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RESTRICTIONS OF WEST AFRICAN SEABORNE TRADE: A CASE STUDY ON WEST AFRICAN LEADING PORTS

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Aden Moussea tarafından hazırlanmış ve sunulmuş **"Restrictions of West African Seaborne Trade: A Case Study on West African Leading Ports"** başlıklı Tezi(X) / Projesi( ) kabul edilmiştir.

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ABSTRACT

Master's Thesis

Restrictions of West African Seaborne Trade: A Case Study on the West African Leading Ports

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Except in South Africa, the port systems of Sub-Saharan Africa have not kept up with the rising volume or international trade, or with regulatory and technological practices related to trade. The performance of the region's ports lags substantially behind that of other world regions. Several of the ports in the study group have exceeded their designed capacity limits, while others are approaching those limits. Although international container liner operators have proved a strong catalyst for the port development in the region slow progress in the institutional and regulatory reform has stifled the efficiency gains that might otherwise be expected from the new practices introduced by operators.

The economic contribution of modern infrastructure to move growing volumes of trade is well illustrated by the region's oil-export terminals, which are globally competitive in terms of their costs. Generalizing that level of performance through the implementation of modern supply-chain processes could greatly expand the contribution of the region's ports to efficient transport and overall economic activity.

The last 6 years is also marked by the growing entrance of Turkish industrials and manufacturers into the African market. Although, their presence is not balanced considering the different regions, they detain a no neglectable part in the supply of textile commodities and, more importantly, construction materials

especially in the West African region. This tendency is meant to increase year after year. The potential is huge for the Turkish exporters if they want to sustain their presence in the African market where Chinese and other emerging country are already operating.

Therefore, considering the above challenges, the purpose of this research is to reveal the problems which are likely to help those including Turkish traders to take proper precaution in their seaborne trade with, mainly the West African trading area and to bring the spotlights on the lack of competitiveness of certain West African countries may hopefully push the decision-maker to take action in order to improve their service quality and their abilities in protecting their business being extracted from their competitors.

Keywords: West African, Seaborne Trade, Restrictions, Transshipment hubs, Competition, Landlocked Countries

ÖZET

Yüksek Lisans Tezi

Batı Afrika Deniz Ticaretinde Kısıtlar: Önemli Batı Afrika Limanlarında Alan Çalışması

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Güney Afrika hariç, Sub-Saharan Afrika liman sistemleri, uluslararası ticaretteki artan hacmi ve ticaret ile ilgili düzenleyici ve teknolojik uygulamaları karşılayamamaktadır. Bölge limanlarının performansı dünyanın diğer bölgelerindeki limalara göre büyük ölçüde geride kalmıştır. Araştırma grubunda yer alan birçok farklı limanın ise, diğer limanlara kıyasla çalışma kapasitelerinin çok üstünde hizmet verdiği görülmüştür. Uluslararası konteyner hat operatörlerinin bölgedeki varlığının, buradaki limanların gelişimde önemli bir katalizör olmasına rağmen, kurumsal ve düzenleyici refomlardaki yavaş işleyiş sebebiyle istenilen verim alınamamıştır.

Yapılan bu çalışmada, ticaretteki büyüyen hacmi karşılamak için modern altyapı ile sağlanan ekonomik katkılar, maliyetleri açısından uluslararası düzeyde rekabet edebilen, bölgedeki petrol ihracat terminalleri ile örneklendirilmiştir. Belirlenmiş bu performans ile modern tedarik zinciri süreçlerinin uygulanmasını yaygınlaştırmak, bölge limanlarının taşımacılığa ve tüm ekonomik faaliyetlere yapacağı katkıyı artıracaktır.

Çalışmada ayrıca son 6 yılda, Türk sanayicileri ve üreticilerinin Afrika pazarına artan girişleri incelenmiştir. Her ne kadar Türk sanayicileri ve üreticilerinin, farklı bölgeler göz önüne alındığında dengeli bir dağılım olmasa da, özellikle Batı Afrika bölgesinde, tekstil malları ve en önemlisi inşaat malzemeleri

arzına göz ardı edilemeyecek bir eğilimi vardır. Bu eğilim yıldan yıla artmaktadır. Günümüzde Çin ve diğer gelişmekte olan ülkelerin faaliyet göstermekte olduğu Afrika pazarı, Türk ihracatçılar için büyük bir potansiyele sahiptir.

Bu nedenle, bu araştırmanın amacı yukarıda belirtilen olumsuzluklar göz önünde bulundurularak, Türk tüccarlar için de olmak üzere özellikle Batı Afrika'da ülkeler arasındaki rekabet eksikliğini fark ettirerek yetkili kişileri servis kalitelerini artıracak ve rakipleri ile rekabet edebilecek seviyede olamayı sağlayacak , deniz ticaretini geliştirmek amaçlı önlemler almaya yardımcı olacak olası sorunları ortaya çıkarmaktır.

Anahtar Kelimeler: Batı Afrika Deniz Ticareti, Kısıtlamalar, Aktarma Merkezi, Rekabet, Kıyısı Olmayan Ülkeler

RESTRICTIONS OF WEST AFRICAN SEABORNE TRADE: A CASE STUDY ON THE WEST AFRICAN LEADING PORTS

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LIST OF ABBREVIATION

AAS	Average Appreciation Score
ACP	African, Caribbean, and Pacific States
AGPAOC	Association de gestion des ports de l'Afrique de l'ouest et du centre
ANSL	Association of National Shipping Lines
ANOVA	Analysis of Variance
ASS	Average Significance Score
AWAFC	America-West Africa Freight Conference
BBC	British Broadcasting Co.
CEWAL	Central Europe-West Africa Lines
CEO	Chief Executive Officer
CFB	Central Freight Bureau
CIF	Cost, Insurance, and Freight
CMB	Compagnie Maritime Belge
COWAC	Continent-West Africa Conference
CPCS	Canadian Pacific Consulting Services
DAK	Dakar Port
DF	Degree of Freedom in Logistic Regression
DOU	Douala Port
DWT	Deadweight Tonnage
ECOWAS	Economic Community of West African States
ED/C	Port Efficiency/Cost
EU	European Union
EDI	Electronic Data Interchange
EWAC	Europe-West Africa Conference
FEWAC	Far East-West Africa Conference
FDI	Foreign Direct Investment
FOB	Free on Board

GATT	General Agreement on Tariffs and Trade
GCCI	Generalized Cost Comparative Index
GDP	Gross Domestic Product
IMO	International Maritime Organization
IAPH	International Association of Port and Harbor
ISPS	International Ship and Port Facility Security Code
LAG	Lagos Port
LRM	Logistic Regression Model
MC	Monetary Cost
MEWAC	Mediterranean Europe-West Africa Conference
MINCONMAR	Ministerial Conference of the West and Central African States on Maritime Transport
MNL	Multinomial Logit Model
NPM	Negotiation Process and Marketing
OECD	Organization for Economic Cooperation and Development
PA	Port Attractivity
PD	Port Duration
PMAWCA	Ports Management Association of West and Central Africa
PPD/C	Port Performance Discount/Cost
PPI	Port Performance Index
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
SDV	SCAC-Delmas Vieljeux
SNCDV	Société Navale et Commerciale Delmas-Vieljeux
TEU	Twenty-foot Equivalent Unit
TEM	Tema Port
THC	Terminal Handling Charge
UASC	Union of African Shippers' Councils
UKWAL	United Kingdom-West Africa Lines
UNCTAD	United Nations Conference on Trade and Development

UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNTACDA II	Second United Nations Transport and Communications Decade in Africa
WCA	West and Central Africa
WTO	World Trade Organization

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INTRODUCTION

Shipping container and cargo traffic rates are important measures of economic health. During the decade from 2001 to 2011, world container traffic grew substantially, reflecting the expansion of world trade and rapid economic growth in the developing world. Nevertheless, outdated, inefficient ports acted as a brake on burgeoning trade. They will continue to do so unless port capacity and efficiency can be improved.

Sub-Saharan Africa, in general, and West Africa, in particular has a proliferated of ports, few of which are large by world standards. They are generally poorly equipped and operated at low levels of productivity. Few are capable of handling the largest of the current generation of ships, and they are generally unprepared for the recent dramatic changes in the trade and shipping patterns that are now occurring.

This study is based on a detailed review of maritime ports in 4 countries of the West Africa and it attempts to achieve four objectives. Firstly, it aims at giving general information about the West African seaborne trade. This will be achieved through a general analysis of both international and continental perspectives.

Secondly, this study attempts to uncover the problems encountered by West African ports through in-depth analysis of traffic development, institutional and regulatory frameworks, infrastructure development and investment, performance cost and quality, and security arrangements.

Based on the above research, the third objective is to assess the competitive position of the core-four ports acting as transshipment hubs between inward consignment from the rest of the world and different African ports. Apart from assessing the strengths and weaknesses of the ports, this study also tries to enhance the understanding of the current competitive positions of these ports in the market in order to highlight possible restriction in relation with their competitiveness.

And finally the fourth objective is to give some forecast about future port competitiveness in the West African transshipment market. Focus will be placed on what benefits ports would gain through improving their service quality. Through these

forecasted results, practical recommendations to port managers in developing their future competitive strategies can be given.

The above mentioned objectives imply that several hypotheses can be identified. According to Frankfort-Nachmias and Nachmias (1996), hypotheses are tentative answers and must be clear, specific and value-free. Firstly, in container transshipment market, the service provided by the port, the equipment used and the competitive position of ports mainly depends on liners. This is supported by some transport scholars like Ha (2004) who argues that the vessels of liners are the direct users of ports and usually other related parties within the industry do not care (or even know) about such choices. If true, it implies that the competitive position of a port in container transshipment market is directly related to the opinions and perceptions of liners on ports, especially in a region like West African, where competition between ports is tough.

Secondly, while monetary costs and time requirements, which constitute the main West African seaborne trade restrictions, are critical factors in transshipment hub choices, they are not necessarily the only factors. Some other factors less-readily quantifiable must be also considered.

Thirdly, rather than passively awaiting their fate, ports can take more proactive approaches to enhance their competitiveness. Although the competitive position of a port also depends on factors which are not directly related to its service quality, it does not mean that a port has absolutely no control on it. For example, active port marketing can possibly address the problem that users of the port face on frequent basis.

Fourthly, while reasoning in terms of port restrictions and service quality, it is possible that user's reaction to good and poor quality can be different. For example, while poor service would likely discourage users away from a particular port, decent service does not necessarily guarantee an increasing number of port-calls by them. Thus, the decisions of users are not necessarily rational.

Based on the above hypotheses, the whole attempt is to bridge the gap between quantitative and qualitative factors when the matter is to assess port services and in this

case the restriction of the West African leading ports. It implies that analysis can never be comprehensive when either side is ignored.

For the purpose of reducing the scope of this study, two important cargo modes, namely container traffic and general cargo, will be emphasized. We look in less detail at the development of dry and liquid bulk cargo traffic. General cargo constitutes a mix of non-bulk cargo types, among them palletized, break-bulk, and bagged.

CHAPTER ONE
THEORITICAL FRAMEWORK

This part is divided into two sub-parts, which are the Literature Review and the Research Model.

1.1. LITERATURE REVIEW

As Flowerdew and Martin (1997) have noted, it is important for all academic researches to review the major previous works related to the topic so as to give the researcher a strong background when undertaking the research project. The objective of this chapter is to fulfill this fundamental requirement.

Transport is not a new area for research. Several researches have been done on transport, but few focus on port operations in West Africa.

Mutations induced by the introduction of containers in the PAL activities have not been extensively studied. However briefs and reports were prepared on the PAL (Autonomous Port of Lomé) and its area of influence. Handling shipping containers in PAL remains a virgin field which should be researched to determine its influence on the development of transport and port activities in West Africa. Handlers and port facilities that are naturally the key players in the changes in shipping are forced to adapt to new circumstances.

This literature search, the therefore based on the relevant books, papers, publications, reports, which are related to transportation and port activities and especially on the doctoral thesis carried out by the PAL VIMENYO M. (2006).

Transport is a very important element that embodies the influence of human and economic and political systems on the space, (J. RITTER 1971). For Wolkowitsch M. (1982), “transport activities are critical to the survival of individuals and states, because they enable the movement of people and the flow of goods”.

Commercial ports are linkages between large commercial maritime routes and economic activities on land, the port function becomes one of the most characteristic relations of man and the sea So CELERIER P. (1957) believes that “ports, junction points between land and sea, indispensable to navigation, are the marks of this influence in geographic space”.

FREMONT A. (1998) states that “The maritime space is defined as a geographical system whose purpose is to link the continental spaces”.

Dezert (1976), meanwhile, about the competition between different modes of transport states that "shipping is the best market for goods because in recent years, the ship, for it is concerned, tends to a adoption of net freight compete for the aircraft to transport passengers”. In the same direction, VIMENYO M. (2006) states that “all research areas of the geography of the seas and ocean development, it is the maritime and port economy that has most influenced by its challenges issues and plan to triple urban, national, and international involvement”. However often described as unproductive as they do not create such thing as real property, transport is essential to all production activities: manpower, raw materials, energy must be met at the place of production and products brought on the market (J. RITTER 1971).

Through these authors we could say that it is impossible nowadays to talk transportation without reference to maritime activities and the development of the port area as well as the influence of the back country, because for Vigarié A. (1968) “ animation roads is controlled by pulse centers. These are great centers of consumption and production, organizing the implementation mass movement of goods, human intersections where, or leave to which converge the flow of passengers. They can be ports, airports, industrial towns, cities, tourist centers or pilgrimage”. Wolkowitsch M. (1982) to show the importance of transportation infrastructure in spatial planning says: “It is through the construction of a road that leads to the desire to develop and populate the spaces available”.

However shipping like the other modes of transport has changed substantially throughout history. The deep structure of the boat has evolved because of the introduction of new methods of transportation of goods by sea, to improve conditions for

channeling, reducing the time of docking, saving on packaging, on damage and losses due to handling, and by spinning up the buildings.

Doumenge (1965) found that “The emergence and rapid development of new types of big ships have brought profound changes to the requirements of the port development”. Thus the introduction of containers in the second half of the 20th century in shipping and port activities, open perspectives truly revolutionary.

According Vigarié A. (1968) “containerization, however, from the simple idea that the ship will be the least time in port, and is used primarily at sea, and leads the process, has long been known and applied, which consists of to transport the goods in containers shaped parallelepiped. This method avoids handling, fragmented housing is easier to hold, can be loaded on deck, with transshipment traffic patterns, land is easy”.

Adiko J. (1998) in his master's thesis in transport management, said: “Today, the container is packing the most efficient, most economical for shipping, road and rail as it favors the promotion of multimodal transport. Since its introduction in the transport chain, the container has solved the thorny problem of ship-owners namely the speed of handling and thus reducing the residence time of marine shore”.

Cusset J. (2003) says: “For a long time, the management of infrastructure and port services was controlled by state monopolies over the port authorities. However, since the early 1990s, there is a disengagement of varying intensity, depending on the region of the world, government, and openness to private sector management of the port. Cargo handling is no longer the preserve of domestic companies but it tends increasingly to be concentrated in the hands of operators continental size”.

Up in the same direction, Captain Abdou Rahman Bah, Deputy General Manager of the Port Authority of Gambia, representing Mr. Muhamed GULBA, CEO of the Port Authority of Gambia, President PMAWCA (2008) says “Ports of West Africa and Central are changing rapidly due to the new challenges of the global business environment, the viability of our ports through the design of new strategies with specific measures. These measures include facilitating access to our ports by specialized vessels increasingly large and deep, improving reception facilities and the acquisition of equipment for the efficient processing of container”. Rajaonarison V. (2005) in his

master’s thesis thinks “Port operators must invest significant capital for facilities and specialized handling equipment (cranes, container cranes, new terminal etc...). Competition increasingly becoming fierce between the terminals explains among other landscape change port platform. We are witnessing the emergence of international groups that specialize in handling containers. Asians are making a place of choice in this area and the geographic expansion is accompanied by a reorganization of the profession”.

Gbaguidi M. (2007) in his master's thesis on the performance of stevedoring companies says: “If the market for port handling in most Western countries such as France has reformed since 1812, was long the state monopoly in African ports, but it took the nineties for the sector is again reorganized. Indeed, by Ministerial Order No. 12 MTPT / DC / SG / SA, 24 March 1999, the container handling was liberalized at the Port of Cotonou. This liberalization has facilitated the entry into operation of two private companies, the company handling the container terminal (SMTC) and the Bolloré Group company handling Cotonou (COMAN) owned by Maersk Sealand. Thus, the Bolloré Group, through its subsidiary, SMTC, owns 40% of the container market, Maersk Sealand group, 32% and Sobemap, the rest of the market share of 28%”. The example of port reform in another West African country was also given in the case of Ghana. Thus, according to the UNCTAD Report (2003), the Ghana Ports and Harbors Authority (GPHA) launched in September 2001, the first phase of its privatization program that involves the transfer of part handling services to private companies, on the basis of the concession. A second phase will run from July to December 2002 and GPHA will have the status of "landlord port" of regulatory authority and also ensuring the collection of payments by dealers. At the end of this phase, the Port of Tema will be totally privatized.

However, such a market opening for these African ports, international companies can promote their development. It is in that Batandeo B. (1985) in his master's thesis on port management “wonders if the ports of West Africa particularly Lome and Cotonou can overcome their disabilities through better infrastructure management strategy and exploitation”. Port reforms are needed to cope with flows increasingly supported

between African ports and those of the Far East because for Ramandimbiarison Z. (2007) SSATP Program Manager “The port reforms are always difficult. Where once they were often used to improve productivity in a purely domestic context, the reforms are increasingly essential to ensure that the ports simply do not stay on the sidelines of technological and global trends. Shipping companies face higher costs when they enter the ports of West and Central Africa and mainly because of the ineffectiveness of these ports, the low volume of traffic and port facilities inadequate or insufficient”. A service provided by a rich and diverse network, large areas of storage and distribution, enhanced security and modern and efficient equipment are guarantees which is referred to by Gignoux M. (2005) in his master's thesis “Speaking, computing and telematic flows of goods, enhanced security through the implementation of protected enclosures, establishing control of container movements and computer-aided control of access increase efficiency and port security while enabling cost reduction”. Petchelebia A. (1981) in master’s thesis thinks “Ports also play an important role in the global economy. In fact, ports are essential to maritime transport. It is absolutely necessary that the vessels, mostly merchant vessels, have access to well-equipped harbors where they will be able to load or unload their goods”. Further, he adds that these days it is a new orientation of shipping (increased tonnage unit, containerization), ports are continually forced to invest huge sums to develop the access, increase the number and dimensions of their quay berths, increasing the number and power of their handling equipment. For Vimenyo (2006), “Management tool handling also seems to be one of the least controlled at the Port of Lome. Since its inception, the berths of the port are still not equipped with shore cranes. Handling of ships is done by means of their masts loads while the rate of loading and unloading depends on the speed and efficiency of its resources”. Thus according to the analysis of the state of the tooling made by an expert mechanic as part of the study by HPC on the analysis of the PAL management, in September 1992, “All vehicles concerned have been carefully visited and analyzed for most cases in detail. The results are considered reliable on two essential points: age and reliability of handling equipment, as a rule the equipment of the port is rather antiquated, obsolete or depreciated”.

In the same vein, Adza K. (1992) in his master's thesis think "a better competitiveness of the port goes through a comprehensive policy-based marketing to promote the image of the port , improved facilities and better administration". Changes in the field of maritime transport and benefits of reforms that ensued especially in countries of West Africa have been studied extensively. According to the SSATP Working Paper No.84F "The size of vessels, particularly the Container Carrier, will likely continue to grow in the Western region Africa, which necessarily involves efficiency and port infrastructure, and the application of measures to improve safety, including the International Code for the ship and Port Facility Security (ISPS) requires sustained attention". A further example of successful port reform has been described, "The port sector in Nigeria because a just month after the management of container terminal in Lagos has been taken over by private operators, and productivity has increased. Chronic delays attributable to parking areas have almost disappeared, allowing shipping companies to reduce their congestion surcharge of 525 EURO just before the license in March 2006 to 75 Euros in January 2007. Rough estimates show that the only reduction of the congestion charge allows the Nigerian economy savings of about $ 200 million a year".

Also this opening to private the domestic and foreign ports were allowed to benefit from the expertise of the private sector, mostly large multi-port operators, management, modernization of information system and input funds for investment and infrastructure maintenance. According to the World Bank, for 2000 alone, private sector investment in port projects in developing countries have been 2 billion 632 million USD, against 304 million USD in 1992. The main consequences of cooperation between the private and public sectors essentially improved operating performance, increased traffic and lowered port charges, etc... UNCTAD report (2003).

But for these reforms to be effective, it is essential to have a hinterland country and therefore to facilitate connections with the ports, the sine qua non if we want to increase traffic. With this in mind Akoussan F. (1996), in his master's thesis on geo-economic study of the Port of Lome, said the port has the benefit of certain transit traffic tariff advantages over the fees generally charged. He said that traffic determines the

economic results of port operations, especially because, without it, imports and exports were not sufficient to achieve a positive result. This thought is found in TOUSSA (1993) who thinks that "only the quality and efficiency of service may create a differential advantage to ports more opportunistic and more organized". For the Port of Lomé, arises competitor seriousness of the ports of Abidjan and Cotonou which also serve as maritime gateway for Burkina Faso, Niger, and Mali, Segbor P. (1997).

1.2. RESEARCH MODEL

There is beyond doubt that port competitiveness is affected by the services it provides and thus its attractiveness. When an ocean-crossing vessel reaches West African ports, it has different port options to load/discharge its containers and transship them to final destinations and, theoretically, a port which can provide higher utility to port users are likely be called more frequently. Such utility is represented by the combination of various attributes within 'Port Attractivity' (PA) including '' Assessment Process'' and '' non-Assessment Process'' factors. In order to evaluate port attractiveness effectively and forecast the port performance in the future, PA has to be expressed into More-readily analyzable terms (usually monetary) and this section is going to introduce the procedures and models in achieving this objective. To do this, two different research and statistical models will be used, which are:

- Generalized Cost
- Logistic Regression (for Port Performance Forecast)

CHAPTER TWO
STUDY AREA AND METHODOLOGICAL FRAMEWORK

2.1. THE CORE-FOUR PORTS

The following information about the different ports has been collected from their Website (Official Website of the ports) and from many other Websites in which details relating to these ports can be found (World Port Source). The below information are based on the publications in these website and thus constitute the main sources.

2.1.1. Port of Dakar (Senegal)

The Port of Dakar is the western-most point on the continent of Africa. It is also the capital of Senegal and one of the major seaports in West Africa. The Port of Dakar's harbor is outstanding, protected by limestone cliffs and a system of breakwaters. In 2004, over one million people lived in the Port of Dakar, and over two million lived in the Dakar urban area.

Located half-way between the mouths of the Senegal and Gambia rivers on the southern Cape Verde Peninsula, the city has the Wolof name for the tamarind tree (*Dakar*) and a Lebu village once located south of the Port of Dakar's first pier. The Port of Dakar is an important service and industrial center for West Africa. Industries located there can fish, mill flour, brew, assemble trucks, and refine peanut-oil and petroleum. The Port of Dakar's Leopold Sedar Senghor International Airport is a major stopping point for flights traveling between South America and Europe.

Picture 1: Port Of Dakar (Senegal)



Initially created by the French colonial power in other to strengthen the growing trade between countries around the Atlantic Ocean. General illustration can be summarized in below table and figures.

Table 1: Dakar Port General Information

	Map reference number and Description	Length (m)	Draught (m)
	SOUTH AREA		
Mole 1	Container / General cargo (11 to 17, 112)	150 to 448	9 to 10
Mole 2	General cargo (21 to 25, 213) (24,25, 213) : Under repairs	450 / 150	10 / 9
Mole 3	Container / General cargo "Mali area" (31, 32)	360	10
	NORTH AREA		
Mole 4	Cereals / General cargo (41 to 44)	100 to 200	7 to 10
Mole 5	Phosphate (51, 52)	160 - 200	08-Nov
	Extension TAC / Container Terminal	424	
Mole 6	Containers (61, 62)	424	11 High tide
	Oil (64)	150	8
Mole 8	General cargo		
	Sulphur / gencar (81, 82)	350	10.2
	Sulphur / gencar (83)	150	10
Mole 9	Hydro-carbon		
	91 92 1 2 910	235 267 100 100 170	10 11 10 10 4.5/6.5
	North Jetty / Hydro-carbon	200	9

Source: Dakar Port Authorities.2010

Table 2: Dakar Port Storage Capacity

Bonded warehouses	60,000 sqm
Container storage area	150,000 sqm
General cargo storage yard	360,000 sqm
Plugs for reefer containers	500
Free storage zone for cargo in transit	17,000 sqm

Source: Dakar Port Authorities. Official Website.2010

Table 3: Dakar Port Stevedoring Equipment

	Quantity	**Capacity**
Shore cranes (Gottwald)	5	100 T
Super stakers	30	45 T
Tugs	5	700 to 1,200 hp
Pilot	13	
Multipurpose cranes	1	100 T
Mobile cranes	1	10 T
Mobile cranes	1	16 T
Floating cranes	1	60 T
Floating cranes	1	120 T

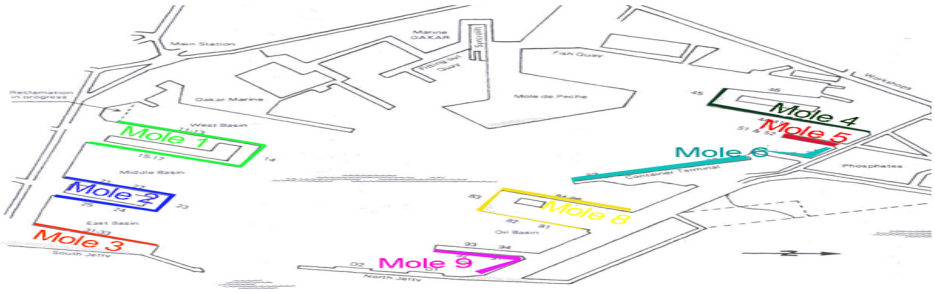
Source: Dakar Port Authorities. Official Website.2010

Table 4: Dakar Port Other Facilities

	Yes/no
Bunkering	Yes
Water	Yes
Slops	Yes
Shipchandler	Yes
Shipyard	Yes

Source: Dakar Port Authorities Official Website.2010

Figure 1: Picture of Physical Facilities



Source: Dakar Port Authorities. Official Website.2010

2.1.2. Port of Tema (Ghana)

The Port of Tema lies on the shores of the Gulf of Guinea in southeastern Ghana. About 29 kilometers east-northeast of Accra, the country's Capital. Tema is one of two deep-water ports in Ghana, and it is the largest seaport. In 2005, about 209 thousand people lived in the Port of Tema.

Once a small fishing village called Torman, the Port of Tema was established in 1962 with the construction of its deep-water harbor (the largest man-made harbor in Africa). Only 29 kilometers from Ghana's capital city of Accra, rail and road links make it Ghana's biggest and most important port.

Even though the Port of Tema is the younger of Ghana's two seaports, it handles 80% of the nation's international cargo. In 2006, the Port of Tema handled 7 million tons of imports and 1.1 million tons of exports on 1994 vessels. Included in the cargo were 425.4 thousand TEUs of containerized cargo.

The Port of Tema's harbor covers 166 hectares of the Atlantic Ocean. The port has 12 deep-water berths on two quays with paved apron offering 2.2 thousand square meters. Quay 2 contains a dedicated state-of-the-art container terminal with a quay of 570 meters with alongside depth of 11.5 meters. The port also includes facilities for roll-on/roll-off vessels, a berth for oil tankers, warehouses, transit buildings, and facilities for cold storage. A fishing harbor with facilities for storing and selling fish is located east of the commercial harbor. The Port of Tema also has a 100 thousand DWT dry dock and slipway facility.

The Port of Tema offers 77.2 thousand square meters of paved storage area for containers, conventional cargoes, and steel products. Closed storage areas of a total 25 thousand square meters are made up of six sheds with capacity to store a total of 50 thousand tons of cargo. The Port of Tema includes five off-dock container terminals that receive, store, and deliver containerized cargos.

Picture 2: Port of Tema (Ghana)



Table 5: Tema Port General Information

Map reference number and Description		Length (m)	Draught (m)
Main port			
1	Containers (Berths 1, 2)	400	11.5
2	Containers + Roro (Berth 2N)	200	11.5
3	All cargo (Berth 3)	200	10
3	General and bagged cargo(Berths 4, 5)	183	9
4	All cargo / Sheanuts (Berth 6)	183	8
3	General and bagged cargo (Berths 7, 9, 10, 11)	183	8
5	All cargo / palm oil, tallow (Berth 8)	183	8
6	Clinker (Berth 12)	183	8
	Private berth for Valco	175	9.6
	TOR Terminal (Tanker vessels)	244 (can manage with 9.8 on high water)	9.6
	CBM (Tanker vessels)	203	12.2
	SPM (Tanker vessels)	No restriction	No restriction
Inner fishing harbor			
	Berth 1	58	3.3
	Berth 2	55	3.6
	Berth 3	52	5.2
	Berth 4	73	4.6
	Berth 5	73	4.4

Source: Ghana Port and Harbor Authority. Official Website.2010

Maximum permissible draft for general cargo vessels is 9.80 m. Basis High tide to berths 3. Therefore, it is compulsory before sending a vessel to Tema with an expected arrival draft exceeding 10 m to approach the agency in Tema for confirmation / Tankers arrivals and sailings are between 06.00 and 18.00 hours GMT / Bottom of harbour consists of sand and mud with frequent hard rocky ground / Water density : 1.025 / ISPS : Level 1 / Weather : May to July : rainy season. August to September : small rains. December to March : dry NE Hartmattan with poor visibility (300m/400m). Winds from W and SW all year except December to March, when there is Harmattan. Dangerous winds are line squalls from E, January to July, swell in the harbour / Private stevedoring.

Table 6: Tema Port Storage Capacity

Bonded warehouses	12,000 sqm
Container storage area	150,000 sqm
General cargo storage yard	15,000 sqm
Plugs for reefer containers	400

Source: Ghana Port and Harbor Authority. Official Website.2010

Table 7: Tema Port Stevedoring Equipment

	Quantity	Capacity
Gantry cranes	3	50 T
Tugs	4	1320 - 2200 hp
Multipurpose cranes	2	35 T

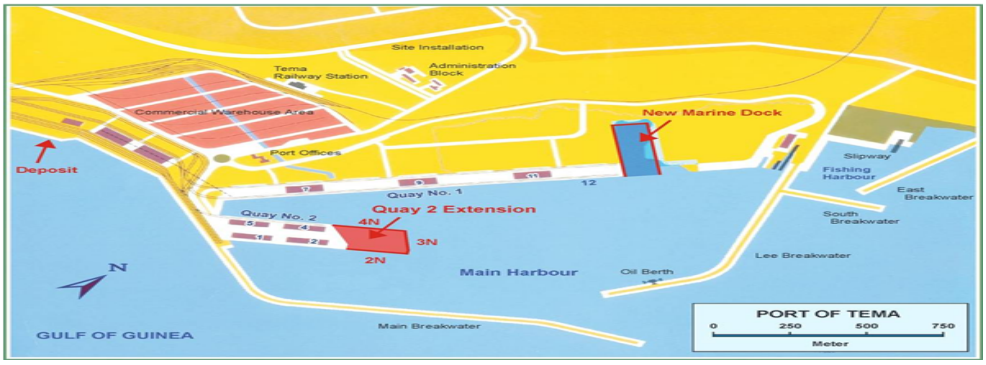
Source: Ghana Port and Harbor Authority Official website.2010

Table 8: Tema Port Other Facilities

	Yes/No
Bunkering	yes
Water	yes
Slops	yes
Shipchandler	yes
Shipyard	no

Source: Ghana Port and Harbor Authority. Official Website.2010

Figure 2: Tema Port Picture of Physical Facilities



Source: Ghana Port and Harbor Authorities. Official Website.2010

2.1.3. Port of Lagos (Nigeria)

The Port of Apapa is the port for the City of Lagos in the Rivers Province of Nigeria. Located west of Lagos Island across the harbor from the city, Apapa is one of the country's administrative local government areas. Lagos Port has three major components, Lagos, Apapa, and Tin Can Island.

The Nigerian Ports Authority regulates all major ports in Nigeria, including the Port of Apapa. While the agency is being privatized, its mission is to contribute to national economy and well-being through efficient management of port operations,

optimal allocation and use of resources, diversification of revenue sources, and maintaining adequate returns on investments.

Picture 3: Port of Lagos (Nigeria)



Table 9: Lagos (APAPA) Port General Information

Map reference number and Description		Length (m)	Draught (m)
1	Apapa 1 - Bulk & General cargo (Apapa Bulk Terminal Ltd)	157	13.5
1	Apapa 2 - Bulk & General cargo (Apapa Bulk Terminal Ltd)	146	13.5
2	Apapa 3,4 - Bulk & General cargo (Apapa Bulk Terminal Ltd)	152	9.6
2	Apapa 5 - Bulk & General cargo (Apapa Bulk Terminal Ltd)	152	9.6
2	Apapa 6 - Container & General cargo (ENL Consortium)	18	9.6
2	Apapa 7 - Container & General cargo (ENL Consortium)	152	9.6
2	Apapa 8 - Container & General cargo (ENL Consortium)	122	9.6
2	Apapa 9 - Container & General cargo (ENL Consortium)	152	9.6
2	Apapa 10 - Container & General cargo (ENL Consortium)	220	9.5
2	Apapa 11, 12 - Container & General cargo (ENL Consortium)	180	9.5
3	Apapa 13 - Container & General cargo (ENL Consortium)	150	9.6
4	Apapa 14 - Container & General cargo (ENL Consortium)	150	9.6
5	Apapa 15 - Containers (APMT)	150	10.5
6	Apapa 16, 16A - Containers (APMT)	180	10.5
6	Apapa 17, 18, 18A - Containers (APMT)	150	10.5
7	Apapa 19, 19A - Bulk & General cargo (DANGOTE)	180	11.2 - 11.5
8	Apapa 20 - Bulk & General cargo (DANGOTE)	150	9.8

Source: Nigerian Port Authority. Official Website.2009

Table 10: Lagos Port Storage Capacity

Logistic Base One	80,000 sqm
AFT Warehouse	80,000 sqm
KCT Bonded terminal	30,000 sqm
Apapa warehouse	765 sqm
Covered warehouse	

Source: Nigerian Port Authorities. Official Website.2009

Table 11: Lagos Port Stevedoring Equipment

	Quantity	**Capacity**
Forklifts	30	
Tugs	3	1,490 bhp
Tugs	2	1,280 bhp
Multipurpose cranes	5	
Mobile cranes	25	
Floating crane	1	250 T
Transtainer crane	1	35 T
Portainer cranes	2	35 T
Quay crane		5T
Conveyors		70 t/h

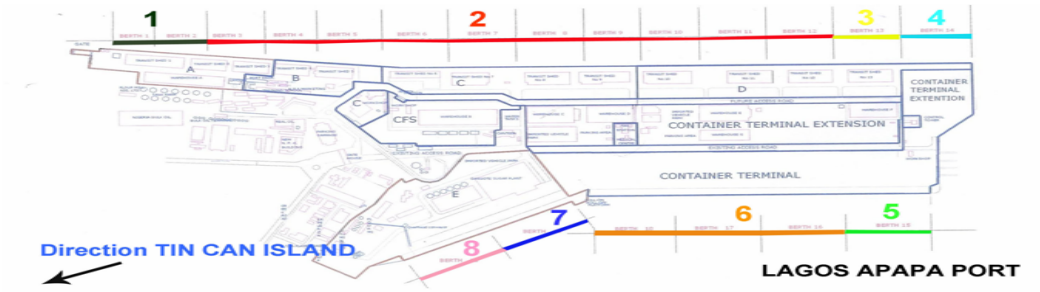
Source: Nigerian Port Authorities. Official Website.2009

Table 12: Lagos Port Other Facilities

	Yes/no
Bunkering	Yes
Water	Yes
Slops	Yes
Shipchandler	Yes
Shipyard	Yes

Source: Nigerian Port Authorities. Official Website.2009

Figure 3: Lagos Port Picture of Physical Facilities



Source: Nigerian Port Authority. Official Website.2009

2.1.4. Port of Douala (Cameroon)

The Port of Douala is the Cameroon's major seaport. Located on the shores of the Wouri River estuary some 24 kilometers upstream and about 210 kilometers west of Yaounde, the city has road, rail, and air connections to all of the country's major cities. This deep-water port is home to most of the country's international trade, and it has facilities dedicated to cargoes that include timber, gasoline, bauxite, and bananas. It has serves a busy fishing industry.

The Port of Douala is among central Africa's most important industrial centers. It is home to breweries, food-processing plants, and factories that produce palm-oil, soap, building materials, plastics, soaps, glass, bicycles, and paper goods. The port includes a ship repairing facility.

Picture 4: Port of Douala (Cameroon)



Table 13: Douala Port General Information

Map reference number and Description		**Length (m)**	**Draught (m)**
1	Tankers Terminal	140	7.3
2	Alumina	150	8.5
3 to 11	Conventional	150	8.5
12	Banana / Fruits	150	8.5
13	Bulk wheat	150	8.5
14 to 16	Containers + RoRo vessels (2 gantry cranes)	150	8.5
51	Bonaberi : Gas and Liquid Products	130	8.5
52	Bonaberi : Clinker + Gypsum	160	8.5

Source: Autonomous Port of Douala publication 2010

Table 14: Douala Port Storage Capacity

Bonded warehouses	52,000 sqm
Air storage	65,000 sqm
Container storage area	159,661 sqm
General cargo storage yard	90,009 sqm
Plugs for reefer containers	120
Cold storage	8,900 sqm

Source: Autonomous Port of Douala publication 2010

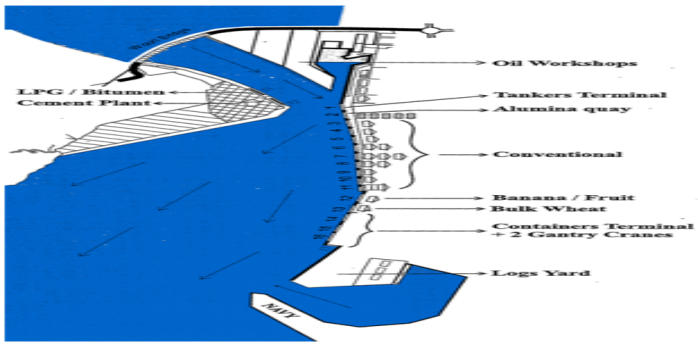
Table 15: Douala Port Stevedoring Equipment and Other facilities

	Quantity	**Capacity**
Superstakers	10	45 T
Gantries	2	
Crane	1	5 - 20 T
Cranes	9	20 - 40 T
Elevators	19	0 - 3 T
Elevators	99	4 - 7 T
Elevators	12	7 - 12.5 T
Elevators	5	12.5 - 20 T
Elevators	7	28 - 32 T
Elevators	6	32 T
Tugs	4	

	Yes/no
Bunkering	Yes
Water	Yes
Slops	No
Shipchandler	Yes
Shipyard	Yes

Source : Autonomous Port of Douala publication 2010

Figure 4: Douala Port Picture of Physical Facilities



Source: Autonomous Port of Douala publication 2010

2.2. STUDY APPROACHES

There are two common approaches used in evaluating ports performance. The first approach is known as the engineering approach (Talley, 1988) where performance is evaluated through calculating the maximum throughput that a port can physically handle under certain condition. In other words, the engineering approach assumes that port competition is negligible and different ports possess different natural hinterlands. As noted by Juhel (2001), the major objective of an engineering approach in port developments is to ensure that the port can be kept open so as to sustain trade flows.

The other approach is the economic approach (Talley, 1988) which argues that, rather than physical outputs, port performance should be based on a port's ability to compete for throughputs depending on the minimum costs that ports provide. This approach assumes the existence of competitions and ports need to attract cargoes from common hinterlands and port effectiveness is determined by the port's growth in traffic vis-à-vis potential rivals (De Lombaerde and Verbeke, 1989). The difference between the engineering and economic approaches had also been highlighted by Song and Han (2004) who distinguish the differences between productivity and (economic) efficiency.

The debate between the two approaches has directly addressed the concern of Meersman and Van de Voorde (1998) who argue that the central questions facing contemporary port are the ways to sustain throughput growths and what strategies should be adopted with regard to their positioning on current and future markets. As we will discuss latter in this study, in West Africa, Port competition is intensive (all presenting the same symptoms of miss-management and physical restrictions) and natural hinterland, including those African landlocked countries, becomes increasingly rare. This process has been accelerated by the increasing need for transshipment traffic since the final destination of transshipment cargoes are not the immediate surrounding areas of the transshipment hubs. Under this situation, ports common hinterlands have become even more common.

Although, West African ports aren't well equipped to handle the business as it deserves, the competition between them, is becoming more intense because of the drive for cost reduction in liner shipping and the geographical proximities between them. Moreover, since major trunk liner services always call at least two ports in West Africa, liners' choice is perceived to be quite flexible and ports need to compete in order to establish themselves as transshipment hubs and improve the provided-services.

The above confirms the argument that economic approach is more appropriate in analyzing port functional problems and its competitiveness. This is endorsed by Johnston et al. (2000) who convincingly argued that the study of transport nodes does not only involve the morphology of physical facilities but also the whole systems of different competing players.

Considering above statements, for this study, the engineering approach and most of the time the economic approach will be applied in analyzing port performance and encountered problems.

2.3. DATA COLLECTION

Uncovering the situation of a port, the encountered problems by port facilities users and eventually forecasting the future prospects is possible only when relevant data is available.

While it might not be too difficult to collect quantitative data (Although commercial confidentiality had made the issue a bit more complicate), it is not the case for qualitative data because the monetary values of such factors were extremely scarce and thus not readily available. It implies that further qualitative information is required for data analysis and interpretation of port major restrictions in West Africa.

Traffic analysis is usually insufficient to perform comprehensive port analysis and field research, usually in terms of a questionnaire survey, was needed to look into the causes of the identified trends. The questionnaire survey is *a quick, easy and painless way of recruiting people while researchers usually know something about their views on the topic* (Flowerdew and Martin) which could facilitate research analysis.

Based on such support, in this study, the necessary qualitative data in assessing port attractiveness was collected through a questionnaire survey, conducted from the half of December until the end of January.

2.3.1. Questionnaire Survey

In order to conduct an in-depth analysis on the above mentioned core ports, the inclusion of non-monetary factors into consideration is necessary. As Powell (2001) emphasized, transport analysts should be based on a large number of criteria, both monetary and non-monetary. Acting so will enhance understandings of port choice.

2.3.1.1. Identification of Survey Participants

Before inviting survey participants, it was necessary to identify who they were. In this survey, the search of questionnaire respondents was based on non-probability sampling. There was a need to target a particular type of survey respondents.

Since the port is the platform through which containers and ships operations are performed, probability sampling was not an appropriate method because the most critical port choice decisions were usually made by one or few senior official(s) within the port main users (Shippers, liner shipping companies etc….). Thus it is important to find out who were authorized in making such decisions. As mentioned before, liners were the major decision-makers in transshipment hub choices comparing the port's offers in terms of facility and equipment performance. In fact, ports don't sell services directly to shippers and thus liners where their major customers and the contracts with them were the single largest determinant of business volumes. The argument that liners were the major decision-makers was further strengthened through various in-depth interviews (See later in this chapter) with various experts within the industry including port operators and liners themselves. According to them, once the top liners had made their port choices (here we will see through analyzing decision making process of liners their expectations and how far our West African core ports are to meet these expectations), in most cases, feeder vessels would likely follow and thus ports usually put their marketing focus on these major ocean-crossing liners.

Thus, this survey was directed towards these ocean-crossing liners. 25 Container liners, all belonging to the global top 30, were identified and questionnaires were distributed to their West African headquarters and specially those which are in our scope of research namely Dakar (Senegal), Douala (Cameroun), Lagos (Nigeria) and Tema (Ghana). Targets consisted of Local General Managers, Operation Managers and Contract Managers of ports and terminals. These 16 liners were identified because they were the dominant players of the West African transshipment market. The relevance of personnel, together with the relevance of the questions on the questionnaire, was further strengthened by reviewing interview targets with interviewees and the author was

guaranteed that all the targeted interviewees were the authorized decision-maker at the time when this survey was conducted.

During the survey, the research's trustworthiness, as performers of this survey, was questioned and fulfilling his promise to maintain information confidential was the major obstacle in persuading targeted interviewees to participate in the survey as, most of the case, many of them felt the pressure of being accused of releasing confidential information to third parties by their respective management hierarchy which could threaten their career. Their concern was understandable because while it was easy for the interviewer to give confidentiality promises to participants, it was much more difficult to fulfill them and survey participant usually had little control on data processing and publications afterwards. Therefore, in order to gain their trust, the author assured that their names and personal information would never be shown on any publications, including this thesis.

Moreover, instead of showing names, the names of liners were coded alphabetically (Liner ''A'' ''B''etc…)

2.3.1.2. Designing the Questionnaire

Apart from persuading interviewees to participate in the survey, it was equally important to design a questionnaire which could be useful in fulfilling this study's objectives. Here three questions needed to be addressed. The first one is: What approach should be used?

According to previous studies on social science consulted by the author, survey questionnaire was mainly divided into two approaches – revealed preference and stated preference. The former analyzed and collected information based on the actual behavior of targeted interviewees, while the latter collected information based on hypothetical situations usually requesting interviewees to take a choice preference test. While there are pros and cons for both approaches, this study has chosen revealed preference approach because it was perceived that virtually all survey participants possessed vast experiences in using the core-four ports for container transshipment and the discharge of

some project cargo shipped under bulk basis. Also using the revealed approach enabled the questionnaire to capture liner opinions based on their actual experiences and their perceptions on these ports acting as transshipment hubs were likely to be more accurate.

Also, this questionnaire used a Likert-style format which mainly consisted of closed-ended questions requesting respondents to give 'attitudes' and 'opinion' on various statements of factors affecting transshipment hub choices. People with certain attitudes could reflect their inclination to act or react in a similar manner when confronted with certain stimuli and 'what they think' would play an important role on 'how they act'. This was very relevant here as all targeted interviewees here were experienced users of the core-four ports. The advantage of attitude and opinion collections was also endorsed by Flowerdew and Martin (1997: 132) who noted that such data possessed the potential to predict how people might behave in the future; (including) transport decision.

Although admittedly data on attitudes could not be 100% reliable due to psychological uncertainty and the possibility of having different attitudes on the same issue under different circumstances, as discussed before, perceptions and beliefs would often affect the final decisions of liners in most cases. Thus, the author was sensible to believe that attitudes and opinions should be included in transshipment hub choice analysis. Although attitude and opinions were the most difficult category of social survey data to collect and zero error was virtually impossible, the quality of such information could be improved through professional wordings, clear instructions and making respondents feel respected.

Another question involved guessing the expected problems from respondents when they filled in the questionnaire. Based on previous studies and author's experiences on the field, several problems could be expected. A questionnaire survey often posed the risk of biased responses. There is the possibility that some interviewees might give relatively emotional answers at the time when they fill in the questionnaire. For example, if the survey was conducted at a time when some unhappy incidents happened between users and suppliers, there would possibly be a risk that the user would likely to give rather emotional response which did not reflect the realistic situation.

Finally, of course some interviewees might give responses without reading the instructions carefully, which in turn provided irrelevant and useless information.

Therefore, to minimize these problems, certain measures had been carried out. Firstly, the author made special reminders to interviewees, through instructions on the survey questionnaire (See Appendix A) and phone calls, that they should give responses based on their experiences on the overall performance and expectation on the ports concerned in the last and forthcoming three years. Also, interviewees were reminded that they should only give opinions on the performance of ports of which their respective companies had actually used for transshipment before.

The third question involves the objective of the questionnaire survey, or what exactly does this questionnaire wanted to achieve. This question can be answered more easily by understanding the major problem of this study. The difficulty to measure the monetary values of qualitative factors directly is due to several reasons. Firstly, it is extremely doubtful whether respondents know the exact amounts that they were willing to pay for different qualitative factors due to the internalization of the characteristics of ports by decision-makers.

Secondly, due to the above problem, it implied that a questionnaire which requested respondents to give the exact amounts on qualitative factors would be too complicated and bore the risks poor response rate.

Thirdly, even if respondents could give an answer to the above question, measuring the monetary values of qualitative factors would bear the risk of falling into the trap where the shortcomings of stated-preference approach were best illustrated.

The above queries have posed a question mark on whether directly measuring the monetary values of qualitative factors could realistically reflect the choice-making process of liners which implied that the only thing that could be done was to estimate the values of qualitative factors indirectly. Thus, the objective of this questionnaire was to estimate the relative significance of qualitative factors to monetary cost and the impression of port users on these qualitative factors offered by different West African port.

The layout of the questionnaire can be found in Appendix A. The author tried his best to make the questionnaire as ‘’ respondent-friendly’’ as possible by being kept reasonably short, easily understandable but at the same time professional. The questionnaire is divided into four sections which will be discussed here.

2.3.1.3. Section A

In this section, survey participants were required to give their (and their company) background information. Apart from keeping records, from assessing the information of the company background, the author also attempted to get a better understanding about the background and characteristics of liners. Questions included the current transshipment hub choices of liners to different West African port, the types of terminals that they are using and whether they had any plans to construct dedicated terminals for transshipment.

2.3.1.4. Section B:

In this section, interviewees were requested to give opinions on the significance of different factors in affecting port’s attractiveness acting as container transshipment hub to liners. Due to the nature of the question in this section, questions were listed using an attitude battery approach so that respondents would find the statements easy to read and answer.

The next question was to decide what factors should be included. In transport analysis, the types of non-monetary factors greatly depended on the nature of the movement, transportation of passengers and goods, between modes and choice within mode….etc. based on the nature of this study, a number of factors had been identified as the mostly likely criteria for port selection and thus assessment of port competition through the constraints and problems encountered by the said-liners. These factors were identified based on the belief that port competitiveness involved the effectiveness of inputs from different aspects of the ‘port cluster’ which included public and private

sectors. The coordination and interaction within the cluster would decide the operational effectiveness and strategies of a particular industry, including ports. The performance of a port should be based on various factors of which the qualities are based on the effectiveness of different sectors of the port as well as their interactions and port authority policy and regulations (mainly the responsibility of public sector), port operator's speed in responding to new demands (mainly the responsibility of supporting industries), availability of professional personnel (mainly the responsibility of educational institutions), etc.

There were two queries requiring further explanations. Firstly, some previous studies have included *port management of private port operator* as an independent factor for consideration Clark et Al. (2001), Lirn et Al. (2004), etc. while it is undeniable that port management plays a significant role in port competitiveness, the effects of port management had already been directly reflected in various categories listed in Table 16, delays and damage in reliability, availability of professional personnel in personnel and facilities, relations with customers, response to changing customer demands and reputation in other qualitative factors, etc.

An understanding of the significance of the categories listed in Table 17 would certainly give readers a clear idea on the significance in port management as well as management performance of different ports. Thus there is not a necessity to include port management as a separate component anymore.

Table 16: Major Factors Affecting Container Transshipment Hub Choices

PORT LOCATION FACTOR
A) Monetary aspect
- Vessel operation monetary cost from transshipment to destination port (Journey Cost)
B) Time aspect
- Average journey time form transshipment to destination port (Journey time)
C) Locational efficiency
- Location of port with respective to distance between transshipment and destination port (locational efficiency)
PORT FACTOR
A) Monetary aspect
- Port Charge (Terminal handling charge and port dues)
B) Time Aspect
- Average time to load/unload containers from vessel - Efficiency of port in container-handling
C) Qualitative aspect
- Cases of delays in loading/unloading containers
- Records of damage during container-handling
- Custom procedures (Inspection, Documentary, etc.)
- Port authority policy and regulations
- Accession to port

Table 16: Major Factors Affecting Container Transshipment Hub Choices (Devamı)

- Quality of port infrastructure for handling containers
- Quality of port superstructure for handling conaitners
- IT and advanced technology for port operations
- Dedicated terminals and facilities for container transshipment
- Supporting industries (Warehousing, insurance, etc.)
- Quality of other services (Pilotage, towing, mooring, etc.)
- Availability of professional personnel in port
- Preference of shipping line clients/shippers
- Personal contracts/relations between port operator and liner shipping companies
- Efforts of marketing on the port by port authority
- Reputation of port within the region
- Port operator's speed in responding to liner shipping companies' new demands and requests

Source: Gathered and Constructed by the author for assessment purposes

The second query involved whether geographical location should be included as the effects of geography were also reflected in monetary costs and time. The monetary cost includes travelling from Port A to Destination X, time required to travel from Port A to Destination X, etc. with such understanding, perception in geographical location should be included as a separate category, termed as ' Locational Efficiency' in this study.

Survey participants were required to assess the significance of these factors in affecting their transshipment hub choice by giving 'Significance Scores'. Scoring was preferred to other methods, notably ranking, because of various reasons. Firstly, if the method of ranking were used, problems might arise when interviewees consider that some of the factors are more or less similar in significance to each other. In reality, it is

doubtful whether interviewees really make decisions through looking at a table of factors and rank them. As mentioned, liners usually make a choice through evaluating mixed sets of options consisting of different status of factors available from different ports for their choice. Also using ranking bears a risk by assuming that all the factors identified would have at least some implications on port choice decision-making process by all interviewees which is not necessarily true. Finally recognizing that such data were ordinal in nature, transforming data through scoring into cardinal terms (or 'cardinalisation') has more mathematical justifications than other available alternatives. Using the *expected value method*, Nijkamp et al. (1990: 75) offered mathematical justifications on this issue:

'' *(an) Approach to a qualitative evaluation…is to ask a respondent to express his information on impacts of alternatives in ordinal form (for example (Giving scores of) 1= least attractive, 2= One but least attractive…I= most attractive). Such ordinal information is in practice often treated as if it were cardinal: Operations such as addition, subtraction and multiplication are used with cardinal data without paying attention to the ordinal character of the figures….Is there a justification for such an approach?...It is interesting to note that the expected value method, when applied to ordinal project effects, yields a justification (for this approach)…if a uniform distribution is assumed for project effects on a range between 0 an I…(Using expected value method), the expected cardinal value of the i-th number is i/I. For example, the quantitative values assigned to '1 to 4' are: ¼, ½, ¾, I, respectively. It is not difficult to see that… these expected values fully correspond to the original numbers… (of which its) statistical distribution lies on a linear cordinalisation curve''.*

The argument of Nijkamp et al. (1990) is also supported by Frankfort-Nachmias and Nachmias (1996) who argued that mathematical and statistical operations on such data are sensible as long as the researcher does not change the order of the data during the transformation process.

Fully appreciated the fact that the cardinalization of ordinal data was a very tricky task, apart from getting the best academic support, we also put a lot of effort in questionnaire design to make such operation as sensible as possible. Apart from

choosing scoring rather than ranking (see above), instructions were designed carefully to request survey respondents to try their best to give scores based on a ‘ Rational cardinal scale’ (See Appendix A).

The ASS (Average Significance Score) scale table can be found in Table 17 a score of zero was necessary to avoid the mistakes of previous scholars who assumed that the factors identified must necessarily have implications to all targeted interviewees.

Table 17: Significance Score Scale

SCORE	**DEGREE OF SIGNIFICANCE**
5	Very Significant
4	Significant
3	Some Significance
2	Little Significance
1	Minimum/Nearly No Significance
0	Not Significance at All

The zero score requires more explanations. Respondents were expected to give zero score to any factors of which they believed that no consideration was required. Without the necessity of even minimum significance, zero score ensured that this particular factor did not affect the generalized costs of using a port for transshipment no matter how good or bad that particular port performed in this factor. In other words, a particular factor with zero score could not change the values of the generalized costs.

2.3.1.5. Section C

To compare the service quality between the core-four ports, this section consisted of an evaluation exercise asking survey participants to give their opinions on the performance of the core-four ports. Here only port performance factors were included for analysis. Again, similar to significance scores, scoring was preferred due to the reasons discussed before.

In this section, respondents gave ‘Appreciation Scores’ (in agglomerate, Average Appreciation Score, or AAS) to assess the performance of ports in different factors in Table 16 Appreciation scoring was an effective way to observe the quality of services offered by the ports concerned since respondent experience in using the services was very important in deciding whether liners would use a particular port for transshipment. As one could easily identify the factors which give negative impacts to port performance, AAS is a valuable indicator in evaluating what factors a particular port should improve in enhancing its attractiveness as it measures respondent’s viewpoint to a particular issue.

Different from significance score, opinions on the performance of service quality could be positive or negative (or neutral) and thus both positive and negative scores should be available for selection. The AAS scale is based on what a port user regards as extremely important; it implies that it has already affected ‘Values and Perceptions’. In this study the word ‘very’ is regarded as the ceiling for rather ‘objective-subjective judgments of the significance of different factors and performance of ports. Scores higher than ‘Very’ are regarded as part of ‘subjective-subjective judgment’. In fact, during the survey and in-depth interviews, some interviewees indicated that they had special preferences to some port even though they know that the services offered by those particular ports were significantly worse than other available options. The AAS scale table can be found in Table 18.

Table 18: Appreciation Score Scale

SCORE	**PERFORMANCE OF PORT**
+3	Very positive
+2	Quite positive
+1	Somewhat positive
0	Neutral
-1	Somewhat negative
-2	Quite negative
-3	Very negative

Although AAS gave immediate impressions on the strengths and weaknesses of different ports, it was inadequate to conclude whether a port performed better than others because the significance of different factors was yet to be inscribed. This step was very important as there were circumstances where a port might perform well in many insignificant factors while another port performed well in relatively few but very significant ones and under such circumstances, wrong conclusions might be drawn.

2.3.1.6. Section D

Overemphasis on close-ended questions might bear the risk of missing out some aspects like specific preference of individuals, especially since closed-ended questions could possibly neglect the reasons why respondents arrived that a particular point of view (Frankfort-Nachmias and Nachmias, 1996). Recognizing such deficiency, the final part of the questionnaire consisted of several open-ended questions which allowed survey respondents to give their opinions on the issue freely. Some open-ended questions in the questionnaire included reasons why ports give particular scores to particular aspects of port performance, any particular ports of which interviewees especially like or hate (possibly without any specific reasons and purely perception) and any further comments on the questionnaire or the West African transshipment and container market.

2.3.2. In-depth Interview

Mathematical modeling and closed-ended questionnaires might not be able to cover all aspects of restriction and difficulties encountered by the port users in West Africa due to complexity within the industry. This was supported by Frankfort-Nachmias and Nachmias (1996) who noted that qualitative research could yield rich information that cannot be attained through quantitative one. Although this problem had been partly addressed by open-ended questions in the questionnaire, it was by no means

addressing the core issue completely because respondents were still being ‘imprisoned by the researcher’s beliefs and expectations reflected in the questionnaire. Indeed, in many cases, questionnaire was usually standardized and untailored to individual’s circumstances which made responses not completely ‘respondent-friendly’.

Thus conducting qualitative in-depth interviews was necessary. Apart from addressing the problems of the questionnaire, through in-depth interviews, the researcher also tried to obtain further detailed information about port operator strategies and the decision-making process of liners in transshipment port choice based on the quality of port facilities. Furthermore, in-depth interviews were necessary to check the plausibility of the modeling assumptions.

Between December 2011 and March 2012, 12 (twelve) interviews with various experts within the West African Container market and transshipment were conducted successfully (Hereafter called ‘interviewees’), as follows:

- A senior official from West African Container Terminal Expert, Dakar
- A senior official from IAPH office in Lagos
- A senior official from Port of Tema
- A senior official from Municipal Port Management, Douala
- A senior official from Port Authority of Dakar
- A senior consultant from an Lagos-based transport consulting Company
- A senior Consultant from Tema-based shipping consulting Company
- A senior editor from Containerization International, London
- A senior editor from Lloyd’s List Shipping Journal, Dakar
- A senior officials from three liner shipping companies

These interviews, mainly consisted of semi-structured dialogues, were conducted in pleasant and relaxed environments, usually either through phone or with the presence of some West African friends. Given distance and the fact that the author can’t be physically on the ground, he was represented by some other students who conducted the face-to-face meetings on his behalf which he personally arranged. Results arose from that interviews are reliable considering the seriousness with which they were conducted.

Under such arrangements, they could offer opinions in a detailed and more critical manner while the researcher could exert better control on the interview situation.

Like the questionnaire survey, the major problem here involved confidentiality with considerable potential participants refused to accept interview requests. Even those who accepted they were sometimes reluctant to offer key information citing confidentiality. This was understandable since keeping information closed to the outside world was an important strategy to sustain the competitive advantages of firms (Porter, 1985). Those conducting the interviews on behalf of the author faced some problems of confidentiality relating to the anonymity. So to assure them, the researcher has also guaranteed that the information would only be used for research purposes and any personal details could not be released in this thesis.

During these interviews, three major aspects have been discussed, namely the strategies of port/multimodal operators, the decision-making process of liners in transshipment hub choices and general questions. In the following, these aspects will be discussed one by one.

For strategies of port/multinational port operators, three major issues were discussed. Firstly, interviewees were asked to give opinions on the strengths and weaknesses of the core-four ports. As interview targets did not only compose of liners, it was anticipated that more diverse and objective views could be obtained from them.

Secondly, interviewees were requested to evaluate the major strategies of these ports in attracting customers and businesses. The major focus was on the approaches of different ports during port promotion, marketing and negotiation with liner shipping companies, since it has been noted before that the competitive position of a port and problems encountered in handling the seaborne trade also depends on factors belonging to the ‘non-Assessment Process’ of PCM.

Thirdly, interviewees were asked to give opinions on the major similarities and difference in the core-four ports in terms of physical and no physical restrictions. The researcher also discussed with them whether the strategies of ports were persuasive enough to convince liners to choose them for transshipment.

For the decision-making process of liners, it was divided into one issue. Firstly, interviewees were asked about the major concerns of liners when making transshipment hub choice in especially West African major and 'modern' port. Apart from the factors mentioned in the survey questionnaire, special attention has been given to three other aspects, namely inland connection between port and hinterland, opinions/preferences of shippers and freight forwarders (or customers of liners) and subjective impression/perception of the ports by liners. The issue of hinterland was highlighted as it would be interesting to understand how direct import/exports coming from the West and Central African landlocked countries affect the port competitive positions acting as gate for the said-type of country. Based on above factors, interviewees were asked to give a general appreciation and assessment and how these factors influence the decision-making process of liners.

Finally, the researcher had discussed with them on some general questions concerning the West African seaborne trade, role of African port to handle it, the specific information about the core-four ports.

2.3.3. Other Information

Throughout the research period, the author paid close attention to the most updated news and information about global and West African ports and shipping development, and had the opportunity to participate to student knowledge exchange forum on African maritime policy held in Mombasa, Kenya.

The opinions of different scholars and experts within the industry have given important supplementary insights to this study, approaches, research design, theoretical framework, arguments, etc. On the other hand, the assumption figures for calculating generalized costs.

CHAPTER THREE
GLOBAL TRENDS, ISSUES AND AN OVERALL DISCUSSION ON AFRICAN SEABORNE TRADE

Information contained in this part is based on the personal knowledge of the author along with the ideas taken from reports, multitude reviews and Hoffmann (2005) assumptions relating to international maritime seaborne trade.

3.1. GLOBAL TRENDS AND ISSUES

Maritime transport industry and port management have evolved considerably in the last two decades. Mainly due to transport liberalization and increased competition among shipping lines and between ports, operating costs have been reduced and achieving economies of scale have become vital for shipping lines and some port operators.

In the last decade, after a period of liberalization, concentration has grown in the maritime transport industry as well as for port operators. The barrier at entry is becoming increasingly high in maritime transport since shipping lines have to invest in mega-container vessels, which may now cost more than 100 million US dollars. Containerization rate continues to grow at a high pace.

Maritime transport and port management reflect globalization trends with increasing traffic and economic activities in East Asia, mega-carriers and mega-ships calling at efficient mega ports. Some parts of the world, which face high maritime transport costs and high port charges, are increasingly becoming marginal in world trade. The major consequence for shippers is decrease in transport costs between mega-ports and constant or increasing maritime transport costs for not well-managed ports and those attracting only low traffic volumes.

Global shipping lines utilize hub & spoke systems, calling preferably to mega-ports. For regional shipping lines, difficult choices have to be made: either entering an

alliance with a mega-carrier, with a risk of future takeover from the mega-carrier, or finding market niches, which are increasingly difficult to find.

3.1.1. International Trade and its Maritimization

World economies are increasingly dependent on efficient maritime transport and port sectors.

Since World War II, seaborne trade has increased tremendously. Maritime transport has been growing at a more rapid pace than trade flows.

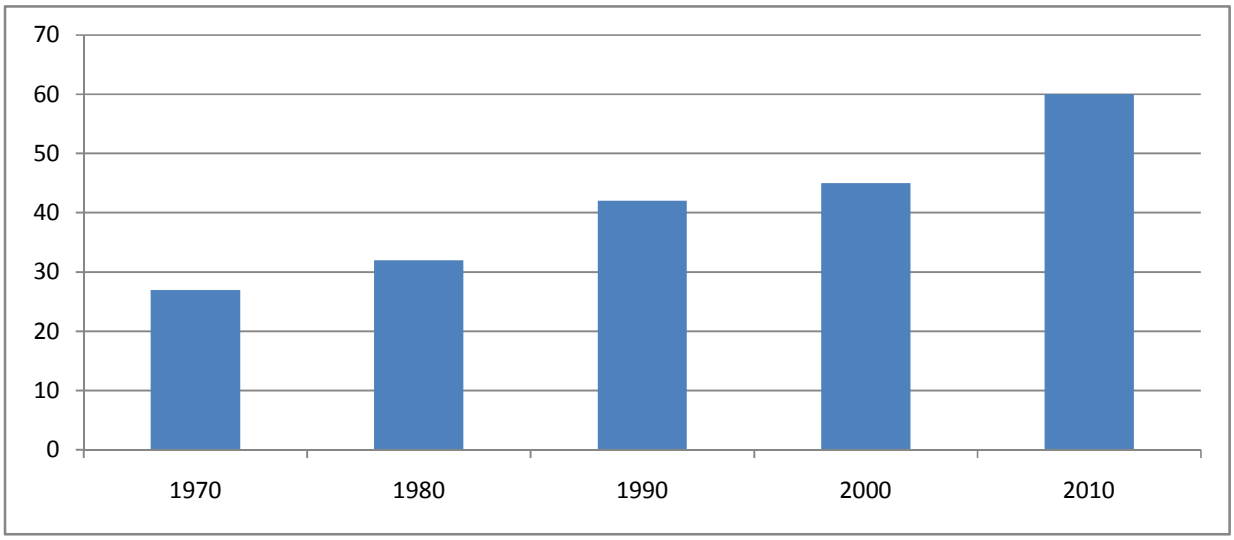
However, Africa has been lagging behind in terms of maritime transport trends in the last fifteen years.

Maritime transport industry and port operators have been striving to reduce operating costs. The impact of the economies of scale in maritime transport (Cullinane and Khanna, 2000) as well as in container handling (Vanelslander, 2006) has been demonstrated empirically.

Shipping line industry seeks for economies of scale, which explains the ever growing container vessels capacity. The tendency for larger container ships has been a long-term trend for several decades. What are at present the largest ships, used on the high volume routes such as the Trans-Pacific, will be displaced by the new vessels and put to use on the intermediate routes. Thus, the tendency for increasing ship size on WA routes will be reinforced.

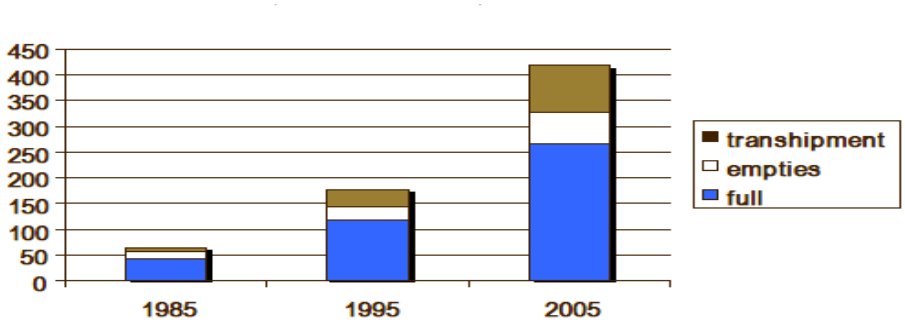
The market of container terminals operators is becoming increasingly concentrated. The market share of leading global terminal operating groups is steadily increasing and the four largest container terminal operating groups (Hutchinson Port Holdings, PSA Corporation, APM Terminals and P&O Ports) handle close to 40 percent of the world container traffic. In order to reduce costs, shipping lines prefer transporting containerized goods and call at major ports. As a result, transshipment flows have increased dramatically in recent years (Figure 5 and 6). Today, almost 50 percent of maritime trade is containerized (in volume).

Figure 5: Share of Containerized Maritime Trade In Total Maritime Trade Value (in percentage)



Source: Various Data collected by the author from various Economy reviews (1970-2011)

Figure 6: World Containerized ports throughput (in million TEUs)



Source: Hoffmann (2005)

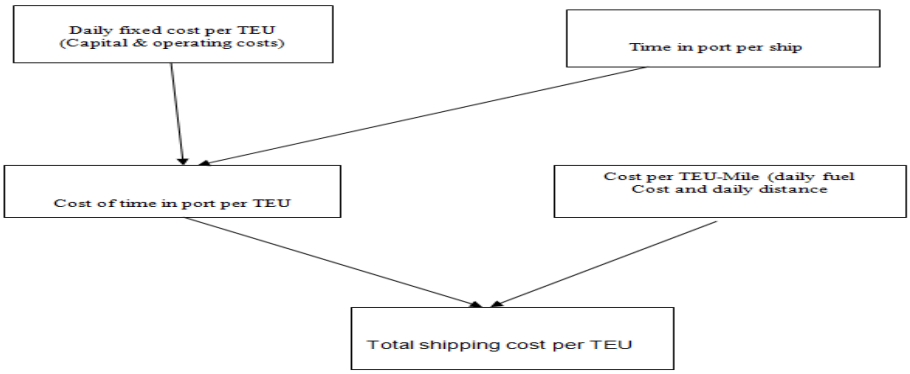
3.1.2. Impacts of Global Trends on Ports and Economies

Economies and shippers have to pay cumulatively the poor port efficiency. Indeed, as a result of poor port productivity and efficiency, direct charges, such as public port charges and shipping costs, are high. On top of these direct costs, shippers pay indirect logistics costs related to excessive inventory costs and dwell time, which probably constitutes an even greater cost. Time in port is a major criterion to choose to

call at a port. Poor port efficiency is usually embedded in higher ship turnaround time. When facing this constraint, shipping lines inevitably increase shipping costs charged to the shipper. The shipper will also have to pay higher costs because the shipping line will limit vessels size in order to diminish fixed costs (see Figure 7 for a breakdown of shipping costs). Sanchez et al. (2003) demonstrated empirically that higher ship turnaround time, congestion time and dwell time induce higher shipping costs, all other things being equal. Clark et al. (2004) also demonstrated the strong correlation between port efficiency, maritime transport costs and trade.

Time in port is not negligible in door-to-door transport. Notteboom (2006) calculated that in East Asia, where ports are more than efficient in WCA, time spent in port already reaches 20 percent of total transport time. In Africa, this ratio may reach more than 80 percent.

Figure 7: Breakdown of Shipping Costs



Source: Cullinane and Khanna (2000).

3.1.3. Organization of liner shipping and international conventions

In order to contextualize the subject, one must understand that, West African issues cannot be raised without taking into account international conditions and organizations. This part will also give the author a strong background so that empirically-based analysis can be conducted.

The claim that "trade follows the flag", often used in the past to justify support for national fleets, has become primarily an argument of special interest groups seeking support for maritime sector enterprises. It is agreed that *access* to efficient maritime transport is a key variable in economic development. This does not necessarily imply fleet ownership or government control. Following consultations between key industry stakeholders and government, Canada, for example, made the deliberate decision not to establish a national flag carrier, and yet the country is a leading exporter, is well served by maritime carriers and has competitive ancillary maritime industries (Sletmo, 1985).

Many of the traditional maritime countries, such as Germany and Great Britain, have been forced to accept substantial declines of their national flag fleets. Ship-owning interests, however, remain substantial in several countries, such as the United States, Great Britain, and Germany which own significant tonnage under open registries (UNCTAD, 1992).

A decline of national-flag shipping or the absence of a national merchant marine does not imply that these countries had to surrender participation in maritime policy matters. Their presence in international fora, such as IMO, OECD, and UNCTAD, and national maritime legislation, play an important role in ensuring competitive market conditions.

The market structure of liner shipping has changed fundamentally over the last decade. Three developments have occurred in parallel: (i) an increasing global integration of production and distribution processes; (ii) a diversification of industry participants; and (iii) the decline of market power of the liner conferences. The old hegemony of OECD shipping has been challenged by the New Maritime Countries (NMCs) of Asia and the Pacific which controlled 16 percent of container ship deadweight tonnage (dwt) in 1991. Six Asian developing countries ranked among the top 20 most important maritime countries measured in deadweight tonnage, and ten among the 35 leading nations.

3.1.3.1. Changing Structure of Liner Trades

The transport of liner cargo (i.e., general cargo, usually containerized, transported by fixed schedule vessels) has been altered by the globalization of production and marketing of products. Hand-inhand with important technological developments in maritime transport (e.g. containerization and electronic data interchange), this set the stage for the expansion of world trade based on an ever increasing international division of labor. The simultaneous expansion of low-cost liner shipping capacity and world trade is a case of positive synergy, making it difficult to separate cause and effect. The key point is that trade requires cost-effective transport systems.

The aim of globalization is to systematically take advantage of labor costs and productivity differentials in different parts of the world. This is made possible because of developments in transport technology and organizations that are reflected in the concepts of physical distribution and logistics, which aim at optimizing transport flows and distribution processes and reducing inventories. To be able to provide such services, transport operators must work closely with shippers and must maintain control over the various components of the global distribution system.

The technological requirements of the ocean- and the land side aspects of integrated transport networks pose difficulties for developing countries which are faced with substantial investment requirements for modern vessel and port equipment. This is compounded by the need to provide efficient inland transportation services and communication facilities to integrate the economies of developing countries into global export networks.

UNCTAD has been at the forefront of promoting the participation of developing countries in global trade. This was expressed in the goals of the Second and Third Development Decades which set specific goals for maritime transport. The quantitative targets were reached for developing countries as a whole (i.e., 10 percent of world tonnage by 1980 and 20 percent by 1990) but there are significant regional and structural imbalances. In 1992, developing countries in Asia accounted for 14 percent of global

dwt, while Africa made up only 1 percent. Problems of fleet structure are particularly apparent in the general cargo sector. Developing countries increased their share of world tonnage from 18 percent in 1980 to 26 percent in 1990, representing an increase from 21 million dwt to 27 million dwt. At the same time industrial market economies reduced their engagement in conventional (non-containerized) general cargo fleets from 50 million dwt to 23 million dwt. Given the relatively low productivity of general cargo vessels, there is considerable prima facie evidence that developing countries to a large extent have invested in obsolete tonnage and have equally failed to modernize their fleets. The lack of adaptation to new technology has considerable repercussions on present and future competitiveness of the fleets of most developing countries.

3.1.3.2. UNCTAD Code of Conduct

Inclusion of UNCTAD Code of Conduct is justified by the fact that the whole shipping sector of the developing countries has been reorganized under this Code. Therefore, giving brief information can be important.

A key instrument in promoting the maritime involvement of developing countries has been the United Nations Code of Conduct for Liner Conferences which was formulated during the 1970s and reflects the structure of conference-dominated liner shipping that *prevailed at that time*. However, the code came into force only in 1983, at a time when liner fleets had undergone major changes, most notably the wide-spread use of containerization. The Code mirrors the policies and aspirations of developing countries with regard to national merchant fleet development and the problems encountered by these countries both in terms of cargo protection and national fleet promotion.

According to UNCTAD *Review of Maritime Transport 1993*, eighteen of the 25 MINCONMAR countries are contracting parties to the Code and have made the provisions of the Code a foundation of their maritime policies. The liner cargo sharing provision of 40/40/20, the right to adhere to conferences serving the West African trade and freight rate negotiations to be conducted by shippers' councils are regarded by many

regional countries as key elements for establishing and maintaining national fleets and accessing cargo markets.

The cornerstone of the Code is the conference system which has been significantly altered since the Code was conceived. For more than one hundred years, liner conferences had provided the organizational framework within which liner shipping developed as a largely self-regulating industry. Despite shortcomings, conferences were generally recognized as being beneficial to trade, by providing scheduled fixed-rate services. Regulatory action taken at national, regional, and international levels did not necessarily question the existence of conferences, but was directed at avoiding abuses that the system might lend itself to. However, the market power of conferences has been weakened considerably during the last two decades as independent carriers and more flexible commercial arrangements, such as joint ventures and stabilization agreements, have emerged. In addition, the extensive uses of flags of convenience and regional economic integration have rendered the principle of national cargo sharing largely obsolete.

Shippers' councils are another integral part of the Code and UNCTAD identified two main purposes for such councils: (i) to unite shippers and to give them the necessary bargaining strength to obtain adequate and efficient services at minimum cost; and (ii) to provide ship-owners, government agencies, and port authorities with a means of communicating with shippers, and of obtaining an authoritative shipper viewpoint (UNCTAD, 1975). In the African context, councils have primarily served the first objective, whereas European shippers' councils are consultative bodies and do not engage in freight rate negotiations (Sletmo and Holste, 1994). There appears to be an inherent problem of the mandate of shippers' councils and UNCTAD observed that "it does seem that serious conflicts of interest may arise from involving bodies charged with protecting the shippers' interests in the controversies and difficulties which are liable to emerge in the mechanisms of cargo sharing" (UNCTAD, 1975). The Cotonou study R5 *Mission and Role of Shippers' Councils* will analyze the situation of shippers' councils in the West African context.

The weakening of the conference rate structure and the use of door-to-door rates has eroded the ability of the councils to negotiate on behalf of the shippers. Large shippers can benefit from direct negotiations with carriers, particularly when there is a surplus of tonnage and rates are depressed. Medium- and small-sized shippers may be at a relative disadvantage because of their weaker bargaining position and their lack of market knowledge necessary to organize the transport of their goods or to judge the soundness of services offered by ocean carriers or freight forwarders. It has been argued that for these shippers, councils can perform essential services, such as negotiations with shipping companies, information for shippers on costs and conditions of transport, monitoring of market developments, and representation of the interests of the trading community vis-à-vis governments in their formulation and implementation of shipping and transport policy measures. Such services, however, can arguably also be provided on a commercial basis by freight forwarders.

The problem of the small shipper is not much different from that of small firms in general. For example, small firms may have greater difficulties obtaining bank loans at favorable rates than large competitors. Often, the solution for the small firms lies in identifying appropriate middlemen or niche providers capable of efficiently supplying the service needed. In the case of liner shipping, these providers exist in the form of freight forwarders and consolidators who operate on a commercial basis.

3.1.3.3. Unctad's Current Position on Liner Shipping

With the entrance into force of the code followed by a strict application, this part will focus on the current changes of liner shipping and UNCTAD’s position. The link with the subject is to analyze the adaption of the outdated code with the current changes.

UNCTAD's promotion of the Code of Conduct in the 1970s and 1980s was based on market conditions and development objectives which prevailed at that time. More recently, most industrialized and a number of developing countries have adopted strategies to re-orient their economies toward a more competitive and export-oriented system and closer regional integration. These developments are particularly strong in

Europe, the Americas, and Asia, and go hand-in-hand with a gradual reduction of government intervention and a liberalization of markets for goods and services (including shipping). It is nevertheless realized that some developed and many developing countries hesitate to liberalize their shipping industries. Many countries attach great importance to maintaining national fleets in the belief that it is essential to the national economy. Liberalization may therefore require a gradual, carefully phased approach. To make progress in the area, UNCTAD is promoting greater transparency, for example through the creation of a database on measures affecting service trade, and services trade statistics.

In the past UNCTAD concentrated its efforts on policies designed to expand the national fleets of developing countries, particularly through the redistribution of international fleet ownership (Behnam, 1994). Governments were usually the targets of the actions, and the strategies pursued reflected the then existing environment of East/West ideological conflicts and the North/South divide. In 1992, UNCTAD defined new terms of reference for its Committee on Fostering Competitive Services and called upon an ad hoc group of experts to assist in formulating the new work program. The agenda which was consequently adopted stressed that commercial criteria should be the basis for developing countries expanding their participation in world shipping, and that the objective of transportation services should be to facilitate trade. An essential element for developing countries would be the ability to have commercial control over transport services, rather than fleet ownership. Future shipping policies would have to be based on progressive liberalization and the principles of free and fair competition.

UNCTAD now follows the premise that maritime transport should be treated as a service to trade and not taken as an industry in its own right, and that the development of national infrastructure, national policy frameworks and national capacities to deal with shipping in a liberal commercial framework, are of utmost importance. In this context, it is vital that developing countries become efficient consumers of shipping services through improved organization and functioning of collective shippers' organizations and introduction of efficient trading and transport systems and practices.

3.2. GLOBAL AFRICAN MARITIME TRADE SITUATION

In the past eight years, global trade has increased dramatically in value (+45%) and volume (+50%). The surge in cargo growth has strained the trade-related infrastructure of many countries. This is especially true of ports: maritime transport today handles about 90 percent of world trade by volume−nearly 13 billion tons of cargo a year. In developed countries, ports with longstanding reputations for efficiency are challenged in handling ever-increasing cargo volumes. In developing countries, with poorer port facilities and fewer resources, the burden is even greater. In Africa, in particular, port congestion is undermining attempts to improve international competitiveness.

In this part the author will describe this challenge to competitiveness and outlines approaches for African governments and donors to take in addressing it. These approaches do not rely on costly investments in physical infrastructure; in most ports, dramatic improvements in efficiency are possible with existing infrastructure−provided that chokepoints in the port and transport logistics chain, including in the competitive and regulatory environment of transport infrastructure, are carefully assessed. In short term, in order to put global competitiveness back on the truck, the author advances to give an especial emphasis on privatization strategy, adopt or strengthen regulatory frameworks that safeguard competition and monitor pricing behavior, identify and address transport chain chokepoints, and implement an institutional design that improves security within an efficient and competitive port and transport system.

3.2.1. African Ports: The General Situation

In Africa, shipping volumes have been rising even more rapidly than the global average. Consequently, Africa is facing the kind of congestion that India, the United States, and much of Europe has faced. This congestion undermines Africa's export

competitiveness by increasing direct costs (e.g., port congestion penalties or surcharges) and indirect costs (e.g., inventory, idle ships, and trucks).

In Ghana, (which is one of the core-four African ports that the author will analyze in the next Chapter) for example, the port of Tema suffered until recently from low berth productivity because of a lack of gantry cranes. Increasing container volumes forced carriers to wait several hours for berths and, in turn, imposed congestion surcharges on shippers.

In Durban, cargo-handling demand has exceeded the terminal's handling capacity, causing berth congestion and forcing carriers to impose penalty surcharges. In addition to causing congestion at port terminals, increased cargo volumes cause congestion outside the terminal gates. The limited truck inventory in many African countries−combined with uncontrolled truck movements outside the port gates, inefficient intermodal exchanges, and extraordinary dwell times for containers−exacerbates this problem.

Inefficient ports in Africa are eroding the competitiveness of African producers, but two changes pose further challenges: (1) the move to ever-larger ships and increasing use of transshipment hubs, and (2) the need for international ports to comply with recommended or required international or U.S. security protocols.

3.2.1.1. Changing Deployment Patterns: Larger Ships and New Transshipment Hubs

Based on combined information along with the author’s personal knowledge on the issue, Carriers now deploy much larger ships for "around the world" service, and increasingly rely on regional transshipment hubs and feeder ships to handle shipments to and from smaller ports, such as those in Africa. One scenario involving Africa's West Coast is already becoming reality:

- Many in the industry expect that transshipment cargoes will be diverted from Algeciras (Spain) to a new, highly mechanized container terminal being built in Tangiers because of cheaper labor costs. Thus, transshipment cargoes will dominate activity in Tangiers, transforming it into a "pure transshipment port" (PTP). This means that Tangiers will likely provide regional feedering services to West Coast Africa, with regional hubs established at terminals offering fast turnaround times for vessels.
- Regional hubs are usually established in ports with substantial cargo volumes, making Abidjan (Cote d'Ivoire), with a capacity of 640,000+ TEUs, a likely candidate. But a new highly mechanized terminal, offering substantially more efficiency and berth productivity, will open in Tema (Ghana) before the end of the year. Though Tema has lower volumes (about 350,000 TEUs), this is enough to attract main regional feedering services, thus assigning Tema regional hub status. This means that in the midterm, as cargo volumes continue to grow, Panamax-size vessels will begin calling to Tema. Of course, with the concession recently awarded for the container operation in Lagos (Nigeria) competition will emerge for regional hub designation. At this point, however, Tema will be the first to offer a terminal with the efficiency required for regional hub services.

A similar scenario is likely to emerge for East Coast Africa, with competition for regional hub status emerging from Mombasa (Kenya), Port Luis in Mauritius (if expanded), Maputo, Mozambique (if channel access is improved), and Durban, South Africa.

3.2.1.2. Post 9/11 Security Requirements for Transport Logistics

Since 2001, new protocols have been instituted to enhance security along the transport logistics chain. The protocols are embodied in the International Maritime Organization's Safety of Life at Sea Convention, including the International Ship and Port Facility Security Code (IMO/ISPS), the Container Security Initiative (CSI), and the Customs-Trade Partnership against Terrorism (C-TPAT). Figure 8 delineates the jurisdictional authority of these protocols by area of transport logistics activity. Taken

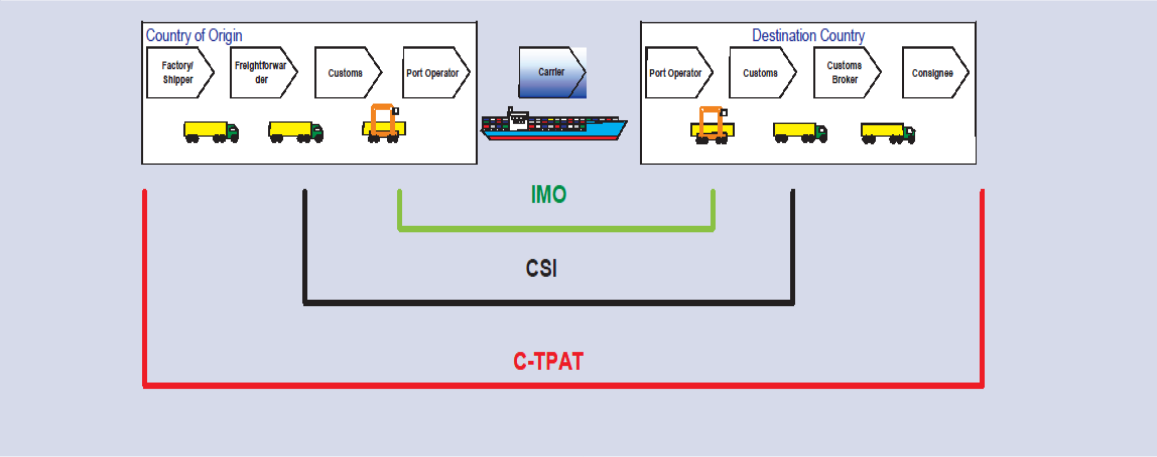
together, these protocols cover ports of entry and ports of call prior to entry, ports of container origin, and shippers of origin−the entire supply and warehousing chain.

African countries and their exporters are challenged to meet these requirements. For example:

- As of May 2005, the U.S. Coast Guard had identified ports in five countries as not having complied with IMO/ISPS requirements for ensuring port security. Four of the countries were African: Democratic Republic of Congo, Guinea-Bissau, Liberia, and Mauritania.
- Container security work has focused on the world's largest transshipment hubs. But of the 37 ports now in the CSI program, only one is from Africa: Durban.

Responsibility for assuring supply chain security and compliance with C-TPAT lies with shippers; those who wish to enjoy expedited cargo processing in the United States must assess the security of their supply chains, including foreign warehouses and the transport chain. This imposes a burden on U.S. importers, who must assess and strengthen the security of their supply chain following guidelines and reporting requirements developed by U.S. Customs. New requirements are in turn imposed on foreign exporters, who need to address container security (e.g. seals, inspection, and storage), physical security of warehouses/factories/ industrial plants (e.g. fencing, lighting, video surveillance), and site access (e.g., ID verification, pre-employment verifications/ background checks), among other items. These requirements are particularly onerous for small-scale exporters. Thus, if an African exporter is to be competitive in the U.S. market, it must cooperate with the U.S. importer in securing the logistics chain.

Figure 8: Transport Logistics Chain Coverage by Existing Security Protocols



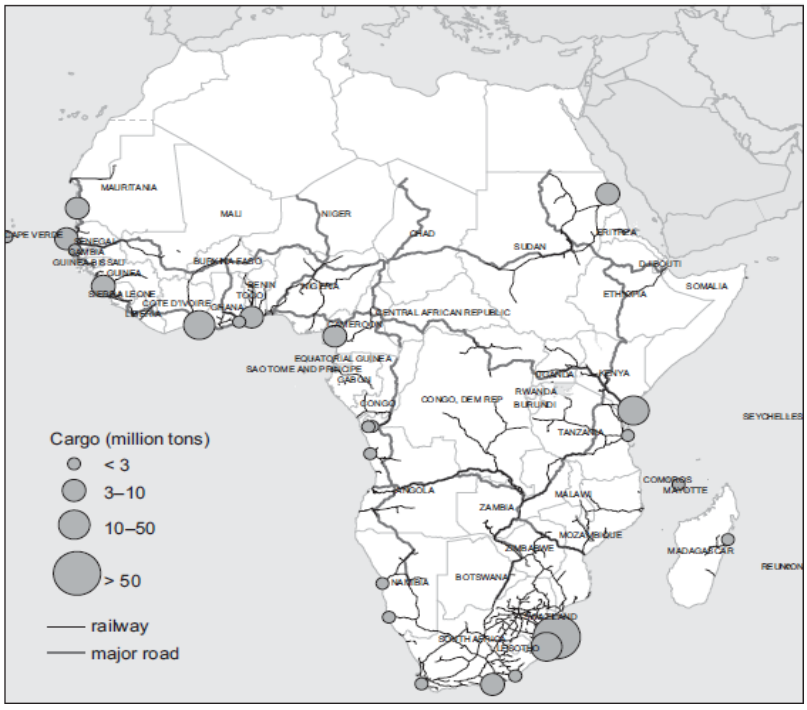
Source: Transportation and Logistics Review 2009 publication

Based on comparative study conducted by the author, in terms of port configuration, there is a huge need for a better Hub-and-Feeder system. This can be modeled under the aspect of problems encountered in port capacity and both cargo handling equipment. All three regions, eastern, western, and southern, claim to suffer from specific capacity problems. Mombasa and Dar es Salaam have reached their storage limits for containers in their terminals. Durban is struggling to bring in new capacity to meet container handling and storage demand. In West Africa, Luanda and Tema are short of container capacity, and Luanda, Douala (Cameroon), and Tema are under pressure for general cargo. Numerous factors contribute. Location in a major urban area limits the capacity of some ports (Apapa [Lagos], Nigeria).

For many ports, equipment availability and maintenance are constraints. Maintenance dredging is often inadequate (and much more costly than a few years ago) because of the reliance on ad hoc contracting rather than long-term performance contracts. In addition, many ports have poor navigational aids. Despite these circumstances, one source considers total use of African port capacity to be 80 percent overall and likely to remain there through 2012 (Drewry Shipping Consultants Ltd. 2006, 2008). Making ports more efficient could overcome many of the capacity constraints, because handling rates are below international standards. For example, the

Durban Container Terminal manages only about 17 moves per crane hour, short of an international norm of 25 to 30 moves.

Figure 9: African Port, by size



Source: Munday and Penfold 2008

3.2.2. Maritime Transport Cost and Infrastructure

The following information has been gained from reports conducted under the auspices of Unctad from 2003 to 2005. Even though data may seem a bit outdated, one must note that it still serves as reference to the issue in close relation on developing country maritime sector.

A comparison of African countries with other developing countries in Latin America and Asia shows that the competitiveness of African economies in the international marketplace is limited by a range of factors and that the transport sector undoubtedly represents one of the major problems in the shipping of goods. Both

importers and exporters in Africa face high costs for sea and land transport. The average freight rate is 47 per cent higher than in other developing countries and twice the rate in developed countries, estimated at 5.21 per cent. Those hardest hit by excessive transport costs are the continent's 15 landlocked countries. According to the World Bank, to ship a container from Baltimore to Dar es Salaam or Durban by sea costs US$ 1,000 and US$ 2,500 respectively; yet the total transport costs for the same container rise to US$ 10,000 and US$ 12,000 for delivery to Bujumbura, in Burundi, and Mbabane, in Swaziland, respectively. An UNCTAD study on the landlocked countries of the Southern African Development Community (SADC) found that overland transport was by far the most expensive: for every container imported, the difference between maritime and overland freight costs is a factor of 1 to 4. Such additional outlays are not justified by distance alone and are a major drag on countries' competitiveness. In the ports, these exorbitant costs are basically the result of long waiting times, dead time, low productivity and poor and inefficient service.

Generally speaking, port infrastructure is in good condition, but the lack of adequate State resources means that maintenance and renewal capacity is limited and cannot keep pace with the increasingly intense competition within the sector. The UNCTAD survey shows that 59 per cent of African ports have a container terminal; containerized traffic for the continent as a whole in 2000 was estimated at 7.2 million TEUs, or 3.5 per cent of the world total.

According to a four-country survey conducted by UNCTAD in 1989 (Which serves as references until now), however, "success has been most apparent when the port - although under public control - has been given the objectives and the freedom to apply commercial operating principles of flexibility and responsiveness to changing markets". Though far from recent, this study shows that the competitiveness of African ports is undermined by basic institutional problems and poor management.

- (a) The institutional problems can be summarized as follows: Delays in customs clearance in ports owing to other partners' inefficiency; Outdated procedures and inadequate human resources; Foreign-exchange problems in payment transactions with landlocked neighboring countries;

- (b) In the area of management, political interference and multiple layers of civil service oversight demotivate competent staff and leave managers little leeway to introduce new methods.

In addition to these problems, there are other factors, unconnected with the ports' own operations, which adversely affect the ability of the majority of African ports either to develop further or to attract private partners. These factors are primarily:

- (a) Restricted local markets: with some exceptions, such as South Africa, Egypt and Nigeria, the majority of ports handle a total traffic of less than 10 million tons per year, and only 10 ports handle containerized traffic exceeding 200,000 TEUs per year;
- (b) Underdeveloped land transport systems - road and rail - which negate all efforts to improve port logistics;
- (c) The local social and legislative environment.

Furthermore, the growing interest in Africa as a source of energy products, agricultural products, timber, and minerals might aid in creating the proper maritime export capacity. The funding for this new capacity is invariably provided as part of a turnkey project, not under a traditional port authority budget. Thus, financial impediments are not envisaged.

The quality of container handling inland is indicated by the cycle times of trucks dropping off and picking up containers at the terminal and the average container dwell times in a terminal. The typical target for an efficient truck cycle is 1 hour. Average cycle times are estimated at 5–6 hours in East Africa, 4 hours in southern.

Africa, and 10 hours or more in West Africa (table 19). Average container dwell times are 6 days in southern Africa, 12 days in East Africa, and 15 days or more in West Africa, more than an accepted international standard of 7 days or less. The range of dwell times in southern Africa (4–8 days) is a much tighter band than in East and West Africa, thanks largely to better organization and control of container storage at the terminal.

Table 19: Container Dwell Time

Region	Range of truck cycle times	Range of container dwell times
East Africa	3.5 hours to 1 day	5 to 28 days
Southern Africa	2 to 12 hours	4 to 8 days
West Africa	6 hours to 1 + day	11 to 30 days

Source: Mundy and Penfold 2008

It was against this background that, in the late 1990s, Africa began asking itself how port authorities could improve the productivity and competitiveness of ports. In order to meet the new demands of the market in a climate of tight budget control - and in many cases under strong pressure from the international financial institutions (IMF and the World Bank) - the port authorities undertook reforms aimed at creating ports run on autonomous, commercial and progressive lines through the divestiture of various services. Partnership with the private sector became indispensable in the new environment of competition and technological change.

3.2.3. Reforms and Privatizations process: What about African ports?

In this part, our statements are based on the Unctad report 2003 to 2005, relating to the privatization process.

Africa is placing increasing emphasis on cooperation with the private sector, in order to obtain additional financial resources for port modernization and to take advantage of the experience of private, mainly foreign, companies in the areas of management and productivity.

The first, and boldest, privatizations were launched in the late 1990s and were concentrated in the East and southern Africa region, in contrast to what was happening in the west and north of the continent. To date, there are three countries (table 20) where

the private sector – chiefly international multi-port operators - is fully involved in port management and development: Djibouti, Mozambique and Tanzania. Each of these countries has a different conception of the type of participation, the operations and the equipment involved, and of the reform process itself.

Table 20: Public-Private Partnership in African Ports

	Date	Type of contract	Period	Operator	Investment programme
1. Mozambique, port of Beira	Oct. 1998	Concession	25 years	Cornelder Moçambique	US$ 13 million
2. Mozambique, port of Nacala	Jan. 2000	Concession	15 years	SCDN	US$ 52 million[a]
3. Tanzania, Dar es Salaam container terminal	April 2000	Concession	10 years	ICTS/HPH	US$ 6.5 million
4. Djibouti, international autonomous port	May 2000	Management	20 years	Dubai Port International	US$ 54 million
5. Mozambique, port of Maputo	Sept. 2000	Concession	15 years	Mersey Docks (MPDC)	US$ 50-100 million

Source: UNCTAD Secretariat 2003

According to the survey organized by the same organism, the most popular option in public-private partnerships is the build-operate-transfer (BOT) concession, which accounts for 40 per cent of private sector participation in African ports, followed by management contracts (25.3 per cent) and privatization (22.7 per cent). Only 9 per cent of ports have opted to lease their equipment to operators. The various forms of cooperation with the private sector reported in Africa can be summarized as follows:

(a) Management contract for all port operations: Djibouti;

(b) Concessions on existing terminals: Dar es Salaam, Beira, Douala, etc.;

(c) Concessions on new terminals (container, bulk-carrier, etc.): Dakar, Abidjan, Lomé, etc.

Regional competition for transit and trans-shipment of the lucrative trade of neighboring landlocked countries and port capacity are the basic elements which provide motivation for the introduction of reforms in African ports and attract the private sector. Table 21 clearly shows that reforms involving opening up to the private sector are most advanced in ports with a large hinterland with intense regional competition. In these ports, transit activity accounts for quite a large share of total activity; the port of Djibouti, where 75 per cent of shipments are currently destined for Ethiopia, is a notable example.

Table 21: Regional Competition And Container Traffic In African Ports Undergoing Reform

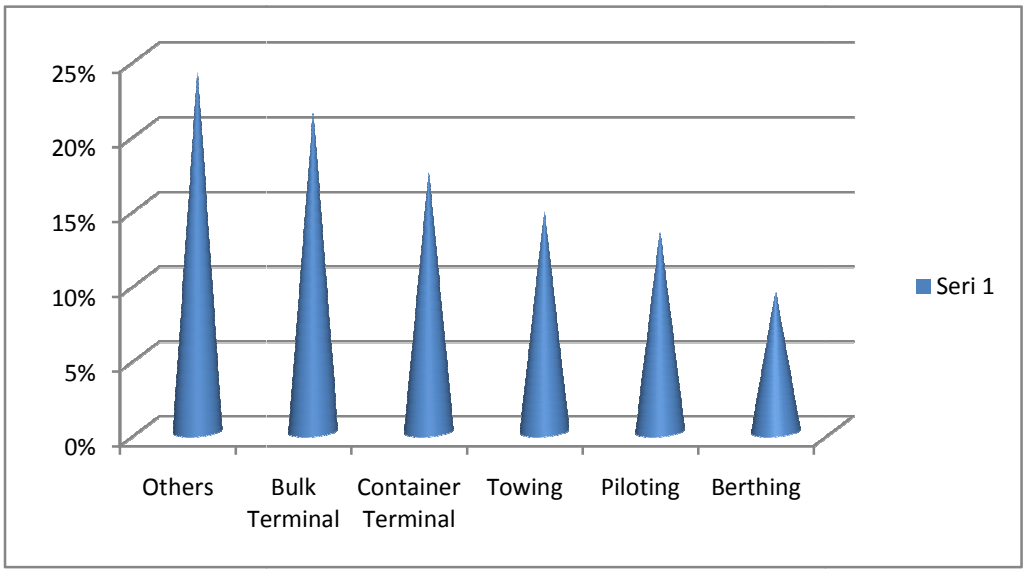
Ports	Landlocked neighbours	Competitor ports	Transit[a]	TEU
Abidjan	Mali, Burkina Faso, Niger	Dakar, Tema, Cotonou, Lomé, Lagos	10.4[b]	434 600
Dakar	Mali	Abidjan, Banjul, Conakry	3.5	165 000
Dar es Salaam	Burundi, Rwanda, Uganda, Congo, Malawi	Beira, Maputo, Nairobi, Durban	17	118 000
Djibouti	Ethiopia	Assab, Berbera, Nairobi, Aden	75	127 100
Douala	Central Africa, Chad	Calabar, Port Harcourt	7.5	126 900
Durban	Botswana, Lesotho, Malawi, Swaziland, Zambia, Zimbabwe	Maputo	-	1 291 100
Maputo	Malawi, Zambia, Zimbabwe, Swaziland	Dar es Salaam, Durban		34 871
Mombasa	Burundi, Rwanda, Uganda, Sudan, Democratic Republic of the Congo	Dar es Salaam, Maputo	16	236 900
Tema	Burkina Faso, Mali, Niger	Abidjan, Cotonou, Lagos, Lomé	2.3	209 500

Source: UNCTAD Secretariat Report 2003

It is also of note that the private sector has a particular presence or interest in ports which have already invested in heavy equipment, e.g. container terminals. All the ports in the above table have a container terminal and individual container traffic in excess of 100,000 TEU annually, except for Maputo.

According to the same survey, where services are concerned, private operators have a 24 per cent involvement in the “Miscellaneous” column (cargo handling, forklift trucks, oil terminals, etc.), 21.3 per cent in activities relating to bulk terminals, followed by container terminals which account for 17.3 per cent of the total (Figure 10). Among the ports involved in the survey, 59 per cent have a container terminal, while 88 per cent of ports cooperating with the private sector are equipped with a container terminal. Of the latter, 57 per cent have involved the private sector in container terminal-related operations. These operations concern 14 projects in 12 ports, and take the form of a concession (64 per cent), a management contract (21 per cent) and equal percentages of privatization and leasing (7 per cent).

Figure 10: Services and Equipment Involving the Private Sector



Source: Unctad Secretariat Report 2003

3.3. WEST AFRICA'S INTERNATIONAL TRADE AND MARITIME TRANSPORT

3.3.1. Socio-Economic Profile

The following information is purely based on details collected from various websites relative to African economies review along with the author's knowledge about the matter.

The population in Sub-Saharan Africa (SSA) rose from 389 million in 1980 to 534 million in 1990 then from 850 million in 2000 to one billion today. Average population growth was approximately 3.2 percent per year, whereas world population increased by 1.8 percent annually over the same decade. SSA's share in world population stood at over 16 percent in 1990. During the same period, the Gross Domestic Product (GDP) of West and Central African states increased only about 2.1 percent annually, while the rest of the world averaged 3.2 percent per year. Contrary to its demographic evolution, Africa's contribution to world production is regressing, and the average income per capita is falling. The structure of the region's economies has remained largely undeveloped although some noticeable change occurred. Over the last decades. In 1987 sectoral shares were: agriculture 32 percent (down from 42 percent in 1965), manufacturing 11 percent, other industries 17 percent, and services 40 percent while today the situation is quite different with a little improvement. Trade diversification has been slow; exports continue to be dominated by primary products. The decline in agricultural growth was partly due to recurring droughts and has led to increases of food imports.

SSA's share in international trade is falling. Exports declined from 3.3 percent of world exports in 1950 to 2.5 percent in 1970 and to 1.0 percent in 1989 before noticing a small increment with 2.5 percent today. The development of imports followed the same pattern. Between 1990 and 1989, SSA exports decreased 5 percent per annum, while exports from developing countries as a group increased by 1.4 percent. Imports declined by 3.6 percent for SSA between 1990 and 1990, compared to 1.6 percent for all

developing countries. Furthermore, since 2009, the tendency has completely changed with an export increase to developed countries. This export increase was driven by the growing interest of wood-originated products and some other mines. The value of SSA's exports was US$30.9 billion in 1989 and that of imports US$31.8 billion while today the growth rate in terms of worth has increased about 9 percent in value and 15 percent in product. The region's dependency on primary products which have been subject to price fluctuations, with a downward trend, is reflected in exports purchasing power which declined 40 percent between, while that of industrial countries rose by 70 percent during the same period starting from 1989 to 2009.

Trade of the West African countries gathered under the ECOWAS block is dominated by countries endowed with natural resources. Primary products contributed 86 percent of the value of all exported goods while manufactured products accounted for only 14 percent. In 2010, four countries provided more than two-thirds of the region's total exports: Nigeria alone accounted for 43 percent, followed by Côte d'Ivoire with 14 percent, Angola with 6 percent, and Gabon with 5 percent, highlighting the importance of oil exports. Table 22 illustrates the export profile for a selected group of countries. For all its exports, SSA faces strong competition in world markets.

Table 22: Key Exports of Selected of West African Countries 2010

Nigeria	Ivory Coast	Angola
Total Export: USD55M Crude Oil : 94% Coca : 3%	Total Export: USD30M Cocoa : 34% Coffee : 18% Timber : 12%	Total Export: Not Published Crude Oil : 94%
Gabon	**Togo**	**Niger**
Total Export: USD10M Crude Oil : 64% Timber : 15%	Total Export: USD15M Phosphates : 48% Cotton : 15% Cocoa : 11%	Total Export: USD20M Uranium : 86% Crude Oil : 4%

Source: ECOWAS Yearly publication 2010.

Imports by West African countries members are more evenly distributed, with concentration on oil producing countries because they have more resources for purchases abroad. The three leading importers in 2010 were Nigeria (35 percent of all regional imports), Côte d'Ivoire (30 percent), and Cameroon (20 percent). Manufactured goods represent 70 to 75 percent of the value of imports. Food products accounted for only 25 percent. It is, however, important to note that food imports have risen rapidly in certain countries, such as Senegal, Togo, and Congo. Oil imports have increased substantially in the case of Benin, Côte d'Ivoire, and Ghana.

An important economic decision was taken in January 1994, when the fourteen member countries of the CFAF zone adopted a new comprehensive adjustment strategy (Clement, 1994). The common currency, which was freely convertible, was pegged to the French franc at a fixed rate. Until the mid- 1980s the countries had benefited from a long period of stability with low inflation rates and sustained economic growth. In 1985,

the economic and financial situation began to worsen, essentially as a consequence of two shocks: a sharp drop in world prices for the leading African export commodities (cocoa, coffee, cotton, and oil) and a weakening of the competitiveness due to the nominal appreciation of the French franc against the currencies of the zone's main trade partners. Between 1985 and 1993, the countries of the zone experienced no growth, compared to an average 2.5 percent of other Sub-Saharan African countries, and per capita income declined by some 3 percent. To counter the deterioration of the economic situation of the zone countries, the members decided that a substantial devaluation was the best way to respond to the growing difficulties. The new parity rate was set at CFAF650 for 1 euro, representing 50 percent devaluation. It is expected that this realignment will particularly benefit the agricultural sector, the largest employer in the region.

An analysis of trade partners shows the predominance of industrial countries, and in the case of francophone Africa of its former colonial power. For most West African countries such trade accounts for more than 70 percent in recent years, in some cases up to 95 percent. For example, Cameroon shipped 67 percent of its exports to Western Europe and 4.6 percent to other African countries; Nigeria exported 69 percent of its goods to Western Europe and 8 percent to Japan. Some trade redistribution is taking place and Japan and other East Asian countries are gradually gaining in importance. With the growing Chinese economy, the whole exports of West African countries are redirected to China. No clear consolidation of trade within Africa can be observed, which is contrary to the situation in other trading areas; for example, over 60 percent of Southeast Asia's imports and exports are traded among the member’s countries of the Association of Southeast Asian Nations.

3.3.2. West African Seaborne Trade

Between 1989 and 2003 Africa averaged about 9 percent of total goods loaded and unloaded in the world's seaports. This represented over 85 percent by volume (roughly the same share when expressed in value) of the continents trade and demonstrates the importance of maritime transport for Africa. A breakdown by region shows that in 2003 West African countries accounted for about 40 percent of all goods handled in African ports, 30 percent of crude oil and oil products, and 29 percent of dry goods (Figure 11). North, West and Southern Africa have comparable shares of the region's total dry cargo, about 30 percent each. Access to competitive transport services for dry cargo is therefore of equal importance to all three regions. The dominance of crude oil and oil products in the West African trades and its implication on maritime transport need to be analyzed separately from deliberations on liner shipping.

Figure 11: Total Dry Cargo by Region



Source: UNCTAD Secretariat 2003

Cargo generation is an important factor (although not the only one) in determining whether a country or, in the case of cooperation, a region is likely to be able to sustain a merchant fleet and what their market strength is to attract transport services. As SSA contributes barely 3 percent of global goods loaded and unloaded and Africa 9 percent, the region does not have a strong cargo base, and may not be able to support viable national fleets, unless they are efficient in competing as cross traders. At this

point no data is available to illustrate the specific case of the MINCONMAR members but this will become possible once the Trade & Transport Project studies are available.

Against this trade profile a two-fold question arises: (i) does SSA have adequate access to shipping services, despite its limited importance in world trade, and (ii) given the region's marginal position would this position in and of itself give rise to higher freight rates than those faced by its competitors? To answer these queries detailed knowledge of sailing schedules and cargo rates by trade will be necessary. Since this information is not yet available, global data estimated from cif/fob figures are used to provide a rough indication.

In specific cases, the cost of ocean transport is lower from the African ports and the composite of five companies in Africa and Asia indicates that land transport accounts for about 1 percent of total product cost. With the relatively modest share of transport in total cost, the duration of transport may be more important than its cost. It is important to note that no information is provided on delays in ports, which reportedly are of great concern in WC.

This small example illustrated by Table 23 indicates that actual provision of transport services and their costs do not necessarily place WA countries at an undue disadvantage in terms of absolute freight rates. It is evident that the weak and incomplete data which are available do not permit a meaningful analysis. One of the Cotonou recommendations is therefore to establish a process for detailed data collection and evaluation (*National and Subregional Transport Monitoring Units*).

Table 23: Shipping Costs From Far East To The Selected Countries For 40-Foot Filled With Garments

Port	**Durban**	**Mombasa**	**Abidjan**	**Dakar**	**Accra**
Ocean freight	2500	1200	1300	1320	1270
Port charges	1200	1320	1250	1200	1130
Total Costs (USD)	3700	2520	2550	2520	2400
Time (Day)					
Sailing	25	20	23	21	22
Overland	15	0	0	0	0

Source: Shipper's council of each country 2010

3.3.3. Liner Shipping Market in West Africa

The claim that "trade follows the flag", often used in the past to justify support for national fleets, has become primarily an argument of special interest groups seeking support for maritime sector enterprises. It is agreed that *access* to efficient maritime transport is a key variable in economic development. This does not necessarily imply fleet ownership or government control. Following consultations between key industry stakeholders and government, Canada, for example, made the deliberate decision not to establish a national flag carrier, and yet the country is a leading exporter, is well served by maritime carriers and has competitive ancillary maritime industries (Sletmo, 1985).

Many of the traditional maritime countries, such as Germany and Great Britain, have been forced to accept substantial declines of their national flag fleets. Ship-owning interests, however, remain substantial in several countries, such as the United States, Great Britain, and Germany which own significant tonnage under open registries (UNCTAD Report, 1992). A decline of national-flag shipping or the absence of a national merchant marine does not imply that these countries had to surrender participation in maritime policy matters. Their presence in international fora, such as

IMO, OECD, and UNCTAD, and national maritime legislation, play an important role in ensuring competitive market conditions.

Thus, UNCTAD has been at the forefront of promoting the participation of developing countries in global trade. This was expressed in the goals of the Second and Third Development Decades which set specific goals for maritime transport. The quantitative targets were reached for developing countries as a whole (i.e., 10 percent of world tonnage by 1980 and 20 percent by 1990) but there are significant regional and structural imbalances. In 1992, developing countries in Asia accounted for 14 percent of global dwt, while Africa made up only 1 percent. Problems of fleet structure are particularly apparent in the general cargo sector. Developing countries increased their share of world tonnage from 18 percent in 1980 to 26 percent in 1990, representing an increase from 21 million dwt to 27 million dwt. At the same time industrial market economies reduced their engagement in conventional (non-containerized) general cargo fleets from 50 million dwt to 23 million dwt. Given the relatively low productivity of general cargo vessels, there is considerable prima facie evidence that developing countries to a large extent have invested in obsolete tonnage and have equally failed to modernize their fleets. The lack of adaptation to new technology has considerable repercussions on present and future competitiveness of the fleets of most developing countries.

A key instrument in promoting the maritime involvement of developing countries has been the United Nations Code of Conduct for Liner Conferences which was formulated during the 1970s and reflects the structure of conference-dominated liner shipping that *prevailed at that time*. However, the code came into force only in 1983, at a time when liner fleets had undergone major changes, most notably the wide-spread use of containerization. The Code mirrors the policies and aspirations of developing countries with regard to national merchant fleet development and the problems encountered by these countries both in terms of cargo protection and national fleet promotion. According to UNCTAD *Review of Maritime Transport 1993*, eighteen of the 25 West African countries are contracting parties to the Code and have made the provisions of the Code a foundation of their maritime policies. The liner cargo sharing

provision of 40/40/20, the right to adhere to conferences serving the West African trade and freight rate negotiations to be conducted by shippers' councils are regarded by many regional countries as key elements for establishing and maintaining national fleets and accessing cargo markets.

CHAPTER FOUR
GENERAL RESTRICTION AND ITS IMPACTS ON

In this chapter details are essentially based on the knowledge of the author along with some information obtained from the Port authorities' websites, various reports and CONTE (2005).

4.1. INTEGRATION OF WEST AFRICAN MARITIME TRANSPORT AND PORT SECTORS INTO THE GLOBAL TREND

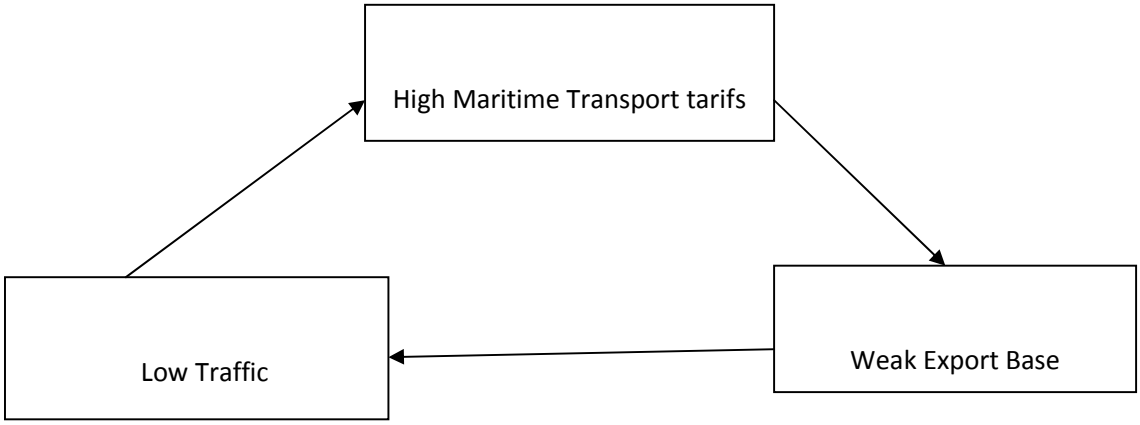
Maritime transport represents 90 percent of the foreign trade volume of WA countries and from the analysis of the patterns of WCA trade, a broad outline of the challenges facing maritime transport in the region emerges. The over-riding objective of a national maritime policy must be to obtain the most competitive rates for exporters and importers.

4.1.1. Limited Shipping services

Shipping lines face increased costs when calling in WA countries due mainly to poor port efficiency, low traffic and inadequate or insufficient port equipment (See below Domino effect of these problems).

WA ports receive calls from about forty container, Ro/Ro and multipurpose vessels. Although the number of vessels docking at West African coasts has grown from 15,000 in the early 1990s to more than 20,000 during the early 2000s, West Africa benefits from limited shipping services. For shipping lines, West and Central Africa remains a niche market. There are several shipping lines providing regional services, including P&O Nedlloyd, which serves intermediate ports between Abidjan and South Africa, and Ecomarine International shipping company, which links ports of the sub-region.

Large ships do not call in West African ports due to a limited traffic, poor facilities and usually a lack of maintenance dredging. Few exceptions can be seen in four important and leading ports which are namely, Dakar Autonomous Port, Douala Autonomous Port, Tema Port and Lagos Port, where almost container to WA destination is transshipped. Ship size calling in WCA increased in the early 1990s and since then has remained steady. WA is now the region, where most ports do not receive ships in excess of 2,500 TEU. Most vessels calling in WA are in the range of 1,000-2,000 TEU, with more than 10 shipping lines providing ships in excess of 2,000 TEU capacities: Mitsui OSK and Maersk Sealand, Hapag-loyd, Hanjin, Yeng Ming, CMA CGM, MSC, DAL, UASC, UAFL, OOL.



4.1.2. Low Containerization Rates

Containerization grows rapidly in Africa at the pace of more than 10 percent annually. In recent years, containerized traffic in WAC even grew even faster than world containerized traffic. In Africa, containerization has grown more than three times compared to economic growth.

However, containerized rate of traffic in WA remains low and container traffic from or to Africa remains marginal in the world. In 2005, containerized traffic in West and Central Africa accounted for 0.6 percent of world containerized traffic (0.75 percent in 1995). Africa's container traffic share has ranged from 0.6 percent to 0.85 percent in the last ten years. West Africa's total container traffic does not account for more than 10 percent of Singapore port container throughput.

Containerization remains relatively low in West African ports so that a commodity, which would be shipped in a container from a Far Eastern or from a European port, may still, be carried in break-bulk from an African port.

4.1.3. A Multitude of Public-Owned Small Ports

West Africa lags behind in terms of global trends affecting port sector in the world. Contrary to most regions in the world, port concentration in WAC is limited. Moreover, contrary to other regions in the world, ports remain predominantly publicly-owned even though some trends to more privatization of ports started recently.

In terms of total traffic, the top four ports in the sub-region are in a decreasing order: Lagos, Tema, Dakar and Douala. These ports account for almost 30 percent of the total port traffic in WAC. In terms of size and activity the port of Lagos is the most important. Its annual merchandise traffic is in excess of 30 million tons, which is approximately 55 percent of Nigeria's port activity (excluding hydrocarbon exporting terminals) and 25 percent of total ECOWAS member countries port activity.

The ports of Abidjan, Dakar, Douala, Tema, Lomé and Cotonou play a regional role. These ports can not only count on their national hinterland in order to thrive but also on traffic in transit. Should land transport be facilitated along the corridor Abidjan-Lagos, these ports would be in a situation of direct competition to serve landlocked countries.

Despite the fact that some ports have witnessed rapid increased traffic, such as the Ports of Onne in Nigeria or Douala in Cameroon, West and Central Africa is characterized by a multitude of small ports: not a single port is ranked in the top 70 ports

worldwide. Port concentration is higher for container traffic. Douala, Lagos, Tema and Dakar ports account for more than two thirds of total container traffic in the region (see Table 24).

Port and port handling remains public in most African ports. State's role is predominant, the private sector, including global operators' role, being limited. Contrary to what happens all over the world, except for Lagos, the principal container terminal operating groups are so far marginally not involved in container operations in WA.

Table 24: Total container traffic in West and Central Africa (in TEUs) 2011

Côte d'Ivoire	Abidjan	670,000
Nigeria	Lagos	650,000
Ghana	Tema	342,882
Senegal	Dakar	331,191
Angola	Luanda	235,411
Cameroon	Duala	156,000
Benin	Cotonou	97,801
Guinea	Conakry	47,000
Congo, DRC	Matadi	46,000
Gambia	Banjul	44,152
Togo	Lomé	42,240
Gabon	Libreville	39,000
Congo, Rep.	Brazaville	30,000
Sierra Leone	Freetown	25,000
Mauritania	Nouadhibou	21,000

Source: Port Authorities' websites. Includes traffic in transit

4.2. EXPORTS WEAKNESSES

4.2.1. Exogenous Factors

Freight rates take into account trade imbalance between Southbound and Northbound flows. Freight rates to Abidjan are lower than freight rates to destinations at a shorter distance from Europe because return cargo are loaded in Côte d'Ivoire.

Although there has been some improvement in the trade balance of containers, for many WA countries the continuing imbalance between imports and containerizable exports resulted in the export of a large number of empty containers and contributed to increases in maritime freight rates in the region. In 2000, trade imbalance reached 57 percent.

WA trade reached US$112 billion in the year 2011, accounting for 2.1 percent of the value of global trade. In terms of volume, WA trade accounts for 2 percent of world trade. According to UNCTAD, trade grew by 14 percent between 1990 and 2000 whereas world trade increased by 29 percent during the same period. Although WA trade with Europe represented more than two third of total WA total trade, market share of Europe has decreased incrementally since then. Europe and North America remain major trade areas, representing 30 percent of WA trade value. However, Asia, especially China, plays an increasingly significant role in the region.

In the last years, this change has been primarily due to trade growth with the countries of the Far East and the impact of Euro appreciation.

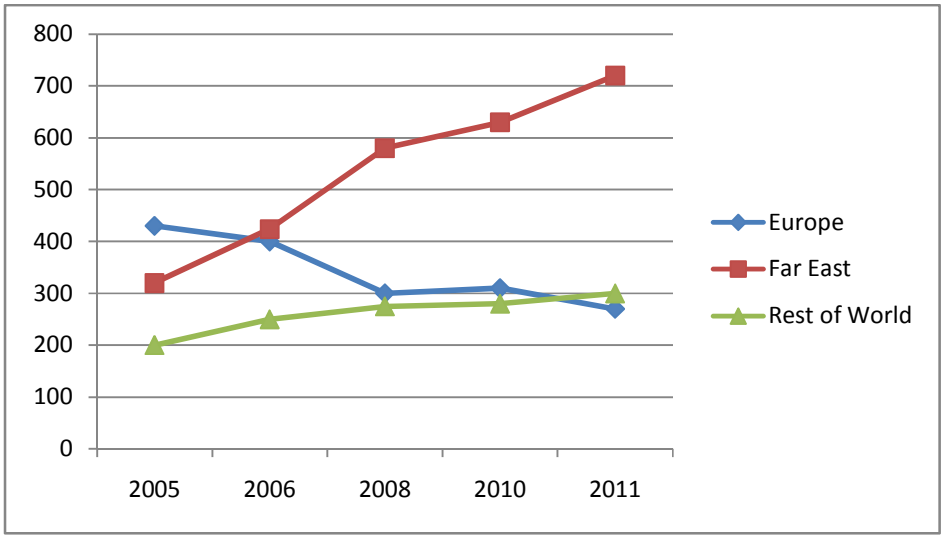
This can also be explained by the changing composition of exports from WA. In 1970, oil was representing 50 percent of exports whereas today it represents more than 85 percent. Nearly half of WA imports were from Europe. This represents a decline over previous years. The region only imports six percent of the value of its trade from North America. The ROW (Rest of the World) category—mostly the Far east—represents a growing source of imports for the region (Figures 12 and 13 on trade trends by regions). The rest of the import value, five billion dollars, represents imports from SSA countries, of which 81 percent is intra-regional trade (WA trade).

Most West African countries depend heavily on commodity exports. WAC mainly exports sugar, cocoa, coffee, tea, cotton, forest products, iron ore, copper and other minerals. These commodities represent more than 80 percent of the volume of non-oil export freight handled by ports in WAC.

According to UNCTAD, the twenty-six major ports in West Africa handled a total traffic of 250 million tons of cargo in 2010, of which 66 percent were oil exports from the oil producing countries of the region.

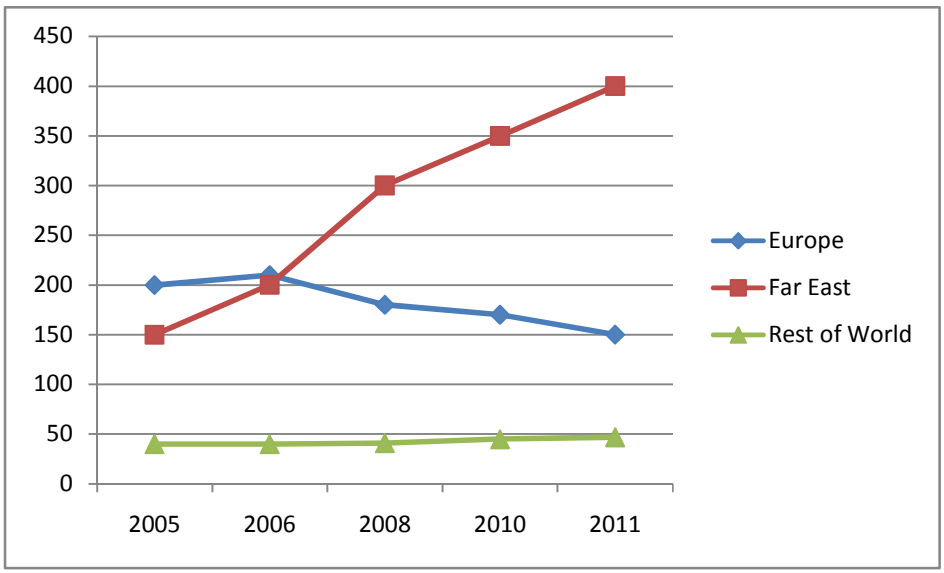
The erosion of export volumes during the last decade was accompanied by a decline in market shares for key exports. For the 30 most significant non-oil exports combined, SSA‘s average market share declined from 20.8 percent in the 1960s to 9.7 percent in 1990 of world exports of those products.

Figure 12: Recent Trends of West Africa’s Imports



Source: Conte (2005) and various trade reviews (2011) Combined by the Author

Figure 13: Recent trends of West Africa’s exports



Source: Conte (2005) and various trade reviews (2011) Combined by the Author

4.2.2. High Port Costs for Shippers and Shipping lines

Because of numerous constraints, port charges are high for shippers. Shipping lines face congestion costs and poor port productivity and pass these costs to the shippers.

Consequently, African economies, as a whole, bear the costs of congestion and poor port productivity. Delmas Shipping line (Before it is takeover by CMA-CGM) calculated that, in 2004, 146 days were lost on the weekly service Europe-Africa because of congestion, which corresponds to an estimated cost approaching US$5 million, which is passed on to shippers through congestion charges. In 2009, when congestion was extremely high in Nigeria, it was calculated that the average cost of a call at Lagos was twice higher than in Felixstowe (UK).

4.2.3. Shipping Lines to cope With Constraints in West Africa

Faced with numerous constraints, shipping lines strategies have been focused on conferences, niches' quest and stopping the erosion of tariffs, which decreased in the end of the 1990s.

The agreements between shipping companies, known generically as Conferences, have a long history in West Africa. There have been major changes in comparatively recent years, mainly as a result of requests from the European Union.

Changes in the composition of such agreements has resulted from mergers and takeovers in shipping lines industry, including the purchase of OTAL by Delmas, the purchase of Safmarine by Maersk Sealand and finally, the purchase of Delmas by CMA-CGM.

Due to the 1974 Code of Conduct for Liner Conferences and the 40-40-20 rule, WA fleets played a substantial role until 1990. In practice, this rule led to the existence of several shipping companies without ships, selling their country's share of cargo to

foreign companies, without accepting any responsibility for the quality or cost of services.

However, containerization growth has required the reconfiguration of national fleets—a challenge impossible to meet for most WA countries.

UNCTAD then recommended shipping policy reforms based on the following strategies:

- Liberalization with a complex mix to ensure the competitiveness of the sector, and
- Regulatory and promotional policies, to ensure a "level playing field" for national operators and the best available conditions for users"

This concurs with the recommendation of Cotonou II to liberalize policies for maritime transport: "Policies and accompanying legislation should be modernized to reflect commercial realities. Key policies and laws should focus on rules of competition and should be harmonized at the regional level".

As a result of this liberalization and the end of the 40-40-20 in several countries, national shipping lines have greatly diminished in size and importance with a few exceptions and are marginal for containerized cargo.

The shipping industry is now dominated by a few companies, the "mega-carriers", organized in global consortia and able to offer lower rates for shippers. WA countries excluding the Liberian flag now report a total fleet of 4,000 tons for container ships and 288,000 tons for other ships (general cargo, bulk ships and oil tankers), many of which may be out of service.

The total of container ships serving WA ports may amount to 3 million tons Gross Register Ton (GRT).

Until the mid-90s, the Europe-West Africa trade was organized within four conferences.

- COWAC (Continent-West Africa Conference) covering trade between North Europe and
- West Africa

- UKWAL (UK-West Africa Lines) covering trade between the UK and West Africa
- CEWAL (Central-West Africa Lines) covering trade between North Europe and Central Africa)

- MEWAC (Mediterranean-West Africa Conference) covering trade between the Mediterranean and West Africa

In the early 1990s, following a procedure initiated by Maersk, the European Commission investigated the alleged monopolistic practices of the conference lines involved in the region, mainly targeting Delmas. As a result, the shipping company was fined and forced to withdraw from all conferences in 1992, reducing drastically the market share controlled by COWAC and MEWAC.

Competition then intensified in the Europe/West Africa trade, and maritime transport rates registered a sharp decrease. After 1995, maritime transport tariffs remained without a rate setting mechanism for several years.

Eventually, the situation stabilized when Maersk took over Safmarine and OT Africa Line joined Delmas under the control of the Bollore Group.

In 2000, a group of carriers involved in the Europe West Africa trade decided to set up a new conference, named Europe West Africa Trade Agreement (EWATA). The main objective of EWATA was to stabilize rates, which would be published. EWATA impact was due to the fact that member lines controlled an estimated 50 percent market share of the Europe/West Africa trade. Delmas and OTAL opted to remain outside the agreement, but mirrored most of the rate increases initiated by EWATA members.

In 2002, new shipping lines entered the Europe-West Africa trade, notably the CSAV group which developed an innovative approach, by adding intermediate calls in West Africa on their joint service between Europe and East Coast of South America (ECSA).

EWATA members and Delmas/OTAL, accused the new entrants to practice predatory pricing and fierce competition. Subsequently, the downward effect on the rates resumed over the next two years.

On September 1, 2003, Delmas and its subsidiary OTAL joined EWATA, bringing the market share of EWATA to an estimated 70 percent to 75 percent of the total Europe West Africa trade. In November 2003, P&O Nedlloyd announced its withdrawal from the Europe West Africa trade, and its intent to focus on the growing Asia West Africa trade. In August 2004, West-Afrika Linien announced its withdrawal from the Europe-West Africa trade, quoting the inability of EWATA to increase the rates because of a strong competitive pressure from the outsiders, as the main reason for the decision. Slow traffic growth and limited market entry had lead to excessive capacity over demand for shipping services.

Because of port problems, shipping lines adopted port surcharges, such as congestion surcharge which range from 25 Euros in Dakar to 300 Euros in Tema for a 20' container. Thus, gaps in freight rates between WA ports do exist, as a consequence of traffic and efficiency differences.

In the last years, shipping lines established tariffs increases for "port congestion" and "rate restoration" within the framework of Conferences.

4.3. EFFICIENCY AND MARGINALIZATION OF PORTS IN WEST AFRICA

West African ports cannot be isolated from world trends in trade and shipping sectors. West African ports are facing a challenge to receive bigger ships and to provide quick and efficient container handling. Major ocean carriers may be reluctant to call at certain ports due to high turnaround time and poor port efficiency.

Yet, this challenge is also an opportunity as over time; these developments should result in more efficient transport operations, which, if complemented with commensurate efficiency gains on the port landside, can significantly drive costs down.

Ports in the region with substantial hinterland traffic should be the natural competitors to become hub ports. However, decisions on transshipment centers in WA inevitably will reflect a wide range of additional business considerations by ocean carriers, including the capacity of the ports to handle significantly increased traffic in order to minimize dead time for vessels. This might lead to a situation where medium size ports in the region can also be serious competitors for consideration for development as hubs.

4.3.1. Port Physical Constraints

There has been ongoing discussion to expand several ports in the sub-region such as in Ghana, Benin, Côte d'Ivoire and Nigeria. However, materialization of such projects has been difficult due:

- Location constraint for the sustainability of certain ports

Many of the region's ports are embedded in cities, resulting in port and cities congestions. Port access from land transport corridors are usually inadequate, requiring better joint planning between ports and cities. The location of many of the long established ports such as Lagos-Apapa within the urban area makes them difficult for their sustainability in the future Port-rail connection may also have to be redesigned and requires detailed consideration in each case. Indeed, rail yards may take up a significant area within or adjacent to the port with rail lines representing up to 10 percent of the port estate.

- Port capacity usually results from inadequate maintenance

Only Abidjan (3 cranes), Lagos-Apapa, Tema, Dakar and Douala, (2 cranes) are equipped with gantry cranes in container terminals.

In general, equipment maintenance in West African ports has been inadequate over the past years. However, expensive rehabilitation should be only approached after a careful analysis of the future need for current equipment, many of which being technically obsolete and would be better replaced by new facilities.

Maintenance dredging and navigational aids are usually inadequate. Ports in WA sign on ad-hoc basis dredging contracts. However, there are few long-term contracts for dredging maintenance. Access depths increased for Douala after a dredging contract was signed. However, because of contract implementation problems, the depth of the port remains changing, which is problematic for shipping lines.

- Port capacity could become a serious challenge in the future

As ports would be increasingly challenged by intensified traffic, greater ship size and transshipment growth, ports capacity may have to be expanded in the future. Larger ships are more demanding in terms of port installations. The ship to shore gantry cranes need to be sufficiently large to reach all the containers and sufficiently fast in operation for an acceptable ship turnaround time. We could assume that, in five to ten years, 2,500-4,000 TEU containers vessels will call in West and Central Africa demanding depths up to 14 meters and increased stacking areas.

However, expanding port capacity does not currently appear to be the main priority in WA. According to Drewry (2006), port capacity in Africa is used at 80 percent capacity. In 2010, the utilization ratio of container terminals should remain constant (79.5 percent) based on traffic forecasts and confirmed investment plans. Consequently, in the short and medium term, global port capacity in Africa does not seem to be the most important constraint (although it may be an important factor for some ports).

If the containerization rate would increase substantially, capacity could then become a serious challenge in the region.

4.3.2. Impacts of Port Organization on Port Efficiency

This can be analyzed through two points of view:

- Impact of port efficiency on port productivity and costs

Systematic comparative information is not available on cargo handling performance in many ports of WA. However, there are clearly important discrepancies: dwell time may vary between a reported average of 7 days in Abidjan and 17 days in

Douala. A number of ports have developed off-dock terminals to remove container yards from the immediate vicinity of the port to a less congested area. These terminals have their place, primarily for empty container storage. Inland terminals connected to an efficient rail system may tend to reduce the transit time and permit special arrangements to be made with the shipping companies.

- Importance of a legal setting

The institutional framework of a port in WA has depended primarily on its inheritance of either the French or the British model. The French model usually placed the ports under an *établissement public*, which is an incorporated government agency. In France, the landlord model prevailed. The agency was in charge of infrastructure, real estate (*domaine*) and marine services. The private sector operated cargo handling and storage and other business related activities under some degree of regulation.

In the British model, port authorities were also incorporated statutory public bodies but usually enjoying a greater degree of autonomy. They usually were service ports. The port agency entered more directly into landside port operations, such as shore handling, storage, or towage. In both cases, investment in infrastructure and fixed equipment was supported primarily by the port agency, with or without government financial involvement. Over the years, the public institution has tended to grow incorporating in some cases additional functions and services. There are at present two major trends. The first is to establish the statutory incorporated port agencies as share companies. Shares are at present owned only by Treasuries but the road to equity participation by others is opened. The second is towards the concessioning of specialized terminals to transfer the risks and costs of fixed infrastructure and equipment from the port agency to private operators.

The present model envisages the transfer of responsibility for operational matters and, so far as possible, the investment in superstructure and operational infrastructure. The landlord port concept now prevails in many regions of the world. Terminal containers have been concessioned in Abidjan, Tema, Takoradi, Luanda and Douala, among others, in the last years. Landlord ports are usually less costly for shippers and shipping lines because in most service ports, the transfer of lucrative cargo handling and

storage activities to the private sector will impact negatively on their revenue, necessitating a reshaping of their financial and revenue structure.

4.3.3. Cumbersome Procedures And Poor Links To The Hinterland Reduce Port Efficiency

Lomé's port implemented a program, "Solidarity on the water" aiming to promote transit operations destined to landlocked countries.

However, a port's competitiveness does not only depend on its infrastructure and services. It also hinges on the quality and fluidity of the land transport networks which serve it (most often being the regional interstate roads). The beneficiaries of this emerging trade competition will be the countries that have, at the same time, efficient ports, good roads without roadblocks, operational rail lines and border posts with the least administrative formalities.

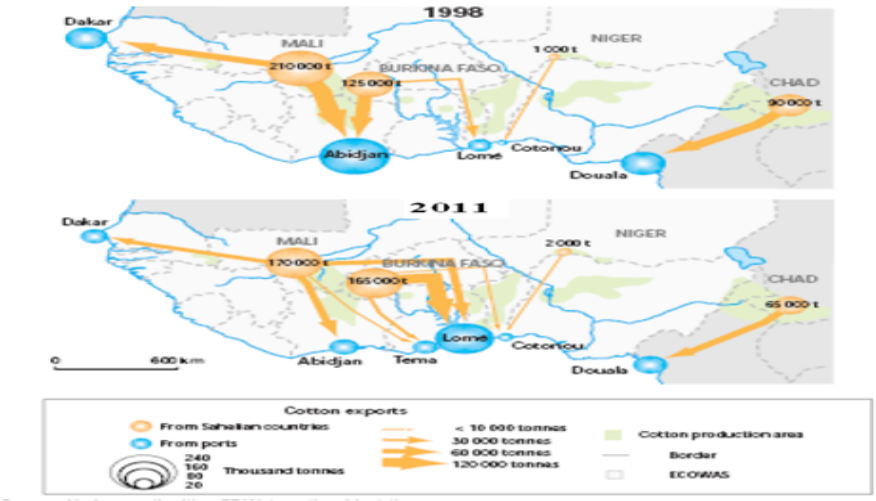
The competition between transport corridors could be a triggering mechanism to do away with the numerous road blocks and other obstacles to the fluidity of goods and people's movement. In addition, there are the traditional "non-infrastructure" and "non-official" barriers at the ports and at border crossings that slow trade movement and increase their costs without adding economic value. The search for efficient ports and shipping has to be complemented by associated measures, which increase transparency and reduce corrupt practices. The five landlocked countries of West and Central Africa are Burkina Faso, Central African Republic, Chad, Mali and Niger. Their transit traffic registered by WA ports amounts to three million tons, representing a volume of about four percent of all West African port traffic.

Fifteen transit possibilities for the five landlocked countries have been identified. Distances to the ports vary between 1,000 and 2,000 kilometers with an average distance of 1,500 kilometers. Inland transport costs are relatively high in West African countries, on account of distances and deficiencies in infrastructure. Even for two relatively high value commodities (cocoa and coffee), on the basis of figures provided by the *Institut*

national de recherche sur les transports et leur sécurité (INRETS) for the Cotonou II workshop, the land cost accounted between 35 and 41 percent of the total transport cost from origin to port of destination. None of the landlocked countries depends exclusively on a unique corridor. Each of them has the choice of several corridors leading to two to four different ports. In most cases, any determined transit country can be avoided, albeit with some delay, further distance and likely additional cost.

The use of multiple corridors has been the general practice, both for security reasons and on occasion for political reasons. Thus the dissolution of the Mali Federation in the 1960s encouraged the use of the Abidjan corridor. More recently, events in the Côte d'Ivoire in 2011(See Figure 14) have benefited ports in Ghana, Togo and Benin with diverted traffic destined for or coming from Burkina Faso, Mali and Niger. Such interruptions indicate that dependence on a single transit corridor is not a wishful strategy.

Figure 14: Impact of the Ivorian Crisis and the Growing Role of Lomé



Source: ECOWAS Secretariat Publications 2011

CHAPTER FIVE
IN-DEPTH ANALYSIS ON THE CORE-PORTS

5.1. INFORMATION OBTAINED FROM QUESTIONNAIRE SURVEY

In this part the author will discuss the empirical results obtained from the survey. The part is divided into three main sections. After presenting and analyzing the response and the current hub choices of the major liners, the author will assess the average significance, appreciation score and finally test statistical the result of the survey.

5.1.1. Response Analysis and Current Transshipment Hub Choices of Major Liners

Survey respondents were requested to fill in and return the questionnaire in the latter half of March 2012. The author received back 16 filled-questionnaires representing 16 liners with a response rate of about 64%. Among these responses, they represent the opinions of the major players in the West African transshipment market since, in terms of TEU and number of container vessels; these respondents represent more than 80% and 70% of the top 25 and total African container liner shipping markets (See Table 25). These figures strongly strengthen the argument that the findings and analysis of this thesis are well-supported by a highly reliable database.

Table 25: Share of Interviewed Liners Compared to the African Global Total and top 25 Liners

Category	Total Carrying Capacity (TEU)	Total Vessels	Share of Capacity	Share of Vessels
All Liners in Africa	50000	150	100%	100%
Top 25 Liners (% Share) To all liners	42000	92	84%	61%
Interviewed Liners (% Share To all Liners)	36000	81	72%	54%

Source: Various Alphaliner Reports Combined by the Author (2004 to 2011)

Using the information provided from Section A of the questionnaire (See Appendix A), Table 26, 27 and 28 are constructed to give a general idea about the current transshipment hub Choices by liners. As previously mentioned, to respect confidentiality, liners are only coded alphabetically.

Table 26 indicates that Lagos and Tema are popular choices in transshipment containers to the other West and Central African countries, while Lagos is also a popular choice in container transshipment to North/South America. With South Europe/East Mediterranean, the situation is more different, with Dakar as the most popular choice. Here it is not difficult to find that Lagos enjoys many exclusive calls from liners while most of the other calls are joint calls except Dakar and Tema often where they enjoy calls excluding Lagos in serving the South Europe/East Mediterranean basin. Finally, few liners choose Douala as a transshipment hub. In many cases, it seems that no matter what ports they choose the companies of survey respondents prefer to include Lagos as a transshipment hub, especially in North/South America and the other west and central African countries.

Table 26: Container Transshipment Hub Choices Of Interviewed Liners Between West Africa and the Other West and Central Africa

Port	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Dakar		*			*							*	*		*	
Douala			*			*		*								
Lagos	*	*	*	*		*	*	*	*	*	*			*	*	*
Tema	*	*			*		*			*	*	*	*			*

Note: ‘’*’’ indicates that the liner concerned has chosen that particular port as the transshipment hub in serving transshipment from other west and central African Countries

Table 27: Container transshipment Hub Choices Of Interviewed Liners Between West Africa North/South America

Port	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Dakar					*								*			*
Douala			*					*			*					
Lagos		*	*	*		*	*	*	*	*	*	*		*	*	*
Tema	*	*			*		*		*	*			*			

Note: ‘’*’’ indicates that the liner concerned has chosen that particular port as the transshipment hub in serving transshipment from North/South America

Table 28: Container Transshipment Hub Choices Of Interviewed Liners Between West Africa/South Europe and West Mediterranean sea.

Port	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Dakar	*	*	*	*	*	*		*	*			*	*		*	*
Douala			*			*	*				*					
Lagos														*		*
Tema	*	*	*	*	*					*	*	*				*

Note: ‘’*’’ indicates that the liner concerned has chosen that particular port as the transshipment hub in serving transshipment from South Europe/West Mediterranean Sea

Only three liners within the top 25 indicate that they possess dedicated container ports/terminals of any kinds at these ports benefiting from the wage of privatizations started recently. Nevertheless, there are also several liners, all belonging to the top 25, which indicate they do have plans/do consider the option of constructing dedicated terminals in West Africa for their own vessels in the near future. The major reasons for such companies to build and invest dedicated terminals are either to guarantee berths available for their vessels or alliance commitments due to berth congestion encountered by their merchant fleet.

In section B, respondents should give scores on the significance of different factors in affecting the attractiveness of a port for transshipment. In section C, they should give scores to assess the performance of the core-four ports in serving such purpose. In the questionnaire, the category ‘ time required to load and unload container’’ is set at 18hours to 20hours in handling 2000TEU-carrying vessel which is the best standards considering African port performance while in the world the standard is set at 13hours maximum. This assumption is based on the scenario in which 3 gantry-cranes are deployed each of them handling 100 TEU per hour.

5.1.2. Average Significance, Appreciation Scores and Statistical Testing on Survey Results

- *Average Significance Score (ASS) and Average Appreciation Score (AAS) calculation*

The aggregated results of ASS are presented in Table 29 for easy understanding, the layout is divided into different aspects and factors. Results from Table 29 show that liners still regarded money, time and geographical location as important factors in deciding their choices. However, here it also illustrates that the significance of qualitative factors should not be ignored as interviewees also indicated that they would be taken into considerations before making their transshipment hub choices. Such results confirm the works by Clark et Al (2001) and Tongzon (2002) where port choice is a mixture of different factor and that only monetary and time factors are not enough to explain the final decisions of liners. Such breakdown also indicates that, although money and time play significant roles in port choice, still, the significance of port performance within the port port-choice decision-making process in container transshipment can't be ignored. Among qualitative factors, survey respondents are most concerned about delays, port access and port operator's speed in responding to their new demands, while port infrastructure, advanced technology, availability of dedicated facilities for container transshipment and the availability of professional personnel in ports are also other important factors in their choices.

On the other hand, AAS of different factors of the ports are presented in table 30 to facilitate comparison, a league table based on the AAS scored by the core-four ports has also been constructed (See Table 31) for the same purpose.

Table 29: Average Significance Score of Different Factors in Affecting The Attractiveness of the Core-four Ports In Providing Container Transshipment Services

PORT LOCATION FACTOR	Score
A) Monetary aspect	
- Vessel operation monetary cost from transshipment to destination port (Journey Cost)	4.37
B) Time aspect	
- Average journey time form transshipment to destination port (Journey time)	4.47
C) Locational efficiency	
- Location of port with respective to distance between transshipment and destination port (locational efficiency)	4.26

PORT FACTOR
A) Monetary aspect
- Port Charge (Terminal handling charge and port dues)
B) Time Aspect

- Average time to load/unload containers from vessel	4.26
- Efficiency of port in container-handling	4.34
C) Qualitative aspect	
- Cases of delays in loading/unloading containers	4.42
- Records of damage during container-handling	2.89
- Custom procedures (Inspection, Documentary, etc.)	3.26
- Port authority policy and regulations	3.05
- Accession to port	4.47
- Quality of port infrastructure for handling containers	3.89
- Quality of port superstructure for handling containers	3.42
- IT and advanced technology for port operations	3.74
- Dedicated terminals and facilities for container transshipment	3.52
- Supporting industries (Warehousing, insurance, etc.)	2.74
- Quality of other services (Pilotage, towing, mooring, etc.)	2.95
- Availability of professional personnel in port	3.89
- Preference of shipping line clients/shippers	3.21

- Personal contracts/relations between port operator and liner shipping companies	3.37
- Efforts of marketing on the port by port authority	2.79
- Reputation of port within the region	3.31
- Port operator's speed in responding to liner shipping companies' new demands and requests	4.05
- Qualitative factors (Average)	3.46

Note: All figures are corrected to two decimal places. Scores range between 5 and 0

Table 30: Average Appreciation Scores of the Core-four ports in Providing Container Transshipment Services.

	PORT SCORES			
FACTOR	DAK	DOU	LAG	TEM
Efficiency of a port in container-Handling	-1.14	0.47	1	0.6
Locational Efficiency (OW and Central Africa)	-0.93	-1	1.21	0.71
Locational Efficiency (N/S America)	-0.29	-1.64	2.06	1.4
Locational Efficiency (SE/West-Med)	1.71	0.2	0.15	0.95
Cases of delays in loading/unloading containers	0.8	-0.43	-1.44	0.07
Records of damage during container-handling	-0.86	-0.64	0.93	-0.73
Custom procedures (Inspection, Documentary, etc.)	0.73	-1.1	-0.96	-0.21
Port authority policy and regulations	1	-1.62	1.5	1.3
Accession to port	1.57	0.79	1	0.8

Quality of port infrastructure for handling containers	-1.6	-1.5	0.64	-0.73
Quality of port superstructure for handling containers	-1.7	-1.6	0.2	-0.9
IT and advanced technology for port operations	1.87	1	1.5	1.65

Dedicated terminals and facilities for container transshipment	0.87	0.43	0.69	0.5
Supporting industries (Warehousing, insurance, etc.)	0.93	-1.5	1	1.94
Quality of other services (Pilotage, towing, mooring, etc.)	0.31	0.27	0.78	1
Availability of professional personnel in port	1.23	-0.25	-1.5	0.87

Preference of shipping line clients/shippers	0.67	0.57	1.13	1.06
Personal contracts/relations between port operators and liner shipping companies	1.13	1.5	1.56	1.6
Efforts of marketing on the port by port authority	0.9	-0.56	0.75	0.7

Reputation of port within the region	0.87	1.86	1.25	1
Port operator's speed in responding to liner shipping companies' new demands and requests	-0.56	-0.35	-0.2	1

Note: All figures are corrected to two decimal places and rage between +3 and -3.

Table 31: Average Appreciation Score League Table

	PORT RANKINGS			
FACTOR	1st	2nd	3rd	4th
Efficiency of a port in container-Handling	LAG	TEM	DOU	DAK
Locational Efficiency (OW and Central Africa)	LAG	TEM	DAK	DOU
Locational Efficiency (N/S America)	LAG	TEM	DAK	DOU
Locational Efficiency (SE/West-Med)	DAK	TEM	DOU	LAG
Cases of delays in loading/unloading containers	DAK	TEM	DOU	LAG
Records of damage during container-handling	LAG	DOU	TEM	DAK
Custom procedures (Inspection, Documentary, etc.)	DAK	TEM	LAG	DOU
Port authority policy and regulations	LAG	TEM	DAK	DOU
Accession to port	DAK	LAG	TEM	DOU
Quality of port infrastructure for handling containers	LAG	TEM	DOU	DAK
Quality of port superstructure for handling containers	LAG	TEM	DOU	DAK
IT and advanced technology for port operations	LAG	DAK	TEM	DOU
Dedicated terminals and facilities for container transshipment	DAK	LAG	TEM	DOU
Supporting industries (Warehousing, insurance, etc.)	TEM	LAG	DOU	DAK
Quality of other services (Pilotage, towing, mooring, etc.)	TEM	LAG	DAK	DOU
Availability of professional personnel in port	DAK	TEM	DOU	LAG

Preference of shipping line clients/shippers	LAG	TEM	DAK	DOU
Personal contracts/relations between port operators and liner shipping companies	TEM	LAG	DOU	DAK
Efforts of marketing on the port by port authority	DAK	LAG	TEM	DOU

Reputation of port within the region	DOU	LAG	TEM	DAK
Port operator's speed in responding to liner shipping companies' new demands and requests	TEM	LAG	DOU	DAK

- ***Statistical Testing on Survey Results***

At first glance, survey respondents do have significant opinion differences on the performances among the Core-four Port. However, to confirm this objectively, statistical testing is needed. As more than two sample groups are available here, ANOVA is used to test such differences through calculating the *F*-values. Various previous studies have also applied ANOVA in assessing the port attractiveness scores given by questionnaire respondents. In the test, if *F* is lower than the critical value, null hypothesis, significant difference does not exist between the quality of the concerned factors offered by different ports to liners and major potential difference is mainly driven by chance. If *F* is higher than the critical value, it implies that significant differences exist and the null hypothesis will be rejected.

As it is assumed that time efficiency, locational efficiency and all other qualitative factors are the three 'pillars' of port performance factors, factors in Table 30 Will be analyzed by dividing them into time efficiency (efficiency of a port in container handling), locational efficiency (of different regions) and qualitative factors (all other remaining factors). As it is assumed that all the factors which affect quality of service

(except time and locational efficiency) should be grouped together under the category 'qualitative factors', when applying ANOVA, except time and locational efficiencies, all other qualitative factors illustrated in Table 30 will also be agglomerated and analyzed together. The values of *F* are presented in Table 32.

Table 32: The ANOVA *F*-Values of Different Categories

CATEGORY	VALUE OF *F*
Time Efficiency	5.82
Locational Efficiency (Other W/Central Africa)	10.52
Locational Efficiency (North/South America)	23.46
Locational Efficiency (North/South America)	23.47
Qualitative Factors	8.32

Note: the critical value is 2.33 (with a significance level of 0.05).

The *F*-value in Table 32 indicates that significant differences exist in all categories with their respective *F* all significantly higher than the critical value of 2.33 which indicates that respondents do have different opinions on the performance of the core-six ports acting as transshipment hubs in West Africa. However, here only half of the question is answered because the relations between different port-pairs are still unknown whether significant difference exists between all ports or just certain binary port-pairs. This can be solved by applying the *t*-test. As AAS of the Core-four Ports are not directly related to each other, the unrelated *t*-test. Like ANOVA, factors in Table 30 will be applied under the same basis as below.

The *t*-test results in time efficiency between different West African ports are presented in Table 33, Table 34, and Table 35 and Table 36 Are bolded if *t* is larger than their corresponding critical values.

Table 33: t-test Matrix Of Time Efficiency Between the Core-four Ports

PORT	DAKAR	DOUALA	LAGOS	TEMA
DAKAR	_	**2.7**	**3.17**	**3.05**
DOUALA	**2.7**	_	0.55	1.01
LAGOS	**3.17**	0.55	_	0.97
TEMA	**3.05**	1.01	0.97	_

Note: the critical values are 1.70 (with a significance level of 0.05).

For time efficiency, the core-four ports can be divided into two groups. The first group consists of Lagos, Tema and Douala with better time efficiency (considering the African standards) while Dakar belongs to the worse performing group. It is clear that significant difference exists between these two groups which suggest that the relatively higher *F*-value was due to the difference between these two groups of ports. According to Table 32, the difference between the two groups is that the former group consists of much higher quality ports (considering the situation of the other West African ports although these ports are far to meet the international standards) in terms of time efficiency in container loading/unloading.

The *t*-test results in locational efficiencies of the other West and Central African countries, the North/south America and the south Europe/West Mediterranean sea port are presented in Table 34, Table 35 and Table 36 Respectively.

Table 34: t-test Matrix of Locational Efficiency (Other West and Central Africa) Between The Core-Four Ports

PORT	DAKAR	DOUALA	LAGOS	TEMA
DAKAR	_	**4.52**	1.11	1.05
DOUALA	**4.52**	_	**2.75**	**3.76**
LAGOS	1.11	**2.75**	_	0.97
TEMA	1.05	**3.76**	0.97	_

Note: the critical values are 1.70 (with a significance level of 0.05).

Table 35: t-test matrix of Locational Efficiency (North/south America) Between the Core-four Ports

PORT	DAKAR	DOUALA	LAGOS	TEMA
DAKAR	_	**4.7**	1.17	0.55
DOUALA	**4.7**	_	**3.55**	**2.01**
LAGOS	1.17	**3.55**	_	0.97
TEMA	0.55	**2.01**	0.97	_

Note: the critical values are 1.70 (with a significance level of 0.05).

Table 36: t-test matrix of locational efficiency (South Europe/West Med) between the Core-four Ports

PORT	DAKAR	DOUALA	LAGOS	TEMA
DAKAR	_	0.7	**5.64**	1.25
DOUALA	0.7	_	**2.55**	0.05
LAGOS	5.64	**2.55**	_	**3.97**
TEMA	1.25	0.05	**3.97**	_

Note: the critical values are 1.70 (with a significance level of 0.05).

For the Other West and Central African ports, locational efficiency can be classified into three groups. The first group consists of ports which have the best potentials (Lagos and Tema) closely followed by the second group consisting of Douala. Dakar belongs to the final group which is also regarded as the worst candidates by respondents. Since significant difference between Lagos and Tema does not exist, competition between them is likely to be tense.

For North and South America, locational efficiency can be classified into two groups. The first group consists of Lagos, Tema and Dakar and the second group consists of Douala. Apart from one port-pairs (Lagos and Tema), there is a significant difference between all other ports-pairs. When Table 34 is analyzed together with the Table 35, it seems that survey respondents regard Lagos and Tema as especially good choices in serving the North and South America transshipment market. It is also a way for these liners not to encounter major restrictions relating to West African seaborne trade. Such a similar perception is likely to pose fierce competitions between the Nigerian and Ghanaian ports in grabbing market shares for this region. Although Dakar port is just behind the Nigerian and Ghanaian ports, their geographical difference is still significant.

For the South Europe and West Mediterranean sea, locational efficiency can be divided into three groups, namely Dakar, Douala-Tema and Lagos, with the last group significantly worse than others. There is no significant difference between Douala and Tema. Interestingly, the null hypothesis cannot be rejected between Dakar and Douala. Although Dakar possesses the best geographical location in serving the South Europe/ West Mediterranean sea and closely followed by Douala and Tema, the geographical advantages of Dakar in serving this region is not as clear-cut as in the case of Lagos and Tema in serving the North/South America.

The t-test results for the qualitative factors between different West African Core-four Ports are presented in Table 37.

Table 37: t-test Matrix Of Qualitative Factors Between The Core-Four Ports

PORT	DAKAR	DOUALA	LAGOS	TEMA
DAKAR	_	1.2	**4.65**	**1.75**
DOUALA	1.2	_	**3.25**	**2.05**
LAGOS	**4.65**	**3.25**	_	0.4
TEMA	**1.75**	**2.05**	0.4	_

Note: the critical values are 1.70 (with a significance level of 0.05).

For other qualitative factors, ports can be classified into two groups. The first group consists of ports which provide acceptable quality of service including Lagos and Tema whilst the second group consists of Dakar and Douala which offer significantly worse quality of services. Although Dakar and Douala are worse than the Nigerian and Ghanaian ports, Table 37 indicates that significant difference also exists between them. Such result clearly illustrates the significant difference in service quality between Douala and the other Core-four Ports of which the former is a very poor performing port.

Through applying t-test, two observations can be identified. Firstly, in terms of time efficiency and other qualitative factors, respondents do not find significant differences between the Nigerian and the Ghanaian ports. They are all quite decent option in terms of service quality (according to African standards). Dakar and Douala should make some dramatic improvements if they want to enhance their attractiveness, especially Douala.

Secondly, in terms of locational efficiency, Lagos and Tema are virtually the same and both of them are ideal locations in serving North/South America but poor in the European region. There is no significant difference between Tema and Douala in terms of geography as they belong to the same group in the South Europe/West Mediterranean. Although Tema and Douala do not have especially favorable locational advantages in serving any one of the destined regions, their locations are rather intermediate between the three regions and both of them possess certain potential in competing for transshipment business, especially directed toward Other West and Central African and South Europe/West Mediterranean sea direction. Here the case of Dakar is especially interesting. Results from t-test indicate that Dakar is perceived by respondents as a good location for virtually in European region studied here. Apart from some parts of it, virtually no significant difference exists between Dakar and the other best ports (Lagos and Tema) in serving that region. Finally, Douala would hope that its locational advantage in serving Other West and Central African ports can compensate its own poor service, although it is likely that it would expect tense competition from Lagos.

5.1.3. General Observations on the performance of the Core-four Ports

Dakar

Except Douala, Dakar is the worst performer among the Core-four Ports with most listed almost factors lying in the bottom three. Unsurprisingly, as a Senegalese Port, Dakar understandably possesses geographical advantages in serving transshipment to the South Europe/West Mediterranean Sea. However, although its relation with liners is okay, quality is rather poor and thus respondents are generally not satisfied with its services. Despite such disappointing performance, the only consolation is that Dakar does not possess any worst performing factors while performing quite well in custom procedures even if it is well below the international standards. In order to remain competitive in the market, it seems necessary for Dakar to improve its performance with its AAS significantly lower the most of the other competitors in the region like Lagos or Tema.

Douala

No other port's performance is as poor as that of Douala. Except possessing geographical advantages, all factors lie well below the acceptable line whilst the port suffers from being the worst performer in most factors. Another poor record shows that more than half of the port performance factors of the Douala possess AAS values with custom procedures, quality of port infrastructure in container-handling, quality of port superstructure in container-handling, supporting industries, availability of professional personal in port, efforts of marketing on the port by port authority and reputation of port within the region being the only one exception. Organized on the same model of French ports, Cameroun port faces a decline in service quality and thus few liners choose it as their major West African hub, especially due to the fact that its facilities are outdated and the Cameroonian government does little to encourage port improvements. Under such circumstance, in the foreseeable future, it is unlikely that Douala can become a

strong competitor in the market. In general, survey respondents indicate their huge dissatisfaction with its service, one of which even describes its services as *terrible.* Understandably, this is likely to affect its reputation as a transshipment hub in the region.

Lagos

The survey indicates that respondents are content with Lagos. Among 21 factors investigated, Lagos performed nine while almost the majority is lying within the top three in the league table and ten factors obtain AAS higher than one. Also Lagos possesses an extremely favorable geographical location acting as a transshipment hub to North/South America. However, survey respondents do not believe that Lagos is a good choice in serving the South Europe/West Mediterranean directions. This positive outcome for the port of Lagos is built on the African standards because even constraints encountered by the liners in that port are too much. Thus considering the international standards, Lagos lags far behind.

Tema

As mentioned, Tema possesses locational advantages acting as a transshipment hub. It performs well warehousing, insurance, pilotage and towing and personal contacts/relations with port operator and liner shipping companies. However, Tema suffers from lack of dedicated facilities for transshipment while the IT and advanced technology for port operations are also inadequate. Most importantly, it seems that Tema is not a port which is much preferred by the customers of liners due to port promotion and marketing. Finally, liner opinions on the overall performance of Tema tend to be mixed with an approximate equal number (Although the numbers between 0-3 are more) of port performance factors shared between the top and bottom three. Such diverse view seems that Tema still cannot create a very clear image as a transshipment hub in the region and thus its reputation is as good as that of Lagos.

5.2. CURRENT SITUATION OF THE CORE-FOUR PORTS AND CONSTRAINTS/RESTRICTIONS AFFECTING THEIR CMPETITIVENESS

In this part, the constraints of different ports in affecting their respective competitive positions will be assessed, followed by the second part wherein the role of other factors that affect liners when they make their transshipment hub choices in West Africa will be investigated.

5.2.1. Strengths and Weaknesses of the Core-Four Ports

In this section the author will attempt to answer question relating to the competitiveness by assessing the strengths and weaknesses.

Dakar

Interviewees generally agree that Dakar possesses locational advantages in serving South Europe/West Mediterranean Sea where there is no problem to sail in or out in terms of access to the port.

There are no real problems on tides and water draught. Although not as cheap as European ports, the monetary cost of using the port of Dakar for transshipment is not judged very expensive by some shippers and liners.

However, Dakar also has many weaknesses to list. Geographically, the port is not especially well-located (for the other regions) when compared to the other continental ports for transshipment market. According to liners, they do not feel that it is significantly more beneficial to use the Ghanaian port in transshipping containers to the South Europe/West Mediterranean Sea in terms of virtually any aspects including monetary cost, time and quality of port services. The quality of some port services is also significantly worse. Thus, provided that no significant improvement is made, Dakar

is likely to face further competitions from the other close ports (Like Cotonou or Lomé) in serving the South Europe/West Mediterranean Sea transshipment market.

Another problem about Dakar lies in its management philosophy. Various interviewees, especially liners complain about the outdated beliefs within the management hierarchy. As indicated in the questionnaire survey, quality of service of Dakar is not considered to be decent in any sense and liners complain about various problems like port congestion, low productivity, poor connection between port and inland regions and thus bad reputations. Based on the author's personal knowledge, Dakar has already been warned on this issue. In fact, during the interview, the KoN interviewees even admitted that several liners have described Dakar as *stagnant where the management hierarchy is stubborn and often gives false promises to customers*. However, despite such warnings, some other interviewees still seem quite convinced that Dakar has no real difficulties to grab significant transshipment business for South Europe/West Mediterranean Sea because of '' geographical proximity''. According to an interviewee (From the Autonomous Port of Dakar), *he believed that as the largest container port in Senegal, there is no reason why Dakar cannot sustain itself as one of the major, if not the overwhelmingly dominating, player in the region container transshipment market.* From such comments, it seems that the management hierarchy has not overcome traditional belief.

The other issue relates to the public-private partnership which is difficult to be clarified. When problems occur, some interviewees indicated that when a complaint is received from customers about the port's inefficiency and poor quality, it often results in a fiasco where the public and private parties start to blame each other, not to mention any possibility of cooperation or any form of strategic-partnership. Thus a '' mutual blaming culture'' between the two sectors is firmly established within the port which, predictably, usually results in doing nothing to improve service quality.

Thus apart from hardware improvement, a change in management philosophy seems to be the key to enhance the competitiveness of Dakar in the regional transshipment market. Such traditional belief possibly also explains its poor port

performance and reputation because the hierarchy does not believe that reforms are necessary.

Douala

The major strengths of Dakar are that it has no significant problems on water draught and tides and its geographical location is good for serving the entire region, although understandably not so good in serving North/South America. Under the current shipping routes, the location of Douala is also ideal for being the last loading port, which liners traditionally have preferences of choosing last loading port for export transshipment due to convenience and savings in transit time and monetary costs. However, despite such advantages, Douala only plays a peripheral role in the market.

There must be a reason to explain such a phenomenon. Results from survey indicate that Douala is a poor port to use for transshipment due to various problems including poor physical and management quality. However, results from the survey only reflect the consequences which give a negative impression of the port to liners rather than the reason behind them.

By conducting in-depth interviews, some lights have been shed on the underlying reasons behind. Although not a particularly expensive port, Douala is characterized by low efficiency and poor quality in providing transshipment services due to two major reasons.

Firstly, it is due to its berth arrangements, where ocean crossing and short sea vessels are often moored far away from each other (in some cases, even located in different terminals). Since transshipment involves the transfer of containers from large to smaller vessels, such arrangement implies that, during the transshipment process, a rather complicated process is involved with the use of container trucks commuting between one terminal to another, where in many cases it involves the use of public roads outside the control of the port itself. With longer transshipment routes and the unpredictability of public road congestion, it greatly jeopardizes the efficiency of transshipment within the port and thus its reputation. As one interviewee has noted, he

found it *difficult to understand why Douala arranges berthing in such a strange formation as it does transshipment no favor at all.*

However, an even more serious problem has hindered Douala in becoming an attractive choice to liners, namely public-private relations. In other words, clear separation of entity is still not fully developed. Crane maintenance is the responsibility of the port authority while more importantly, one of the most important groups of employees in ensuring service quality and efficiency, crane drivers for the movement of containers between vessels, are not employed by the terminals but by the port authority under the influence of stevedoring labor unions. In others words, crane drivers are civil servants rather than private employees and a strange phenomenon exists - civil servants employed by the public sector but work for private companies – and it is not difficult to imagine the uneasy relations between them in terms of work culture and expectations. Unpaid, overtime work, bureaucracy…etc. For example, an interviewee from a liner, while sharing his experience with the author, has addressed his grievance of his company's vessel calling at Douala last year. While his company's vessel was discharging at the port, the crane driver found some technical problems in controlling one of the container cranes. In response to this, instead of finding a solution to solve the problem or contacting the port authority or the terminal concerned, he simply left the crane and took the day off because they believed that the crane was simply too risky to be used.

Such work attitude has deteriorated the efficiency and thus increased the generalized cost of using the port for loading/unloading and transshipment.

Apart from the difficulty in the current situation, Douala also has problems in improving the situation, both financially and politically. Unlike other ports, two among the existing container terminals within the port are held by private families with no public shares but these families have limited investment funds to finance any significant terminal expansions.

In fact the situation of Douala is quite common among other African ports. However, while some other ports have moved forward in reform and restructuration, it seems that the Cameroonian political culture, characterized by strong labor union and

suspicions of foreign investments, has hindered its development in tackling new challenges faced by their seaborne trade.

Lagos

In many aspects, the strengths and weaknesses of Lagos are similar to those of Tema port, geographically advantageous and disadvantageous to North/South America and South Europe/West Mediterranean respectively, high container-handling charges and port dues due to labor problems, etc. Nevertheless, Lagos also suffers further weaknesses in providing transshipment services due to the lack of space for further development as the port is located just next to the city center (and thus causes frequent congestion), the existence of numerous outdated and worn-out container-handling facilities need maintenance.

In general, there are no significant differences between Lagos and Tema in terms of quality of port services in serving transshipment traffic. This is especially true because they are serving similar markets and have similar pros and cons. Lagos has a much higher market share in transshipment traffic and given their similar background, it is interesting to investigate the reasons behind. History explains the strengths of Lagos. In order to survive, Lagos had few alternatives but to focus on other markets and this largely explains why Lagos is more trans-Atlantic business-oriented throughout the last two decades. Nevertheless, now time and circumstances have changed and now Lagos clearly benefits from such 'desperate survival strategy'. The trans-Atlantic business-orientation nature of Lagos also justifies the influence of 'chance' in Port Competitiveness Model (PCM) in affecting the success and failure of a port.

As noted by various interviewees, being a traditionally important trading city of West African, Lagos has long established a much stronger local cargo base. In turn, it implies that both liners and their customers have better 'first impression' on Lagos.

According to an interviewee who participated to a report sponsored by USAID, Nigeria's performance was generally poor, presenting many reasons for improvement. He indicates also that import shipments (one starting at Apapa Port, the other starting at

Tincan Island) revealed that operations at the yard (storage time at the port), border clearance, and waiting time in the channel were very long compared to the international norms. Total dwell time, which includes time for border clearance processing, averaged 20 days at Apapa and 29 at Tincan Island.

Tema

Tema Port possesses geographical advantages in serving both the three regions. According to the opinions of liners, the port also achieves very high productivity according to African standards (almost 10 containers per hour), for port access channel is wide enough for the currently largest container vessels to passé through. Facilities are, more or less, new and liners generally find its quality of service satisfying, although customers complain that Tema is an expensive port with high port charges mainly due to high labor costs and the presence of strong labor union agreements (although still significantly cheaper than some other West African ports). The liners often complain about the lack of feeder services between Tema and the other small ports in the region.

Nevertheless, it is clear that there is something more than conventional weaknesses (or strengths of other ports) it is indicated that Tema is a clear underachiever in the market, despite the fact that the port possesses decent quality of port service. Here, the author found that such a problem is related to its nearest rival, notably Lagos. It is not difficult to find that there is an important factor explaining the current situation of Tema which is extremely difficult to be captured in any surveys, historical accidents. Throughout the last two decades, Tema hasn't made any real efforts in altering its competitiveness position as it does not have any significant physical restriction on its development to become a transshipment center. As an interviewee has noted, *in terms of quality of port services, Tema has no significant disadvantages when compared to ports like Douala or Dakar. However, it is somewhat mystifying that they do not make any attempts to compete for their deserved shares in the lucrative Asian market through America, possibly due to the lack of long term visions and inertia.*

An interviewee, who experienced a very bad moment in Tema in terms of business, didn't hesitate to radically point figure to the mis-management stating as follow, *Tema port received is mis-managed. This reflects issues regarding berth throughput, occupancy, and dwell times leading to lower port productivity. The total time in the yard of 352 hours exceeds by far the normal value for container storage at a port. If 56 hours of Customs clearance time is added to the storage time, the average dwell time for inbound transit containers is 408 hours (17 days). Similarly, waiting time at the channel (41 hours) and total berthing time (20.5 hours) are relatively high, which reflects the port's congested environment. The fair-poor score may also reflect Tema port's policy of allowing transit containers to remain in the yard for 21 days free of charge. Compared with corridors in Asia and Africa (including Chittagong, Bangladesh—a relatively poor performer), Tema Port lags considerably behind in average channel wait time and in average unloading time.*

5.2.2. Opportunities and Threats

The strengths and weaknesses of ports are not enough in explaining their current competitive positions because not everything is under port's control and this section is going to address this issue further. This study has identified two major factors, namely effects of local market bases and cargo orientation and 'own goal' of vertical integration.

- Effects of local market bases and cargo orientations

Being the traditional trading centers of West Africa, both Lagos and Tema are ports with strong local market bases and most liners regard these two ports as *must call* in most of their liner routes, serving the industrial regions of Nigeria. The two ports have enjoyed the advantage of being a popular port which is called most frequently due to the possibility to find return cargo.

Such traditional strong market base is helped by the orientation of Lagos and Tema towards the Far East market through American Continent. Far East is the region where cargo volume has increased most rapidly, especially after the participation of china into the WTO, which ensures that its volume growth becomes even more intensive, mainly due to the rapid increase of FDI in the country's manufacturing sector. Since the turn of the century, import from china to the West African market has increased by 53% (See Table 38)

Table 38: West Africa-Chinese Trade

Year	Share of import from China in the total import of West Africa	Share of export to West Africa in the total export of china
2000	20%	10%
2002	31%	23%
2004	38%	27%
2006	42%	29%
2008	40%	25%
2010	47%	28%
2011	53%	29%

Source: ECOWAS Secretariat. March 2011. Official website.

Such impressive growth also implies the rapid increase of imports from China and thus increasing demand in containerized trade.

With China being the most significant container liner source, in terms of container volumes, trans-pacific and Far East-American routes are the most important *trunk routes* nowadays in container liner shipping to West African direction. Under such circumstances, the focus on the Far East has ensured that both Lagos and Tema could maximize their benefits from the changing global economy and address the restrictions relating to their seaborne trade.

Thus, strong local market base and Far East-oriented approach have affected the competitive position of ports in container transshipment. Employing large container vessel makes economic sense if the destination port can host them. That is the major restriction faced also by these two major leading ports to fully benefit from the increasing seaborne trade between Far East and emerging economies in the West African countries. Liner requires also decent prices and services which must also be addressed by the Nigerian and Ghanaian ports because there is a huge potential at stake.

Consequently, considering these opportunities, Lagos and Tema have all means in their hand to be international standards-meeting ports but without political will, these above-mentioned restrictions can deeply affect their competitiveness.

- Own goal 'Effects of vertical integration and strategic alliances'

With the increasingly capital-intensive nature of the shipping industry and the formation of strategic shipping alliances, the bargaining power of liners becomes so strong that it has left ports in a limbo position in terms of competitive intensity. However information obtained from the in-depth interviews seem to indicate that the heyday of liners in their bargaining position is undergoing gradual change and the balance of power has increasingly shifted towards the service suppliers.

Apart from the strengths of the leading ports, which had been discussed before, there are further reasons in explaining such change. Firstly, it involves the demand for ports and transshipment services. Apart from its cargo volumes, the 'china revolution' has also posed considerable transshipment hub choice limitations on liners through altering the global shipping landscape. For example, according to economic forecasts, China's garment export increases so dramatically that its current global proportion of 29% (See table 38) will rise to 40% toward the end of this decade (BBC, April 2012). Actually, such effects have already been felt at the beginning of the spring, where vast amounts of Chinese garments being agglomerated at the major Nigerian and Ghanaian ports due to the incapacity of these ports to handle it and also due to customs clearance problems. This has an extremely significant implication on transshipment demands.

Since vast capital investments and substantial time for construction, in order to raise the capability level of the said-ports, are required, the supply of container stevedoring and transshipment facilities is increasingly becoming difficult to keep pace with increased demands, signified by the fact that most major transshipment hub in West African have experienced a grave degree of congestion in the last few years especially, although the problem of congestion is a fifty-year old issue.

Container throughput growth of Lagos in 2010 serves as a good example in showing how the port has benefited from the increase exports from China (See Table 38) despite the existence of various problems with the port, notably congestion. Unlike the beginning of the millennium characterized by relatively low imports from Far East (China especially), now most major West African ports (namely Lagos and Tema) hardly have any more berthing slots to accommodate any significant increase in container throughputs.

Another reason explaining such changes involve liners and their own strategies. Liners have self-created strategies in the form of strategic shipping alliances and vertical integration. This has seriously backfired. As nobody wants to be left behind, virtually all liners have introduced container service and purchased large vessels, of which these hardware components were not followed by software and changed their management philosophy. According to information obtained through the in-depth interviews, the initial objectives of forming strategic shipping alliance were to enhance efficiency for vessel deployment, to increase frequency and to increase geographical coverage and port choice was never really a serious problem. Such ignorance has created a serious problem of approach. Not taking into account the facility that will serve these large container vessels deployed in that specific region, is considered nowadays as a very bad move. This conducted also to inflexibility in the alliance management.

Apart from inflexibility, relationship with alliance is increasingly becoming difficult to manage due to the expansion of strategic alliances. It is not uncommon that four to five members exist with an alliance or even more. Predictably, differences and conflicts of interest between members have increased, as various interviewees from liners have admitted, that getting *consensus within alliance members is becoming more*

and more difficult, while one interviewee even goes further and argues that *strategic alliance is likely to lose its strong bargaining status without reducing the number of members within itself.*

Thus the own-goal effects of strategic alliances and the implications of network effects have further strengthened the perceptions of liners in transshipment port choices favoring the major's port (Lagos, Tema). The above factors have largely explained the dominance of traditional ports on the West African transshipment facilities market while some other well-performing ports like Cotonou or Luanda, despite significant improvements in transshipment facilities, still cannot benefit much in the market.

From this sub-section, we understand that liners are actually widely restricted when making their choices. Strategic alliances, vertical integration, quasi-political process, network effects and perceptions implies that liners are further 'locked-up in just one or two port(s), despite the fact that decent alternative choices are available.

5.3. FUTURE PROSPECTS OF PORTS IN WEST AFRICA: AN ECONOMIC FORECAST FOR CONTAINER TRANSSHIPMENT

Apart from understanding the current competitiveness of ports, it is also important to predict their future competitiveness. This does not only give ideas on the problems and challenges that ports are likely to anticipate in the foreseeable future but also enhances their chances of making better decisions and effective development strategies, and this usually involves the construction of a forecasting model through applying econometric technique. Also, the calibration of forecasting models is beneficial for academic research because forecasting model yields important information on the nature of relationships between variables (Flowerdew and Martin, 1997). As mentioned in the previous chapters, a Logistic Regression Model (LRM will be constructed for such purpose.

This section is divided into three sub-sections, firstly the author will discuss about the strategies in constructing the LRM and tests its reliability of forecasting, then the future anticipated prospects of the different ports will be forecasted and finally the

author will propose recommendations on the development strategies of the Core-four Ports in the West African container transshipment market.

5.3.1. Logistic Regression Model: Construction Strategies and Application

- Construction Strategies

According to Hensher and Button (2000), an economic forecasting model is not to replicate the entire structure but seeks to isolate key relationship so as to help explain behavior. Such view is supported by Vickerman (2004) who argues that forecasting model is not required if the reality is simple enough to be understood entirely. In other words, rather than searching the perfect fit, one should construct a model which best fits the issue concerned. This implies the need of a good strategy when constructing the LRM.

In constructing the LRM, two approaches are most commonly used, both with pros and cons (Washington et al, 2003). The first approach is called *stepwise regression* where user selects various criteria to decide the LRM in terms of its goodness of fit and significance of the regression results (R square, adjusted R square and F). The second approach is called best subset regression which is a procedure to fit all permutations of the *p*-value. With such understanding, both methods are included for consideration when constructing the criteria in determining the LRM.

With the strategy being discussed, it comes to the model-buiding procedure. Our data will be based on figures published by the core ports. Based on that, we will try to forecast the future market share of the said-ports. In order to proceed so, two strategies will be mainly used to build up the model. Firstly, we have the market share of each port and the generalized cost. The main point here will be to understand when one port specially the most competitive one, lowers their generalized cost while other ports remain constant, how this will influence its market share and the implication on its market share when a ports lower its generalized cost.

Table 39, 40, 41 and 42 give historical snapshot on the Core-four port (since 1998 until April 2012) for both generalized cost and Market Share.

Dakar

Table 39: Dakar Market Share

Year	Generalized Cost (USD)	Market Share (%)
1998	**1235**	**12**
2000	1350	15
2002	1400	13
2004	1460	12
2006	1500	16
2008	1640	15
2010	1720	15
2012	1700	13

Source: Dakar Port Authority. First trimester 2012 Reports and the previous year's reports

Table 40: Douala Market Share

Year	Generalized Cost (USD)	Market Share (%)
1998	1220	20
2000	1280	17
2002	1285	24
2004	1350	15
2006	1600	12
2008	1620	16
2010	1680	18
2012	1690	17

Source: Douala Port Authority. First Trimester 2012 Reports and the previous year's report

Table 41: Lagos Market Share

Year	Generalized Cost (USD)	Market Share (%)
1998	1030	40
2000	1100	35
2002	1170	42
2004	1240	41
2006	1335	37
2008	1325	39
2010	1400	40
2012	1445	38

Source: Lagos Port Authority. First Trimester 2012 Reports and the previous year's report

Table 42: Tema Market Share

Year	Generalized Cost (USD)	Market Share (%)
1998	1130	28
2000	1120	33
2002	1200	21
2004	1320	32
2006	1348	35
2008	1350	30
2010	1450	27
2012	1400	32

Source: Ghana Port and Harbor Authority. First Trimester 2012 Reports and the previous year's report

In terms of interpretation, if we take the example of Dakar (Table 39), with a generalized cost of 1235 in 1998, the market share of Senegal port in the entire container market of West Africa is 12%. More or less we can notice the fluctuation of the generalized cost which affects the market share.

We intend here to foresee the market share of these ports in the coming six years (2018). Many contracts relating to the management of certain parts of the port will end during that year and thus this forecast may help the decision makers to adopt different approach either to sustain a strong market share or improve it because their market share is below their expectations.

Therefore years 2014 will be subject to our prediction attempts because statistically trying to foresee beyond it, mistakes may be induced in data analyzing and thus mislead the decision maker in their strategies.

According to what we can see here, we can express the correlation in this way, high is the generalized cost low is the market share. Thus, we can easily envisage the market share of each port following that statement. For example, in a foreseeable future, the port of Tema can out-perform the port of Lagos in terms of market share, since its generalized cost tends to decrease. But it must be noticed that, this assumption hides a reality well different from this simple statement. For that, statistical testing is necessary. This implies an application process to uncover the reality concerning the foreseeable future.

$$\mathbf{y = a + bx \quad (1)}$$

This mathematical function, technically called linear function, will be used for prediction purpose. The letter ‘’y’’ alludes to the Market Share (dependant variable), ‘x’ refers to generalized cost, ‘’a’’ is the constant and ‘’b’’ the coefficient.

- Application

Before getting on to forecasting, it is necessary to find out first the variable ‘’a’’ and ‘’b’’. This implies insertion of data in the SPSS. Following insertion in the SPSS, the result can be presented in table 43 and Table 44:

Table 43: Correlations Significance

		MS	GC
Pearson Correlation	MS	1.000	.381
	GC	.381	1.000
Sig. (1-tailed)	MS	.	.176
	GC	.176	.
N	MS	8	8
	GC	8	8

Table 44: Coefficients Significance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	***8.782***	5.080		1.729	.135	-3.648	21.212
GC	***.003***	.003	.381	1.008	.352	-.005	.012

a. Dependent Variable: MS

From Table 44, our linear equation can be re-designed as follow:

$$\mathbf{Y=8.782 + 0.003x \quad (2)}$$

This re-designed function will be used in order to forecast the market share for the Core-Four Ports. Here, referring to the coefficient, we can easily say that the correlation is negative. In other words, the market share is negatively influenced by the generalized cost. When the generalized cost increases, commonly we assist to a less

market share. This can be explained by the presence in the market of some other potential competitors, namely the port of Cotonou and Luanda.

The second thing that can probably explain this positive correlation is the mentality of African shippers and importers who are very sensible to the fluctuation of port charges. When a port increases the local charges, the containers that would have potentially been handled in that port (regardless whether it import or export) tends to decrease. They prefer deviating their container to another port which offers more competitive port charge. This last, greatly impacts on the market share.

On the basis of this application, the forecasting tables and figures can be easily constructed with the re-designed linear function.

5.3.2. Forecasting the Future Prospects of West African Ports

LRM-construction is an important step to forecast the future prospects is an important step to forecast the future prospects of West African ports in the transshipment market as prediction is one of the most important functions of regression (Greene, 1990). As mentioned before, predicting the future prospects of ports is necessary so as to strengthen the value of contribution of this study to the transport discipline. Understanding that the Core-four ports often strive to improve their attractiveness nowadays, it is useful to forecast the implications on market shares when ports lower their generalized costs. As supported by Song and Han (2004), this step is necessary because it provides important benchmarks so that the competitive positions of ports can be assessed relatively to others.

The future competitive positions of ports can be assessed through two scenarios:

- Implications on its own market share when a particular port lowers its generalized cost.
- Implications on other port's market shares when a particular port lowers its generalized cost.

First Scenario

This scenario investigates the implications on its own market shares if a port improves itself. Based on the linear function (1) and more specifically the redesigned function (2), the first scenario can be expressed as equation. Here we consider there is a decrease of 350USD in the generalized cost. Taking into account that remark, the procedures of getting the equation can be found in below.

For Lagos:

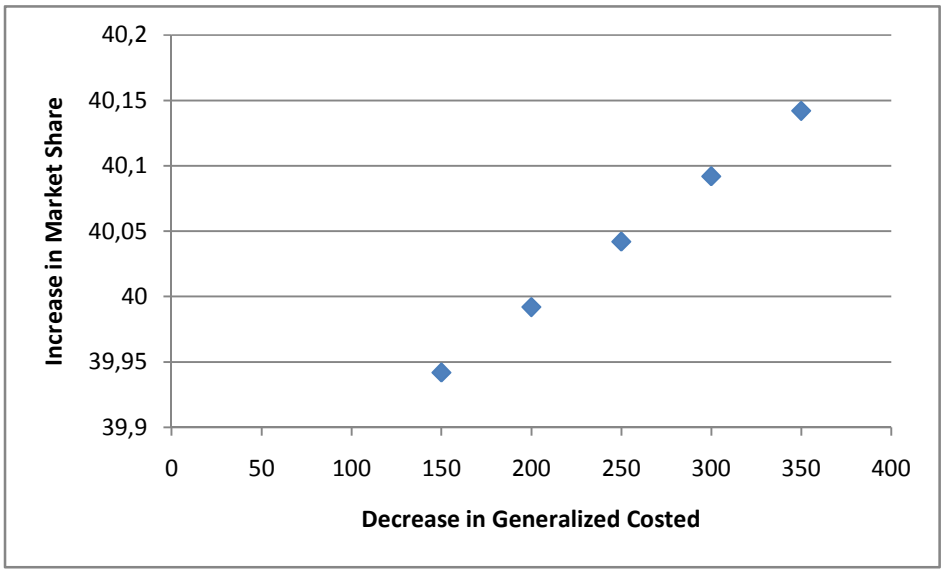
Predicting with the regression output, regression equation is:

Market Share (2014) = 39.792 – 0.001*(-350)

= 40.142%

Assuming that a separate data forecasts, the percentage of Market share in 2014 for Lagos will be 40.142%.

Figure 15: Increase in Market Share



For Douala

Following the same procedure, regression equation is:

Market Share (2014) = 29.889 – 0.009*(-350)

= 33.039%

Market share of Douala in 2014 will be 33.039 with 350USD decrease in Generalized Cost.

For Tema:

Market Share (2014) = 21,290 + 0,007*(-350)

= 18,84 %

Market Share of Tema in 2014 will be 18,84% with 350USD decrease in Generalized Cost

For Dakar

Market Share (2014) = 8.782 + 0.003*(-350)

=7.732%

Market Share of Dakar in 2014 will be 7.732%

The above calculations indicate how the analysis must be understood. When Lagos, for example, lowers its generalized cost by 350USD while all other ports remain constant, its market share in the entire West African transshipment market is anticipated to increase about 2.14%. Here some observations on the immediate futures of the Core-six Ports can be identified. For some countries the correlation is negative. Generally, Lagos seems to have the best prospects for future developments which are followed by Douala port and Tema, while Dakar benefits little from such slight improvements. Such observation suggest that these low-performing need to undertake dramatic reforms to address these unfavorable circumstances.

However, here poses a big question mark on Tema. Although it is a current leader in the market, it is anticipated that it will become increasingly difficult to sustain such status, with Douala which seems to have taken serious steps toward future. Tema will face serious challenges from Douala and therefore developing new strategies seems to be necessary. While Lagos possesses decent potential in grabbing more market share. The Cameroonian port has a bright prospect acting as transshipment hubs.

The major weakness of this forecast procedure is that it only estimates the immediate future of ports while more significant changes are not considered.

Second Scenario

Different from attractiveness, competitiveness must involve one's gain at the expense of others. Apart from knowing the implications of port improvement on its own market share, it is perhaps even more important to know how it affects others and this can be addressed by calculating the point cross elasticity of demand (ncp). The function that will be used for this type of elasticity can be drawn as follow:

$$ncp = B*N(A)* \frac{C(Tema)}{C(A)}$$

Where N (A) represents the quantity demand (market share of port A) and C (A) represent the generalized cost of port A, while C (Tema) represent the generalized cost of the port of Tema (this is just an example) and B represents the Coefficient of the port A. By applying equation, ncp values can be calculate as below:

Comparison between Lagos and Tema based on 2014 perspective:

ncp = (0,007*0,4*1400/1095)*100

ncp = 0,35%

Comparison between Lagos and Douala based on 2014 perspectives:

ncp= (0.007*0.4*1690/1095)*100

ncp= 0.43%

Comparison between Lagos and Dakar based on 2014 perspectives:

ncp = (0.007*0.4*1700/1095)*100

ncp = 0.44%

We can understand from these figures that if Lagos lowers its generalized cost by 350USD, the market shares of Tema, Douala and Dakar are perceived to decrease by 0.35, 0.43 and 0.44 respectively. It implies that unless other ports can suddenly lower their generalized costs significantly more than their Nigerian counterparts, Tema and Dakar (Douala showed some positive signals toward improvement) will face tough task to consolidate their competitive positions.

In general, ports are competing with each other where, with a few exceptions, the implications on others on port improvements are often negative. Another interesting point is that Dakar's market share worsens year after year and this indicates its fragile competitive strengths along with Tema. Finally, if the tendency continues in this way, Dakar's leading position in the South Europe/West Mediterranean Sea is likely to be seriously challenged.

5.3.3. Recommendations

Several implications can be identified from this part. Firstly, the focus of port competition in the West African transshipment market currently lies on the interaction between Lagos and Tema. Due to their poor performances, Dakar and most importantly Douala are too weak in offering any significant influences within the competitive ‘’battlefield’’ and thus difficult to handle the growing West African seaborne trade. Nevertheless, in the foreseeable future, port competition in the entire transshipment West African market tend to be rather tougher with the emerging Douala port. Some other ports, like Lagos port will further consolidate their competitive position.

Also, some recommendations to the future prospects ports in the West African transshipment market made. The Nigerian port, and in a less extent, the Ghanaian port, under the current circumstances and routing of liners, it should consolidate their status as regional ports and should put their focus in serving the European ports since they are likely to gain significant market shares in this region even with relatively minor improvements in their performances. However, they should also consider putting more focus on the Other West and Central African market as they do have decent potential there. A similar situation is also found in Douala where, in the long term, it may become one of the leaders in serving the West Africa, although such potential is not as significant as Lagos port due to the restrictions mentioned before.

Undeniably, Tema is currently one of the leaders in the West African transshipment market, especially in North/South America. However, after so many years of stagnation in its development strategies, the port is finding itself increasingly difficult to sustain its position. If Tema’s development keeps the same pace of development with its competitors, its current competitive position is unsustainable where Douala is already snapping at its heels in a foreseeable future. To enhance its future prospects, apart from the need to improve itself faster than others, Tema should also pay even more attention in its public relation with clients, especially toward liners’ still poor perception on custom procedures like port marketing , negotiation with liner and client networking (although already significantly better than Douala). All these factors lay far below the

standard qualifying ‘’ port quality service internationally’’. In order words, Tema’s future success depends on whether the port can alter the current status to its favor.

For the current low performing ports of Dakar and Douala, they must improve themselves significantly faster than the other ports. At the moment due to their poor performance, perceptions by customers on them are quite bad especially for Dakar and thus image-improving strategies as well as intensive reforms in management philosophy are necessary. The current problematic management philosophy must change.

Finally, one can foresee that Douala is in a favorable competitive position to challenge Tema’s fragile market dominance. Given the recent regional changes like the Abidjan port which regained market, it is extremely interesting to see whether there will be a significant redistribution of market shares between the Core-four ports in the foreseeable future.

As per international standard, the following recommendations must be followed by the ports in the region because none of them is able to meet it. The main objectives of upcoming reforms for Governments should be aimed at:

- Facilitating procedures and controls in ports, such as procedures affecting turnaround time, dwell time and handling costs, otherwise port attractiveness is seriously limited. The introduction of a community-based system may help in this regard.
- Facilitating trade and land transport outside the port on the main trade corridors.
- Improving port access in view to develop multimodal transport. Areas around ports are usually congested and investing in road infrastructure to improve port access may therefore have a positive impact on city economic activity and port efficiency.
- Fostering private sector participation both to provide investment for new installations and equipment, as well as transferring technical know-how and more efficient terminal management.
- Increasing competition among shipping lines in countries where informal barriers to market entry still prevails.

- Developing knowledge sharing between ports and countries on current port reforms in the region. The Port Management Association of West and Central Africa (PMAWCA) could become a suitable arena for these exchanges of views.
- Carrying out cost-benefit analysis of current port management and efficiency in countries facing very high port charges and high maritime transport rates.

CONCLUSION

After detailed analysis, this chapter summarizes the major findings and contributions and gives future researchers a decent platform in maritime transport research.

To ensure that this research has made a significant contribution to the maritime transport discipline of my beloved African Continent, it is necessary to review whether the objectives and hypothesis have been achieved. While reviewing them, the major findings of this thesis are also summarized.

The first objective is achieved in Chapter Four. The current trends in maritime transport and port sector are the logical result of years of trade growth. Global maritime transport has considerably changed in the last decade. Maritime transport is growing at a high pace. Container traffic is the fastest growing segment of maritime transport. Shipping lines have invested in ever growing containerships in order to benefit from economies of scale. In this research, using West Africa transshipment market as the study case can be illustrated by the Port Competition toughness. Also it is justified by the fact that users have many choices to select on port for his containerized cargo and this implies selection criteria. All the theoretical information will be used for the purpose of the whole research. That is why, it was important to give an insight on the global trend and it's implication on African Seaborne trade on one hand, and West African maritime trade on the other hand.

The second objective has been achieved in Chapter Four. A comprehensive overview is given on the major West African restrictions. One should note that 90% of West African Trade is ocean-originated trade. With a growing interest of West African market by the liners and also international traders, it was important to give detailed information on the problems that may be encountered.

The third objective has been achieved in Chapter Five. Different factors in affecting port competitiveness have been identified and their significance being assessed. Survey results indicate that, while money and time are still important attributes, other less-readily quantifiable factors also can't be ignored. With the

calculation of generalized costs, attempt was made to bridge the gap between quantitative and qualitative factors into a 'package' to explain port competitiveness. According to survey respondents, Nigerian port is very good performers, especially in serving the North/South America. The performance of Ghanaian and Senegalese ports also possess decent attractiveness acting as transshipment hubs in serving various South European and West Mediterranean Sea. Finally, Douala needs significant improvements to ensure that it will not remain peripheral in the transshipment market. It is also found that several loopholes exist in the current approach in port 'strategic management'. Ports are too passive in dealing with their potential customers and usually their only strategy to enhance competitiveness is through expensive capital investment in physical infrastructure. Apart from physical restrictions, many ports do not seem to fully understand the significance of software component in affecting competitiveness, notably marketing, management philosophy, historical reasons, and public-private sector relations.

The final objective has been achieved in Chapter Five also. Through logistic regression, a LRM has been constructed to forecast future port competitiveness in the West African transshipment market. Regressed results indicate that competitions in the entire West African transshipment are relatively stable with Lagos likely to maintain its dominance in the immediate future. However, although Tema is in a leading position, comparing to Douala and Dakar, in the immediate future it will face an uphill task to sustain its competitiveness unless huge efforts can be done to alter the *status quo*.

Based on the calculated generalized costs, it is anticipated that Tema will suffer market share loss in the West African Transshipment when all ports lower their cost. The situation of Dakar will largely remain stagnant while it is suffering under current situation.

After the objectives, the rest of this section reviews the hypotheses based on the findings of this research. The first hypothesis states that the competitive position of a port in the West African transshipment market mainly depends on the decision of liners. In general, this is true. Until now, liners have been the ultimate decision-makers in transshipment hub choice and thus the competitive position of port also largely has

depended on their decisions. Some other players, notably government can play also some part, but their significance is still rather limited as liners are the ultimate users of ports for transshipment services, although in the foreseeable future, other players, notably shippers may want to play a greater role in this aspect.

The second hypothesis indicates that while monetary cost and time efficiency are important component, other less-readily quantifiable factors are also critical attributes in deciding the competitiveness of ports in the transshipment market and liners are likely to consider these factors when making their transshipment hub choices. Also, this study shows that, while the above mentioned factors are all important, it is by no means complete. The above mentioned factors, which have formed the components of the '' Assessment Process'' only ensure that a port possesses enough potential to attract potential customer's attention while the port competitiveness also depends on whether the port can play the game of ''Negotiations Process and Marketing' (NPM) successfully and to give positive 'values and perception' to potential customers. Liners do not make their decisions solely based on their own interests, but also have to tackle the interests of their sister companies, interests of the other liners (usually within the same strategic shipping alliance).

Also this study justifies the third hypothesis, where it is argued that ports can take more proactive steps in enhancing their competitiveness in the future. Here ports should not just concentrate on building new facilities and improving service quality, but should also take the initiative to contact customers and listen to their needs and alter their perceptions to different ports, while they should develop more progressive visions in planning for the future and search for new opportunities. In this sense, except for Douala, the ports like Dakar and Tema or Lagos are still too passive in this aspect where their competitiveness is usually dependant on how their customers perceive them rather than controlling their perception.

Finally, the above has given a positive confirmation to the final hypothesis, where liners have different reactions between good and poor performance. Port users are more sensitive to poor port services and poor performing ports are likely to possess small market shares in the transshipment market. However, this does not imply that good

performance automatically leads to high market shares. The important message here is that if a port wants to achieve competitiveness in the transshipment market, it must not isolate itself from customers and think that investing in new facilities and improving service quality can guarantee success.

Apart from giving a clear view of the current and future situations of West African leading ports, this research has made considerable significant contribution to maritime transport by playing its role in addressing the current dilemmas within the field.

Firstly, the West African endogenous factors lead its ports to a very poor position in the international transshipment market place. West African ports cannot be isolated from world trends in trade and shipping. So far, most West African ports have not been able to be integrated into global trends. Yet, current challenges may be an opportunity, as these developments should over time result in more efficient port and transport operations, which should significantly decrease transport costs for West African economies.

Current trends should likely be reinforced in the future with a widening gap between large and relatively efficient ports and small ports, which will not attract mega-carriers and consequently suffer from higher maritime transport rates.

West Africa's trade reorientation has induced evolving strategies from shipping lines in the region. An interviewee stated that he sees significant potential for growth between South America and West Africa, particularly for reefer shipments. Consequently, traditional routes may enter a period of change, as ship-owners looking for the most efficient combination of ship sizes, ports traffic and efficiency. Regarding the hub and spoke discussion, a single hub port for West Africa and Central Africa is unlikely. No country has sufficient traffic to become the unique hub in the region. Moreover, shipping companies will be strongly influenced by the need to provide alternative ports in case of emergency or security problems.

However, two or three ports may develop as competing and complementary hubs, depending on the facilities and operating conditions provided. As additional modern container terminals are provided, a more complex pattern will probably evolve,

with different shipping lines selecting principal ports for their services depending on commercial and trade factors as well as port efficiency. Several West African ports may risk to be increasingly served by transshipment. Some ports will receive the larger ships; others will be served by transshipment in feeder vessels. South African ports should play a major role with an increasing use of transshipment, especially for services from Asia and Australasia. With the rapid development of the South African ports, mainline services from Asia may turn round at Durban, with feeder services to West Africa. Large ports in the region with substantial hinterland traffic should be the natural competitors to become hub ports.

This research should also be regarded as an achievement by providing future insights on the transshipment market and port competition in West African market. Through this study, the Core-four Ports should now be much clearer about their respective current competitive positions and know what they should do to improve/sustain their positions in the near future.

Last but not least, the author are confident that this research can act as a useful platform for future researcher to conduct further studies and make significant contributions to the progress of port, liner shipping, transshipment and maritime transport in Africa. It would surely be author's greatest satisfaction if readers find this research interesting, informative and, most importantly, an invaluable reference to the progression of the transport discipline.

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APPENDIX

APPENDIX

LAYOUT OF THE SURVEY QUESTIONNAIRE

Significance and Performance of Different Factors in Affecting Ports Acting As Container Transshipment Hubs in West Africa

Survey Questionnaire

Disclaimer:

The objective of this questionnaire is to acquire the opinions of port users on the performance of different ports acting as container transshipment hubs in West Africa. All obtained information from this questionnaire will be kept ***absolute confidential***.

Instructions:

This questionnaire consists of nine pages (including this page) and four sections (A, B, C and D).

Please answer ALL questions in sections A, B and D. For section C, please give answers to all the ports that your company has experiences in calling. Here if there were a factor that you do not know or do not have any opinions, just leave the box blank.

In Section B and C, please try your best to give scores to different factors based on a rational *cardinal scale*. For example, in Section B, if you give a score of "4" and "2" for factors A and B respectively, you are likely to regard that Factor A is about twice as more important than Factor B. In Section C, if you give a score of "+3" and ''+1'' to Factor A for Lagos and Douala respectively, you are likely to regard that, for Factor A, Lagos is performing About three times better than that of Douala.

Important Remarks:

Please give responses based on your (and your company's) experience on the *overall* performance and perceptions of different West African ports acting as transshipment hubs in the last and forthcoming several years (2years), NOT just the current status of these ports. Your concern in reading and answering the questions carefully is highly appreciated since sensible answers are extremely important with regard to the accuracy of the analysis and outcome.

Contacts:

After filling in the questionnaire, please return it to ADEN MOUSSA DOUKSIEH by email to your earliest convenience. For any enquiries, please contact me by phone. Detailed contacts are as follows:

Mailing Address: Maritime business Administration department, Maritime Faculty, University of Dokuz Eylul, Izmir, Turkey.

Email: zidenzad@hotmail.com

Tel: +90.554.864.07.22

Thank you very much for spending your time to participate in this survey.

SECTION A: BASIC INFORMATION

1- **Name of Company**: …….

2- **Contact Person and Correspondence**:

Name and Position: …….

Tel: …… Fax: …… Email: ……

Correspondence Address: ……..

…….

3- **Which port(s) is your company's current major port(s) in transshipping containers to different West African region?** Please put '' X" in the appropriate box (es) below. If your company does not provide any feeder services (or any contractual agreements with liner shipping companies providing container feeder services) to any of the region(s) illustrated below, please just leave the box (es) blank.

	Other West and Central African countries	North/South America	South Europe/West Med
Port of Dakar	☐	☐	☐
Port of Douala	☐	☐	☐
/// ///	☐	☐	☐
Port of Tema	☐	☐	☐
Port of Lagos _____	☐	☐	☐

4- **In the transshipment port(s) that you have indicated in Question 3, what kind(s) of container terminal is/are that?** Please put ''X'' in the appropriate box below.

☐ Public Terminal (can be called any vessel owned by any companies)

☐ Dedicated Terminal (Can be called exclusively by your company's vessel)

☐ Liners-Owned Terminal (not only being called exclusively, but your company also owns shares and/or had invested in this terminal.

5- **If your answer public terminal in Question (4), does your company have any plans to acquire dedicated terminal and/or invest in liner-owned terminals for transshipment in the coming five years?** Please put ‘’X’’ in the appropriate box below. If you answer is ‘’Yes’’, please briefly explain what kind of terminal(s), where and why you company is going to invest.

☐ YES What kind of terminal? ☐ Dedicated Terminal ☐ Liner owned terminal

(You can tick both boxes, if necessary)

In which port? ……

Why? …….

☐ NO

SECTION B: SIGNIFICANC OF FACTORS AFFECTING THE ATTRACTIVENESS OF PORTS IN CONTAINER TRANSSHIPMENT

Instructions: With reference to your experience, please rate the Significance of different Factors in affecting the attractiveness of port for container transshipment by putting ‘’X’’ in the appropriate boxes below. If there were other factor(s) that you deem as important but do not appear here, please specify it/them under the category ‘’Any Other Factors’’ and indicate its/their significance.

Score Scale

5 Very Significant **1 Minimum/Nearly No Significance**

4 Significant **0 No Significance at All**

3 Some Significance **? Not Sure/No Option**

2 Little Significance

FACTOR	SINGNIFICANCE SCORE						
	5	4	3	2	1	0	?
Port Monetary Factor							
Port Charge (Terminal-Handling Charge and port Dues)							
Port Time Factor							
Time Required to Load/Unload Containers							
Efficiency of a Port in Container-Handling							
Punctuality and Reliability							
Cases of Delays in Loading/Unloading a Vessel							
Records of Damage during Container-Handling							
Governmental							
Custom Procedures (Inspection, Documentary, etc.)							
Port Authority's Policy and Regulations							
Geographical/Location							
Location of a port (Your ''Feeling of Proximity'' between the Transshipment and Feeder							
Vessel Operation Monetary Cost from Transshipment to Destination Ports							
Average Journey Time Travelling from Transshipment to Destination Ports							
Operational							
Accession to the Port							
Quality of Port's infrastructure for handling container							

Quality of Port's Superstructure for Handling Container							
IT and advanced Technology for Port Operation							
Dedicated Terminals and Facilities for Transshipment							
Supporting Industries (Warehousing, Insurance, etc.)							
Quality of Other Services (Pilotage, Towing, Mooring, etc.)							

Commercial

Availability of Professional Personnel in Port							
Preferences of Shipping Line's Clients/Shippers							
Personal Contacts/Relations between Port Operator and Shipping Line							
Effort of Marketing on the Port by Port Authority							
Reputation of Port within the region							
Port Operator's Speed in Responding to Shipping Line's New Demands and Requests							

Any Other factor

Factor 1 (please specify): _____							
Factor 2 (please specify): _____							

Further Comments on Section B (if any):

SECTION C: PERFORMANCE OF WEST AFRICAN PORTS IN CONTAINER TRANSSHIPMENT

Instructions: Whit reference to your experiences, please give your opinion on different West African ports on the service quality of different factors (as indicated in Section B) provided by them by giving Appreciation Scores. Note that all there are Three Destination for Geographical/Locational Factor (Other West and Central Africa destination, North/South America and South Europe/West Mediterranean Sea) and please fill in ALL destinations.

Score Scale

+3	Very Positive	-1	Somewhat Negative
+2	Positive	-2	Negative
+1	Somewhat Positive	-3	Very Negative
0	Neutral/Neither Positive nor Negative	?	Not Sure/No Opinion

FACTOR	APPRECIATION SCORE			
	DAK	DOU	LAG	TEM
Time Efficiency				
Efficiency of the Port in Container-Handling				
Punctuality and Reliability				
Cases of Delays in Loading/Unloading a Vessel				
Records of Damage during Container-Handling				
Governmental				
Custom Procedures (Inspection, Documentary, etc.)				
Port Authority's Policy and Regulations				

Geographical/Location

Location of a port (Your ‘’Feeling of Proximity’’ between the Transshipment and Feeder				
Vessel Operation Monetary Cost from Transshipment to Destination Ports				
Average Journey Time Travelling from Transshipment to Destination Ports				

Operational

Accession to the Port				
Quality of Port’s infrastructure for handling container				
Quality of Port’s Superstructure for Handling Container				
IT and advanced Technology for Port Operation				
Dedicated Terminals and Facilities for Transshipment				
Supporting Industries (Warehousing, Insurance, etc.)				
Quality of Other Services (Pilotage, Towing, Mooring, etc.)				

Commercial

Availability of Professional Personnel in Port				
Preferences of Shipping Line’s Clients/Shippers				
Personal Contacts/Relations between Port Operator and Shipping Line				
Effort of Marketing on the Port by Port Authority				
Reputation of Port within the region				
Port Operator’s Speed in Responding to Shipping Line’s New Demands and Requests				

SECTION D: OPEN-ENDED QUESTIONS

1- Please briefly explain why you have given scores of ‘’+3’’ (very positive) and/or ‘’-3’’ (very negative) to certain factor(s) of certain port(s). If possible, please offer some examples and/or cases so as to enhance our understanding on the reason(s) behind your decision(s)

2- Are there any port(s) in West Africa that you (or someone in your company who has the authority in deciding transshipment port choice) specifically prefer/does not prefer? Reasons behind specific preference/non-preference to a particular port can be subjective factors like first impression, personal beliefs, and concern on frequent occurrence of unexpected events in port which would delay container’s date of arrival (accidents, labor strike, etc.) or, in some cases even without a specific reason at all.

If you answer ‘’Yes’’, please indicate the name of the port(s) below and explain why you have such specific preference/non-preference to that particular port(s) if you do not have a specific reason, just write ‘’no specific reason’’). Otherwise, please answer ‘’No’’.

3- If you have any further comments, please put them down in the space provided below

Please return the filled questionnaire to ADEN MOUSSA DOUKSIYE by email:

Email: zidenzad@hotmail.com

THANK YOU VERY MUCH FOR YOUR KIND ASSISTANCE