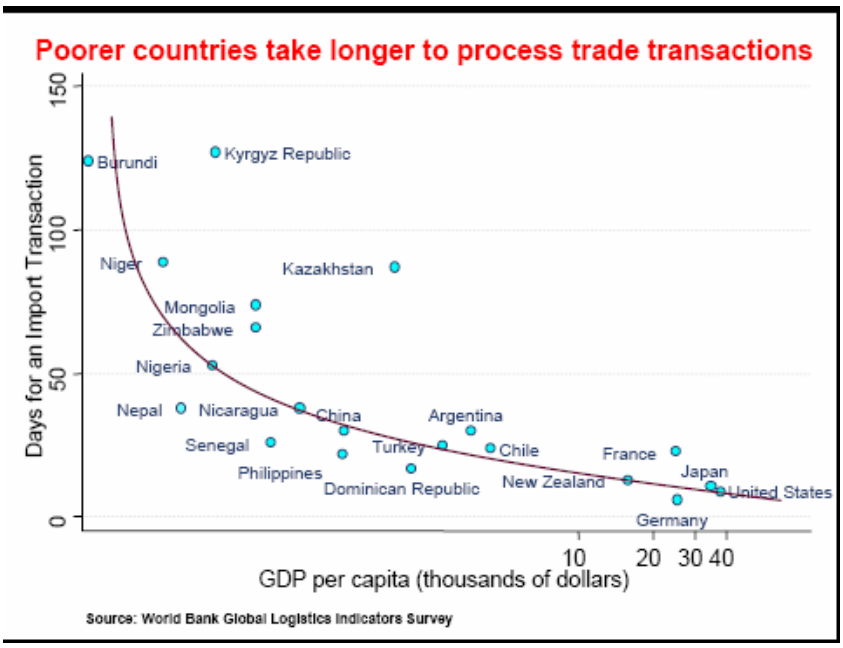
Framework model for TCI port's stakeholders and the TCI port (Fig 2.1)

Port Authority	This is the central organ responsible for running the port on the behalf of the country. It is established by laws and the activities and its directives comes from the ministry of transport
Statutory Agencies	These are agencies in the maritime sector that are established by enabling laws and their functions include inspection, certification, security, revenues collection or just bureaucratic functions etc. e.g. the Nigerian custom Service (NSC)
Customers	These include the different port users. E.g. shippers, freight forwarders, agents, individuals.
Government	The Government of Nigeria. Roles include provision of funds etc.

Operational definitions of terms (Fig. 2.2)

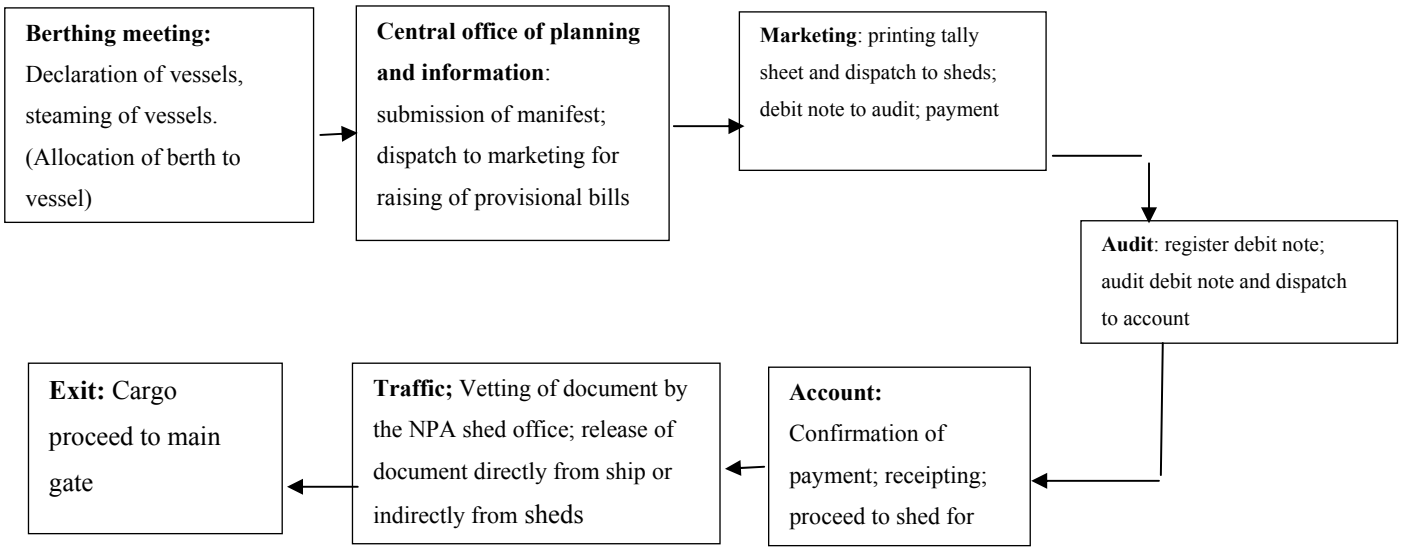


Using the Balance Score Card (Fig 2.3)



(Fig 2.4) Global Logistics Indicator survey 1

(Fig 2.5) Global Logistics Indicator survey 2

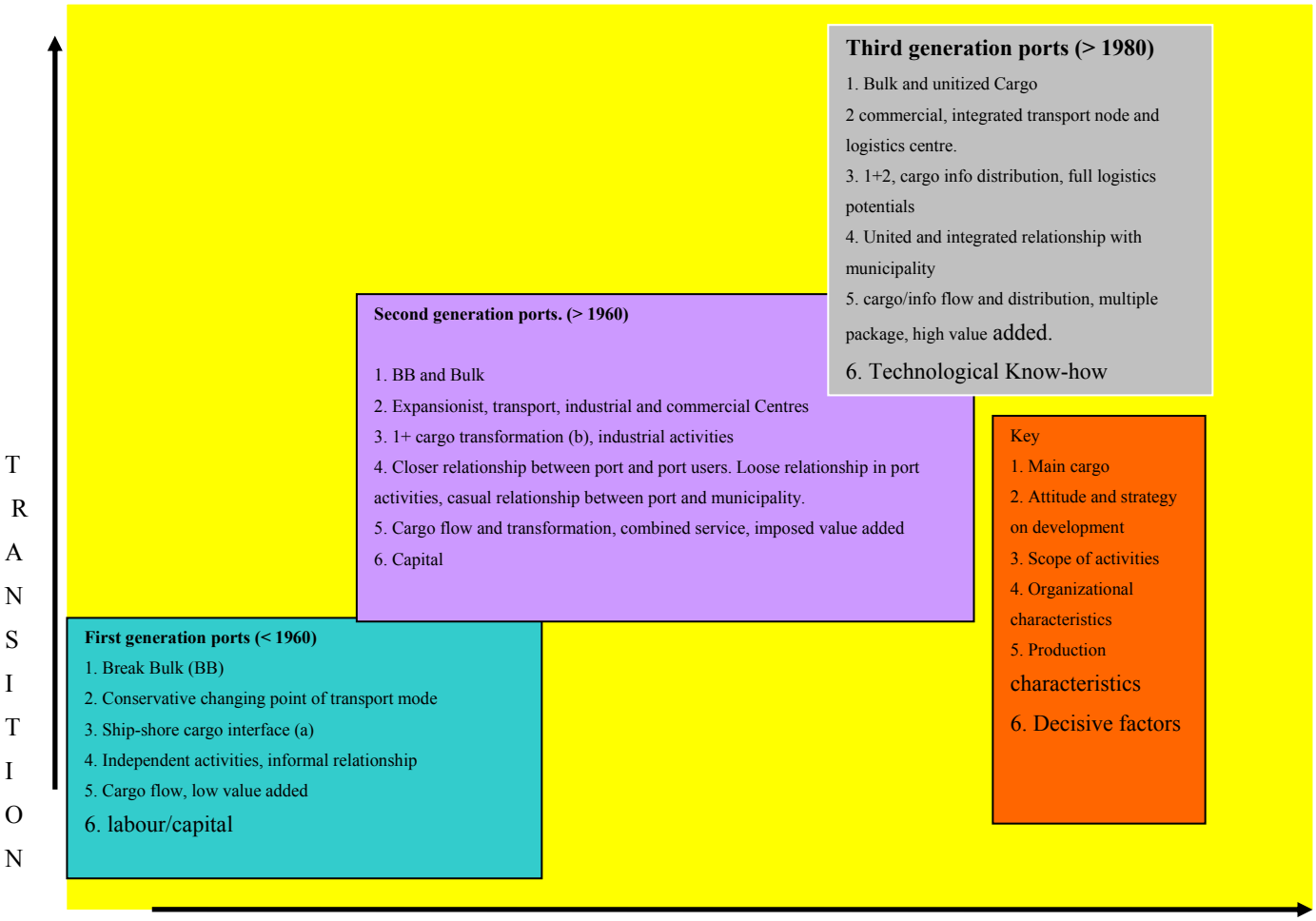


Steps to import cargo clearance at TCI port (Fig 4.1)

Ports	**Port model/ port operator(owners)**	**Depth of berth (meters)**	**output**	**No of employees**	**Medium of customs processes**	**Degree of customs inspection**	**Main equipments(container or bulk)**
Tin can Island port	Public service port/ Nigerian port Authority	Bulk (and container) 9-11	7 days ship turn around time.	1442	Largely paper	Routine inspection	6 electrical portal cranes of 8-10 tonnes with an outreach of 25-28m
Port of Stockholm	Service port/ municipality	8.5-9.0	17-22 moves per hour in the container terminal, bulk ; 135-175ton Per/h	232	Largely electronic	high Alert	8 ship to shore container cranes including 2 post panamax cranes with up to 70 ton capacity
Port of Gothenburg	Landlord port/ municipality	19.6; maximum, 12; RoRo. terminal		1000	Largely electronic	High alert	Two rail-mounted container cranes. Lifting capacity: 42-35 tonnes, 22 - 37meters out-reach from line of quay, 42 m lifting height.
Port of Immingham	Private service port./Associated British port	14m Maximum, 12 container terminal	24 containers per hour	300	Largely electronic	High alert	Two 15tonne electric grabbing cranes, two 10-tonne electric cranes, two 40-45 tonne ship-to-shore containers gantry cranes

Performance comparison between TCI Port and POS, POG and POI

(Fig. 4.2)



Port Transition Fig. 4.3

Strength	Weaknesses
1. Presence of supporting Industries 2. Proximity to open Waters 3. Government Funding 4. Immobility of assets 5. High entry cost	7. Inadequate cargo handling equipments 8. Low employees skill and professionalism 9. Inadequate supporting inland infrastructure 10. High cost of doing business 11. Service port structure 12. Low technological and I T utilization
Opportunities	**Threats**
6. Large market 7. Large expanse of land 8. Huge market potentials 9. Presence of natural resources 10. Favourable political terrain 11. Country's strategic location	4. Government policy 5. Competition from neighbouring countries' ports 6. Closer regional ties

SWOT Analysis of the TCI Port fig. 6.1

Year	2000	2001	2002	2003	2004
Ship Traffic Entered	4.35	4.74	4.05	5.49	4.25
GRT	3.884443	5.013296	5.012376	6.147587	5.410086
Cargo Traffic Inward	2.999209	3.994156	3.995306	4.493789	3.989113
Average Turn Around Time (In Days)	6.6	9.57	10.43	8.18	6.91
Berth Occupancy (%)	5.678	6.6	6.8	7.176	4.7
Personal Strength	1.346	1.351	1.445	1.471	1.437

Operations Statistics of TCI Port

Interview questions

Ports (POI, POG, POS)

What is the model of the port? (e.g., Landlord port, tool port or private service port)

What is the cargo-handling capacity of the port (bulk or container, or both) number of containers handled per hour?

What is the ship turn around time at the port?

How many employees are presently working at the port of Stockholm?

What is the berth occupancy? (2005 figure)
What are the major cargo handling equipments at the port? (Bulk and container terminals)

Which are some of the services offered by the port apart from the traditional cargo handling and provision of berthing space for cargo ships? (e.g., logistics service or other value adding services)

Shippers/Freight Forwarders/Carriers

How would you rate the service at the TCI Port?

Satisfactory, Okay, unsatisfactory, Poor

How would you rate the level of infrastructure at the port?

Satisfactory, Okay, unsatisfactory, Poor

How would you rate the level of cargo handling equipments at the port?

Satisfactory, Okay, unsatisfactory, Poor

What type of cargo is your company importing?

Unitised/Container, general cargo, Liquid Bulk, Dry Bulk

How many days does it take to have ownership of cargo from the time the ship is berthed?

How would you rate the process?

Satisfactory, unsatisfactory

Does your company conduct business in any other port apart from TCI Port?

Yes, No

What is the reason for the above?

Give the name/names of the Port/ports

How would you compare the service level between TCI Port and the other port/ports?

Which aspect of the port's operation would you like to see improvements?

How would you rate the dues at the port?

What types of cargo are mostly moved by your company?

How would you rate the customs processes at the port?

How does the process impact on your business? E.g. Positively, Negatively, No impact

Which area is this impact felt? Time, Cost, Risk.

If you would, give own comments on all of the above.