11-3-2020

Relationship between port performance and economic development: a case study on the Freeport of Monrovia

Deanna Dolobah-Togba

Follow this and additional works at: https://commons.wmu.se/all_dissertations

Part of the Economics Commons, and the Transportation Commons

Recommended Citation

This Dissertation is brought to you courtesy of Maritime Commons. Open Access items may be downloaded for non-commercial, fair use academic purposes. No items may be hosted on another server or web site without express written permission from the World Maritime University. For more information, please contact library@wmu.se.
RELATIONSHIP BETWEEN PORT PERFORMANCE AND ECONOMIC DEVELOPMENT: A CASE STUDY ON THE FREEPORT OF MONROVIA

DEANNA DOLOBAH-TOGBA
Liberia

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the reward of the degree of

MASTER OF SCIENCE
in
MARITIME AFFAIRS
(SHIPPING MANAGEMENT AND LOGISTICS)

2020

Copyright Deanna, 2020
Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): Deanna Dolobah-Togba

(Date): September 7, 2020

Supervised by: Prof. Dong-Wook Song
Korean Chair, Shipping and Port Management
World Maritime University
Acknowledgements

Let me appreciate everyone for the support and effort contributed toward my study and research work that is successful. To you, God be the glory for taking me through this journey of hope and success. You are my maker, redeemer, and protector, whose blessing has kept me going through this global pandemic and deserves all my praises.

I will like to extend my heartfelt thanks and appreciation to the following persons; special thanks go to my parents, Hon. Edwin K. Dolobah and Mrs. Gormah M. Dolobah and my two boys’ children, Eric and Samuel, for all of their support and prayers during my study in Sweden. My appreciation goes to all of my siblings for their moral support. In a significant way, let me also extend my thanks and appreciation to Hon. Jerry O. Varnie and all of the Varnie’s family for their full support and prayers. My heartfelt thanks and appreciation go to my sponsor, Germany’s government, through the German transport ministry and infrastructure in an extraordinary way. I want to extend my sincere thanks and appreciation to my supervisor, professor Dong-Wook Song for his full support and guidelines throughout this work. His recommendation and suggestion motivated me throughout this research.

I will like to express my thanks and heartfelt appreciation to the Government of Liberia, through the office of Disaster management agency, for granting me the opportunity to study at the World Maritime University in Malmö, Sweden. I am also grateful to all the lecturers, the staff, and visiting professors of the world maritime university for their efforts and sacrifice to me with providing excellent and professional training. Special thanks go to Christopher Hoebeke and the entire library staff of the world maritime university to support and contribute to this research.

My thanks and appreciation go to all of my friends and colleagues who have been there for me, giving me the strength and courage to carry on my study.
Abstract

Title of Dissertation: Relationship between Port Performance and Economic Development: A case study on the Freeport of Monrovia

Degree: Master of Science

The dissertation focused on the Relationship between port performance and economic development of the Freeport of Monrovia from 2008 to 2018. In so doing, the study highlighted the economic activities taking place through the process of the imports and export of goods in and out of the port, and the port ability to handle these activities. Liberia depends on the importation of approximately 85% of the goods she used or consumed, and the port is that conduit use of bringing the goods into the country. The country exports major materials that bring in the economic benefits to the FOM and States. These export and import activities face the imposition of customs duties, APM terminals charges, cargo handling fees, BIVAC fees, and other fees that directly and indirectly contribute to the country. The study also assessed the working and waiting rate of ship accessing the port, dwelling and berth occupancy rate of the ship, transit time, unloading, and truck departure in the FOM. The port’s performance in handling these activities as it relates to time was also accessed to ascertain the port ability in dealing with these tasks efficiently and effectively. The study reveals challenges in the form of limited stakeholders’ dialogue, traffic congestion, limited policy on working rate, waiting, berth occupancy rate, dwelling time, unloading cargo and leaving port time, transit time, limited computerization of the entire activities of the FOM, wages disparity and lack of recession facility.

The entered a partnership agreement with some other international port operators and other concessions to manage the port and obligated to pay fees to the port for rental services. These activities, coupled with the previously mentioned activities, experienced a GDP of 3.7 in 2008, which increased upward to 6.33 in 2018. These activities contributed to the upward trend in the GDP. Based on state management methods, the annual inflation rate increased from 17.49% in 2008 to 23.56% in 2018.

The researcher believed that a FOM working group must be set up composed of all Port representative, operator(s), users-customs brokers association, port truckers’ association communities, shipbrokers association, marketing association, and chamber of commerce, LIMA, LRA, MFDP, and academia. The group will hold regular stakeholder meetings that will lead to the development of a Port Performance Strategy and a roadmap that for its validation. The strategy will enable the FOM to move to a digital port that will focus on integrating all of its activities into a one functioning and sustainable system, aimed at accelerating the ports performance and the economic
development of Liberia. This strategy will enhance port performance, account for every activity-taking place, and account for revenue collection.

**KEYWORDS**: Port Performance and economic Development
# Table of Contents

Declaration ............................................................................................................. i  
Acknowledgements .......................................................................................... ii  
Abstract ................................................................................................................ iii  
Table of Contents ............................................................................................... v  
List of Tables ....................................................................................................... vii  
List of Figures ..................................................................................................... viii  
List of Abbreviations .......................................................................................... ix  

## Chapter one: Introduction .............................................................................. 1  
1.1 Research Background .................................................................................. 1  
1.2 Problem Statement ...................................................................................... 3  
1.3 Research Purpose and Objectives ............................................................... 4  
1.4 Research Questions and Hypothesis ............................................................ 5  
1.5 Scope of the Study ....................................................................................... 6  
1.6 Dissertation Organization ........................................................................... 6  

## Chapter Two: Port Performance ................................................................. 7  
2.1 Port in concept ............................................................................................ 7  
2.2 Measuring Port Performance ..................................................................... 9  
2.3 Overview of Liberia Port Sector ................................................................ 12  
2.3.1 Port of Buchanan .................................................................................. 16  
2.3.2 Port of Greenville ................................................................................ 17  
2.3.3 Port of Harper ...................................................................................... 18  
2.4 Integrating the Port with other Infrastructure ............................................ 19  
2.5 Summary ..................................................................................................... 20  

## Chapter Three: Economic Development .................................................... 22  
3.1 Concept of Economic Development ........................................................... 22  
3.2 Overview of Liberia Export and Import ..................................................... 23  
3.3 Economic Benefits of the Seaport ............................................................... 28  
3.4 Summary ..................................................................................................... 30  

## Chapter Four: Methodology ....................................................................... 31  
4.1 Introduction ................................................................................................ 31  
4.2 Research Design ......................................................................................... 31  
4.3 Sampling and Sample Size ...................................................................... 31  
4.4 Data Issues ................................................................................................. 32
Chapter Five: Empirical Analysis, Finding and Interpretation .................. 33
  5.1 Introduction .................................................................................. 33
  5.2 Data Presentation, Analysis and Interpretation ............................. 37
Table 5: Employer of the respondents .................................................. 37

Chapter Six: Conclusion ...................................................................... 57
  6.1 Summary .......................................................................................... 57
  6.2 Implications and Recommendations ............................................. 60
  6.3 Limitation and Areas for Further Research ..................................... 63
  6.4 Conclusion ....................................................................................... 64
References ............................................................................................... 67

Appendices ............................................................................................. 70
Annex 1 ................................................................................................. 74
Annex 2 ................................................................................................. 75
List of Tables

Table 1: inflation Rate and Annual Change ........................................... 24
Table 2: Gender ................................................................................. 34
Table 3: Work Experience of Respondents ......................................... 35
Table 4: Respondents’ Education ...................................................... 36
Table 5: Employers of the respondents ............................................. 37
Table 6: Ship Working Rate ............................................................. 39
Table 7: Waiting Rate for Ship ......................................................... 40
Table 8: Berth Occupancy Rate ......................................................... 41
Table 9: Dwelling Time ................................................................. 43
Table 10: Time between unloading Cargo and Leaving Port ............ 44
Table 11: Transit Time ............................................................... 46
Table 12: Charge per TEU ............................................................. 47
Table 13: Contribution to the National Budget .................................. 48
Table 14: Any other fees .............................................................. 49
Table 15: Ranking of FOM ............................................................ 50
Table 16: Ship dock at the FOM .................................................... 53
Table 17: Challenge facing the FOM ............................................. 54
Table 18: Any gaps ratio ............................................................. 56
List of Figures

Figure 1: Freeport of Monrovia (FOM) .................................................15
Figure 2: Port of Buchanan ...............................................................17
Figure 3: Port of Greenville ..............................................................18
Figure 4: Port of Harper .................................................................19
Figure 5: GDP of Liberia .................................................................23
Figure 6: Ratio of inflation rate and annual change .......................25
Figure 7: Commodities exported ......................................................26
Figure 8: Commodities imported ......................................................27
Figure 9: Illustrates the percentage of gender .................................34
Figure 10: Illustrates the percentage of the respondents work experience .......35
Figure 11: Illustrates the percentage respondents’ education ....................36
Figure 12: Illustrates the percentage respondents’ employer ......................38
Figure 13: Illustrates the percentage on ship working rate ....................39
Figure 14: Illustrates the percentage on waiting rate for ship .................40
Figure 15: Illustrates the percentage on berth occupancy rate .................41
Figure 16: Illustrates the percentage on dwelling time .........................43
Figure 17: Illustrates the percentage on unloading cargo and leaving port ....44
Figure 18: Illustrates the percentage on Transit time ............................46
Figure 19: Illustrates the percentage on Charge per TEU .........................47
Figure 20: Illustrates the percentage on Contribution to the National Budget ........48
Figure 21: Illustrates the percentage on any other fees ..........................49
Figure 22: Illustrates the percentage on ranking of FOM .........................50
Figure 23: Illustrates the percentage on Economic trend of FOM .................51
Figure 24: Illustrates the percentage on Ship dock at the port ..................53
Figure 25: Illustrates the percentage on challenges facing the FOM ..........55
Figure 26: Illustrates the percentage on the gaps ..................................56
List of Abbreviations

AMP A. P. Møller
BMC Bong Mines Company
CPI Consumer Price Index
ECOWAS Economic Community of West African States
EPZs Export Processing Zones
FDI Foreign Direct Investment
FOM Freepor of Monrovia
FTZs Free Trades Zones
GDP Gross Domestic Product
IMF International Monetary Funds
LiMA Liberia Maritime Authority
LMC Liberia Mining Company
LRA Liberia Revenue Authority
MDA Mineral Development Agreement
MFDP Ministry of Finance and Development Planning
MOT Ministry of Transport
MPW Ministry of Public Works
NIOC National Iron Ore Company
NPA National Port Authority
PPP Public Private Partnership
STZs Special Economic Zones
UK United Kingdom
WCL Western Cluster Limited
WMU World Maritime University
Chapter one: Introduction

1.1 Research Background

Port is, indisputably, one of the most critical infrastructures for economic development. It serves as a center for export, import, transshipment, and logistic platforms in the movement of goods, people, and information (Munim et al., 2018). Ports play a vital role in transport efficiency and promote the cost-effective flow of goods and people (Song et al., 2015). It is an integral component of Liberia's transportation system and provides the platform to different international trade and foster domestic social and economic interactions (Senol, 2019). By promoting trade and fostering other economic activities, Port provides direct and indirect economic benefits to the national economies (Cheon et al., 2018). It serves as a strategic instrument of trade policy in the domestic economy and represents a critical interface between a nation and the rest of the world. This is especially true for coastal countries like Liberia that heavily depend on the importation and exportation of goods and services for the functioning of their economies (Bichou et al., 2004).

Even though ports are necessary to foster economic development, they are not sufficient requirements to generate economic growth and development but depend on the country's context and economic realities (Batista, 2012). Firstly, port infrastructures must be linked to places of economic activities, and complementary infrastructures like roads, electricity, warehouses, human resource capacity and must all be developed to ensure the full benefits of the seaport investment (Bottasso et al., 2013). This leads to the fundamental and foundational question of which port management system is appropriate for Liberia—considering the context and economic
realities, privatization, in its various forms such as Public-Private Partnership (PPP), are a better way of developing the seaport.

In recent decades, four main models of port management have emerged. They are the public service port, the toll port, the landlord port, and the fully privatized Port or private service port (Caldeirinha et al., 2014). These models’ differences are based on characteristics like the provision of services, ownership of infrastructures such as port-land, ownership of superstructure and equipment such as ship-to-shore handling equipment, sheds, warehouses and dock labor and management (Senol, 2019). The alignment of private and public interests in seaports’ management and operations is determined by the organizational structure of port management and the port development policy (Yeo et al., 2010). A public service port has a predominantly public character, most often owned and entirely operated by the national and regional port authority (Chiao et al., 2015). Under this model, the port authority offers the complete range of services required for the seaport system's functioning. However, the Port owns, operates, maintains every asset, both fixed and mobile, and handles cargo activities by labor employed directly by the port authority (Cheon, 2017). The Freeport of Monrovia (FOM) enjoyed the characteristics of a public service port. Currently, the Government of Liberia has a management contract with APM Terminals and other operators in the Freeport of Monrovia (Bottasso et al., 2013).

Firstly, ports transport is for both public and private goods. The public goods, which are often non-rival and non-excludable, include public safety, security, and a healthy environment and coastal protection (Tabakoglu, 2016). The port services most often have a direct and indirect multiplier effects on businesses and other economic activities. Many ports have used these multiplier effects to justify the direct public sector investment (Brooks, 2007). This goes to say that over commodifying port services and completely leaving the management and operations of the Port to profit-oriented private entities might be problematic, especially in the end (Dooms et al.,
2019). However, some form of public intervention is necessary to provide port services and ensure that an appropriate public goods level is maintained (Bottasso et al., 2013).

Secondly, a somewhat counter-argument is, the port services provision entails high fixed costs and low marginal costs. The marginal benefits of using port services exceed the minimal costs of providing these services (Ibrahimi, 2019). In addition, the construction of port infrastructure, superstructure, and port expansion require large amounts of capital. As a result, it often appears very attractive for governments, especially in developing countries, to seek private capital to develop the seaports. From these points, it is clear that both the public and private sectors are needed in developing the port (Bergantino et al., 2013). It is considering the offer obtained from the seaport related to employment potential, its centrality in the economy’s functioning (Peter Hall, 2018). The multiplier effects of services on the Liberian economy, it is safe to say that there is a need for some active participation in the Government in managing and operating the seaport. Private participation is also crucial. With a public sector riddled with corruption and lacking the needed resources for significant port investments, private actors must provide support and efficient management (Bottasso et al., 2013).

1.2 Problem Statement

The FOM remains the largest and most essential seaport among Liberia’s four ports, making it one of the most critical economic infrastructure supporting economic activities in the country (Ha et al., 2017). The enormous economic importance of the Port has made it politically and economically attractive among revenue generating agencies. Decisions regarding the operations, management, and overall governance of the Port are tied to domestic economic indications and political and international interplay. However, this tremendous significance of the Port performance to Liberia’s economic development remains a challenge with the unnecessary bureaucracy and limited policy that undermines the port’s performance and revenue envelope (Batista, 2012). The economic contribution, technical performance of the Port, and, most
importantly, the relationship between Freeport's performance and the Liberian economy's development need to be researched to bridge the gaps and improve circumstances (Brigantino et al. 2013).

The lack of adequate information also affects significant decision making for planning, forecasting, and investment for the FOM. It also affects the economic decisions of the government and the relationship between stakeholders in the sector. In some cases, policymakers often do not have the needed data to make crucial decisions regarding management, investment, and governance (Talley et al. 2014). The challenges of integrated data on port operations activities affect investment and management decisions regarding port-related associates and infrastructure. The researcher intended to establish the relationship between the FOM's performance and Liberia's economic development. The research will also seek to identify challenges posing a threat to the performance and provide suggestions for the direction in order to enhance port performance (Bichou et al., 2004).

1.3 Research Purpose and Objectives

The study assessed the relationship between port performance and economic development in Liberia. It also identified and analyzed the contribution of the FOM to Liberia's economic development from 2008 to 2018.

Objectives of the research
1. To assess the performance of the port.
2. To identify the contribution of the port performance to economic development in Liberia.
3. To evaluate the level of port performance to economic growth.
4. To recognize the fundamental challenges faced in port performance in economic development in the FOM.
5. To identify the contribution of the FOM to Liberia's economic development for the period under review.
6. To recognize the fundamental challenges limiting and obstructing the FOM’s contribution to Liberia’s economic development.

1.4 Research Questions and Hypothesis

This research seeks to answer the following question.

1. What is the relationship between the performances of the FOM to economic development in Liberia? And if there is a relationship, what is the direction of that relationship?
2. What was the gross income of the FOM during the fiscal year 2008 and 2018?
3. What was the net income of the FOM during the fiscal period 2008 and 2018?
4. What is the total number of ships that dock in the FOM during 2008 and 2018?
5. What was the contribution of the FOM to the National Budget during the period 2008 and 2018?
6. What are the current challenges facing the FOM?
7. Is there any gap(s) between stakeholders managing the port sector in FOM?

Two key hypotheses have been about this research:

1. Why does the relationship between port performance and economic development seem positive and have two plausible directions?
2. How does the direction of the relationship between port performance and economic development remains unclear, and which direction predominates the other?

The results show that it is essential for developing countries to improve port infrastructure’s quality services uninterruptedly. It seeks to improve logistics performance, leading to increased seaborne trade, yielding higher economic growth. However, this association weakens as the developing countries become powerful.
1.5 Scope of the Study

The research covered the period 2008 to 2018, which focused on the relationship between FOM performance and economic development. After the female president's induction in 2006, the new Liberian government decided to improve the infrastructure and superstructure at the FOM. One aspect of the strategic decision was to outsource the cargo handling operations of the Port to APM Terminal, a global container operator, and dredged the Port (Munim et al. 2018). The study's geographical space is limited to the FOM (Bichou et al. 2004).

1.6 Dissertation Organization

The dissertation consists of five chapters. Chapter one comprises the introductory sections: The Research Background, Problem Statement, Research Purpose and Objectives, Research Questions and Hypothesis, Scope of the study, and the Dissertation Organization (Harreveld et al., 2016). Chapters two and three consists of related literature on port performance and economic development, which embodies the various books, articles, reports, and journals that helped the researcher in mining the relevant information to assess the relationship between port performance and economic development FOM. Chapter four focuses on the research methodology, including a brief introduction, research design, sampling and sample size, and data issues. Chapter five focuses on empirical analysis, finding, and Interpretation. Chapter six focuses on the conclusion, summary, implications, recommendations, and conclusions (Singleton et al., 2018).
Chapter Two: Port Performance

2.1 Port in concept

The Port is the leading center for commercial and industrial activities for a state's economic and social development. The sector is committed to the concept of free trade in the context of globalization, institutional, technological, developments economic, environmental, and maritime transport development (Dooms et al., 2019). Therefore, the Port has always been exposed to changes in social and economic trends. The developments has created a highly uncertain and complex environment for the Port and fundamentally changed the concept (Saeed et al., 2018). The Port is a multisectorial system that combines economic function, infrastructure, geographical space, and trade. The Port is managed under a complex legal concept and maintained through an organizational structure that generates the need to convergence of the public and private sectors (Munim et al., 2018).

In this literature review, the research focused on assessing the relationship between port performance and economic development. The Port is a major player in the distributions and redistribution of goods internally, exports and imports, traffic, and institutional reforms, as private terminal operators contribute to the hub port's operationalization (Nicole et al., 2018). Also, for political circles in a region, the system may have spatial concentration or de-concentration effects beyond market forces only. The maritime ports and international environment have undergone serious changes in organizational structure and legal framework to accommodate international trade (Laxe et al., 2016). The framework of the Port has mainly passed through four generations. It is essential to define the port concept and to determine its classification.
In a broad sense, a port is where the exchange between sea and land occurs; it is a geographically and area to receive ships and goods (Benamara et al., 2019).

In its traditional conception, Paul Tourret defined the Port as a set of moles, basins, and docks that considered all kinds of shipping of goods and services. Besides the definition, the seaport can be defined according to different economic, geographical, legal, and institutional approaches. In useful sense, the port authority develops, owns, and maintains the port infrastructure, superstructure, cargo handling equipment, quay cranes, and forklift trucks. The Port leadership is responsible for operating all equipment owned by the port authority (Bergantino et al., 2013). The landlord port is characterized as a mixed public-private orientation, in which the port authority serves as a regulatory body (Bottasso et al., 2013). Private firms conduct Landlord port operations or cargo handling. For example, some major landlord ports are Antwerp, Rotterdam, New York, and Singapore (Senol, 2019). The private port operators offer and maintain their container freight, offices, sheds, warehouses, stations, workshops. They also purchase and install their equipment on the terminal grounds required by their business (Bichou et al., 2004).

In a fully privatized port, the port-land is privately owned and leased to companies, unlike other form port management in the world. Also, along with the sale of port-land to private interests, some governments may simultaneously transfer the regulatory functions to private successor companies (Song et al., 2015). For example, fully privatized ports are also referred to as a service port, which are few, and some are mainly found in the UK (Bottasso et al., 2013). Privatization is key to port development and performance in many jurisdictions and forms part of port reform. It creates an environment where the state has limited involvement or public policy interest in the running of the Port (Nicole et al., 2018). The risk in this arrangement is that port-land can be sold or resold for nonprofit activities, thereby making it impossible to reclaim its original maritime use. Moreover, there is also the possibility of land speculation, especially when port-land is near a major city. Furthermore, land
sale to private ports may also sometimes raise a national security issue (Senol, 2019). Given the above discussion on the four types of port management models, the researcher believed that the landlord port model is the most suitable according to the Liberian context. The wider neo-liberal argument that the private actors are much more efficient in the management and operation of business entities like seaports and allowing the market forces to determine the decision to make is a sensible approach (Bottasso et al., 2013).

2.2 Measuring Port Performance

The performance of the Port can be measured from several perspectives. The most commonly used indicator is the volume of goods imported or exported, but other methods are also used (Cheon, 2017). The actual throughput compared to the best throughput in the order indicated whether the port performance had the best quality or deteriorated over a period (Jaffar, 2005). Any ports not located in a competitive environment, the engineering best of throughput - the maximum performance of a port handled under certain conditions (the Port's capacity) - can be associated with the actual throughput (Yeo et al., 2010). In a more competitive environment, the economic factors - the performance for which the Port can achieve an economic objective like the maximum profit - are compared to the actual throughput. Another way to measure or analyze port performance is to use port performance indicators (Cheon, 2019). The comparison also indicates improvement or any decline over that period (Bichou et al., 2004). Examples of port performance indicators are throughput volume; value-added generated in the seaport activities, the port added value as a percentage of the Gross Domestic Product (GDP), the returns on firms investing in the Port, the investment level of private sectors in the Port, the establishment of firms in the Port and the employment created in the port area (Senol, 2019). Some of these indicators are related to specific products of the Port, while others are used for the Port as a whole (Brooks, 2007).
To determine the port performance indicators and the economic objective function is required, and much uncertainty is involved (Bottasso et al. 2013)). Therefore, the throughput volume is still the most commonly used indicator, while the absolute throughput volume is used as a port performance indicator in this research (Senol, 2019). There are many determinants of port performance. The characteristics of a port and economic environment affect attracting shippers and, therefore, on the Port’s cargo throughput. Seven main determinants of port performance will be discussed: the location and hinterland, the hinterland access, the draft and accessibility, the presence of firms in the Port, the port and terminal efficiency, the port charges, and the economic activities and development (Cheon, 2017). The relationship between port performance and economic growth remains one of the most discussed topics in both professional and academic circles. It is also elaborated substantially in politics and research science. In political spheres, the port and transport infrastructures are a significant concern for economic activities because they have a meaningful direct relationship with economic development and trade (Song et al., 2019).

The direct relationship between port performance and economic development remains exciting research (Saeed et al., 2019). The Port is a center for export and import and serves as a transshipment center, and fosters economic growth. Others believe that the relationship is straightforward, and contributing to economic development leading to the Port’s productivity. Some people think instead that the relationship between port performance and economic growth is indirect (Munim et al., 2018). When a port performs well, different port sectors also perform better financially, which eventually leads to economic development. However, some of these different sectors engaging in the operations of the Port include manufacturing, service, and transportation (Cheon et al., 2018). The particular interest in the findings that the relationship between port performance and economic growth is an interactive relationship that sometimes provides feedback (Ha et al., 2018). This means a couple of things:
1. The impact of the port performance on economic growth or the effect of economic growth on port performance depends on another variable known as the moderator variable.

2. Also, it argues that a positive impact of the port’s performance on economic growth in return provides positive feedback on the performance of the port in the form of availability of capital for port infrastructure development and adequate human resources for the proper functioning and operations of the port. This finding remains somehow convincing, and it captures most of the other conclusions briefly discussed above.

Despite the different opinions and findings, it is generally agreed that there is a positive relationship between economic growth and development and the performance of the port (Laxe et al., 2016). Seaports are, indisputably, one of the most critical infrastructures for economic development. They serve as trade facilitators and logistic platform for the movement of goods, people, and information and are vital nodes of transport that ensure the efficient and cost-effective flow of goods and people (Yeo et al., 2018). As part of a bigger and longer supply chain, seaports are an integral part of a country's transportation network and provide or improve access to different locations for individuals and businesses, thus facilitating a more extensive range of social and economic interactions (Song et al., 2015). By promoting trade and fostering other economic activities, seaports, directly and indirectly, provide economic benefits to national economies. Ports serve as the strategic center of trade, domestic economic activities, and represent a critical interface between a nation and the rest of the world. This is especially true for coastal countries that heavily depend on the importation and exportation of goods and services for Liberia's economic activities (Saeed et al., 2018).

Even though seaports are necessary to foster economic development, but on their own, they are not a sufficient requirement to generate economic growth and development. For the most part, this depends on the context and economic realities of a country (Ibrahim, 2009). Firstly, seaport infrastructures must be linked to places of economic
activities. Complementary infrastructures like roads, electricity, warehouses, human and resource capacity must all be developed to ensure the seaport investment's full benefits. Four different port management models have emerged in recent decades, and the landlord port model is considered the most popular form of port in most developing countries (Benamara et al., 2018). It is worth mentioning three critical points in line with the port management model, which is appropriate for the study area (Brooks, 2007).

Firstly, seaports produce both public and private goods. The universal products, which are often no rival and no excludable, include public safety, security, and a healthy environment and coastal protection (Caldeirinha et al., 2014). Besides, port services most often have direct and indirect multiplier effects on businesses and other economic activities. These economic multipliers will affect the use of many ports to justify direct public sector investment. This goes to say that over commodifying port services and ultimately leaving the management and operations of our seaports to profit-oriented private entities might be problematic, especially in the end (Nicole et al., 2018). However, some form of public intervention is appropriate for providing port services to ensure that a sufficient public goods level is maintained. Secondly, a somehow counter-argument is that port services provision entails high fixed costs and low marginal costs (Talley et al., 2014). The marginal is associated with using of port services exceed the minimal costs of providing these services. Also, the construction of port infrastructure, superstructure, and port expansion require large amount of capital (Ha et al., 2017). As a result, it often appears very attractive for governments, especially the government in developing countries, to seek private equity to build their seaports. From these points, it is clear that both the public and private sectors are needed in developing our ports (Munim et al., 2018).

2.3 Overview of Liberia Port Sector

The FOM is geographically positioned 6°12′17″ North and 10°47′35″ West of Monrovia, Montserrat County, Liberia. The FOM is the primary commercial port
facility in Liberia that was artificially created on the Bushrod Island near Monrovia in 1948, and the size of the harbor is 750 acres (3km). The facility covers four piers and one main wharf with four berths. The Freeport also has tanker facilities and a fishery pier (Bottasso et al., 2013). The FOM is a landlord port with concessions partnerships like the international container terminal operating company, APM Terminals, Firestone, China Union, Total Liberia, and Western Cluster (National Port Authority, 2017).

In 2010, Liberia’s government signed a $120m United States agreed with the Dutch company, the APM Terminals, a public-private partnership between the company and the National Port Authority to run the Port. According to the terms of the deal, APM Terminals is responsible for modernizing the Port by bringing the Port to international standards (National Port Authority Annual Report, 2010). In October 2012, Western Cluster Limited (WCL) signed a Port Lease agreement with the National Port Authority (NPA) management for the rehabilitation and construction of infrastructures at the Port for WCL to export iron ore. The Liberian government signed Western Cluster Limited Mineral Development Agreement (MDA) in August 2011 for the iron ore mines in Bea, Bomi, and Mano River Mines as required by the WCL Port Lease Agreement (Dooms et al., 2019). The Operating Agreement with the NPA was intended to ship iron ore through the FOM, Montserrado County.

The agreement mandated the Western Cluster Limited (WCL) to construct loading and unloading facilities in the Port, which included the rehabilitation of the former Liberia Mining Company (LMC) and National Iron Ore Company (NIOC) piers facilities (National Port Authority Annual Report, 2010). Under the concessions agreement, 43.29 acres of land has been earmarked for use by WCL for developing the port facilities (Bottasso et al., 2013). Besides the construction infrastructure development, which is critical in the lease agreement by WCL, the National Port Authority, which is the landlord, will be receiving annual lease rental fees for the land. Currently, two rock breakwaters, approximately 2,300 meters and 2,200 meters long protect the
harbor at the Freeport of Monrovia, enclosing a basin of 300 hectares of protected water (National Port Authority Annual Report, 2018). The marginal wharf (main pier) is 600 meters long and capable of berthing 3 to 4 ships, dependent on the vessel size. The FOM also has three docks: Liberia Mining Company (LMC), National Iron Ore Company (NIOC), and Bong Mines Company (BMC) Piers (National Port Authority, 2018).

Due to the name, the FOM has often considered a duty-free port to many people. That is not the case. Generally, Freeport means a port zone under a special custom and taxation system, with a particular jurisdiction regarding investments (Bottasso et al., 2013). The concept of free Port has existed for centuries and has evolved, adapting to new measures and demands from the private and public sectors. Over time, different terminologies such as Export Processing Zones (EPZs), Free Trade Zones (FTZs), Special Economic Zones (SEZ), Industrial Free Zones (IFZs), etc. The study showed that there is a strong correlation between the establishment of FTZs and strong export performance. Hence, it has become popular in developed and developing countries as a policy instrument for promoting export-oriented Foreign Direct Investment (FDI) (Senol, 2019).

On the surface, the popular names that it assumes now do not suggest any relation with ports. However, several definitions of Free Port or Free Trade Zones suggest export orientation amongst others as a major characteristic of such zones. According to Alan Branch, in his book Elements of Port Operations & Management, a free port is also known as a free trade zone (Bottasso et al., 2013). Trade is a specified area based on the unrestricted international exchange of goods, with customs tariffs used only as a revenue source and not as an impediment to trade development. In other words, imported merchandise may be stored pending duty-free re-export or duty-paid entry into the importing country (Song et al., 2015). Free Ports or free trade zones are meant to have a positive effect on the economy. These include generating foreign exchange
earnings, providing jobs, creating income, attracting FDIs, and generating technology transfer (Bottasso et al., 2013).

Now there is a simple but strong reason why the Port is an integral part of the concept. Even though the concept's objectives, as stated above, are not port-centered, the free zone enclave forms part of the Port's hinterland, and the enclave, in turn, is highly dependent on the Port. The Port's hinterland is considered the area from whence its cargo originates from and is destined (Cheon, 2017). This area can be within the country where the Port is located; in this case, it is referred to as a captive hinterland if it is an exclusive hinterland (Ha et al., 2017). It can also stretch beyond the country's borders where the Port is located, which we referred to as contestable hinterlands (Batista, 2012). Many years ago, the free zone/port enclave was largely made up of labor-intensive manufacturing activities. Recent trends show that logistics-oriented activities such as light assembly and processing, procurement of raw materials and parts, consolidation testing, and packaging have become the mainstay of free ports/zones (Bottasso et al., 2013).
Figure 1: Freeport of Monrovia

Source: National Port Authority Profile, 2011

Liberia's national government took over the port from an American company in 1971 and created the National Port Authority (NPA) to operate the facility. The NPA is the seaport Authority in the Republic of Liberia established by an Act of Legislature in 1967. It was amended in 1970 and approved on May 32, 1972, as a state-owned enterprise responsible for managing, planning, and build all public ports in Liberia. NPA currently operates the Freeport of Monrovia, Port of Buchanan, Port of Greenville, and Port of Harper (Cheon et al., 2018).

2.3.1 Port of Buchanan

The Port of Buchanan is 272km away from the FOM, southeast of Monrovia. It is considered as the second largest Port in Liberia. Currently, the Port controlled the majority of the nation's export raw materials. The Port's harbour is protected by two breakwaters, 1,890m and 590m long (National Port Authority Annual Report, 2010). A 225m long ore-loading quay is located adjacent to the commercial loading quay inside the basin, providing a water depth of 10.5m that is below the chart datum. Adjacent the loading quay, another waiting berth for the ore carriers is available. The secondary breakwater's inner side is a commercial dock, 334m long with an open water depth of 9.5m below chart datum (Jaffar, 2005). The Port's access channel provides ships a water depth 11.5m below the chart datum and a channel width between 210m.

Shipping and logistics activities have increased because of the logging, iron-ore, and equipment-handling agreement with UMARCO that has improved the Port is handling capacity and efficiency. Other companies, including Chevron, Equatorial Palm Oil, and others, are expected to make extensive use of the Buchanan Port facility, thus increasing NPA's revenue-earning potential. These activities are planned to improve shipping and logistics activities at the Port, directly creating an additional investment (National Port Authority Annual Report, 2012).
2.3.2 Port of Greenville

The Port of Greenville is located in Sinoe County, Liberia's southeastern region, about 673.6 km from Monrovia's Freeport. A 400m long breakwater protects the port's harbor, and on its inner side, by two quays. There are two berthing facilities, 70m, and 180m, respectively, with a real depth 8/9 meters below the chart datum. With the signing of fourteen (14) logging, one (1) iron ore, and two (2) oil palm concessions in the southeast, there is high anticipation of an increase in shipping and logistics activities at port (Jaffar, 2005).
2.3.3 Port of Harper

The Port of Harper is located in Maryland County, the southeastern region of Liberia, near the Ivory Coast border, about 761.6km away from the FOM. The Port of Harper was constructed on the Rocky Russwn Island by connecting the island to the mainland with a causeway and building a 150m long breakwater (National Port Authority Annual Report, 2011). A 100m long reinforced pier provides berthing facilities with an available water depth of 5.50m. The Port activities are centered on the exportation of logs and sawn timbers from the southeastern hinterland. The Port of Harper will be expanded to handle the anticipated traffic from the oil palm sector's reactivation and other economic activities (Senol, 2019).
2.4 Integrating the Port with other Infrastructure

As mentioned above, ports are part of the bigger and complicated supply chain that connects different economies, producers, and consumers. This means investments in ports must complement other economic infrastructures like roads, highways, and warehouses. This can be done through an integrated transport policy. An integrated transport policy aims to ensure a suitable, safe, and interconnected transport infrastructure for different transport modes such as roads, rail, and inland (Cheon, 2017). In Liberia, an integrated transport policy would involve the National Port Authority, Ministry of Transport (MOT), Liberia Maritime Authority (LiMA), Ministry of Public Works (MPW), Ministry of Finance and Development Planning (MFPD), just to name a few. The list signals the complexity of bringing together different ministries and agencies to formulate and implement an integrated transport policy (Bottasso et al., 2013).
However, it is worth mentioning that the ministries and agencies involved in the formulation and implementation of an integrated transport policy would either interact or coordinate through a formal or informal institutional arrangement. The formal arrangement would be a permanent committee set up by the President or the Cabinet comprising all the concerned ministries and agencies (Munim, 2018). Another formal framework for interaction and coordination could be the Cabinet. Also, there can be informal frameworks for interaction like periodic meetings and dialogues. Whatever the nature and structure of the framework, an integrated transport policy that gives key priority to the seaports and roads is crucial to Liberia's economic development (Dooms et al., 2019). It is not sufficient to invest in seaport infrastructure without investing in complementary infrastructures like roads (Bichou et al., 2004). Seaport areas are also increasingly becoming the sites for the growth of many industries and industrial clusters. These industries often depend on the seaports to smoothly carry out their activities (Laxe et al., 2016). The concentration of businesses around the FOM speaks volumes in relationship to the economic activities involving around the port. The Port Authority must, therefore, take into consideration those industries when formulating policies to address different aspects of the port operations and management (Bottasso et al., 2013).

2.5 Summary

To conclude, the port is the lead station for commercial and industrial activities in the Liberian economic and social development. As the named illustrate FOM, it is committed to open trade and serving as the Liberian economy's gateway. The FOM covers four piers and one main wharf with four berths and operates tanker facilities and a fishery. Since the port is a landlord, it has awarded concessions partnerships to APM Terminals, Firestone, China Union, Total Liberia, and Western Cluster. The port is also committed to the concept of free trade, institutional reform, economic development, environmental and maritime transport development. However, the port has always been accommodating to social, political, and economic changes in trends due to its activities. The port's performance can be determined using indicators either
in the volume of goods exported or imported by mathematical methods. It compared as the best throughput to determine whether the port performance is at its best quality or has deteriorated over the period.
Chapter Three: Economic Development

3.1 Concept of Economic Development

Economic development is more commonly used than economic growth and reflects progress in social and economic conditions, as a state that requires growth. Growth is an economic indicator and a necessary condition for development, but it is not sufficient because its development cannot be guaranteed. The literature focused on import and export in Liberia from 2008 to 2018 (Song et al., 2015). In addition to the port, performance is tied to economic development because economic activities are direct performance functions. Economic activities stimulate activities in the port that lead to a different form of activity. A quantitative and qualitative analysis was performed on data from the period under review (2008 to 2018). Data on the contribution of the FOM to Liberia’s national budget showed fluctuation in its contribution.

Moreover, the economy’s performance during the period was under review compared to the port performance during the same period (Bottasso et al. 2013). Because Liberia is a developing country and is faced with many challenges in developing its port infrastructure, the literature review considered research and studies on other ports in developing countries. This developing country-focused literature review is essential to avoid making a conclusion using developed countries where the circumstances are remarkably different (Cheon, 2017).
3.2 Overview of Liberia Export and Import

As we may be aware, the GDP measures the monetary value of final goods and services, those bought by the final user and produced in a country in a given timeframe. GDP includes goods and services produced for sale in the market and some nonmarket production, such as Defense or education services. Figure 5 displayed the GDP trend from 3.7 in 2008 to 6.33 in 2018, which impacted import and export activities in Liberia and economic development. In addition, this shows that the total output of goods and services are growing or decreasing. However, the GDP is collected at current or nominal prices; one cannot compare two periods without inflation adjustments. In determining Real GDP, its nominal value must be adjusted to consider price changes to allow the value of output or prices to increase (National Port Authority Annual Report, 2018).

![GDP Chart]

Figure 5: GDP of Liberia
Source: IMF, Statista 2020
Table 1 and Figure 6 indicated the relationship between the annual inflation rate and annual change from 2008 to 2018. The annual inflation rate is considered the percent change of the Consumer Price Index (CPI) compared to the previous year. However, the inflation rate and annual change rate affect the import and export trade in Liberia, alongside its operationalization. In 2008, the inflation rate stood at 17.49% and the annual rate of 6.10%, which decline in 2012 to a 6.89% inflation rate and -1.66 annual change rate. The inflation rate increased from 2012 to 23.56%, with an annual change rate of change, also an increase of 11.14%.

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Inflation Rate</th>
<th>Annual Change Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>17.49%</td>
<td>6.10%</td>
</tr>
<tr>
<td>2009</td>
<td>7.43%</td>
<td>-10.06%</td>
</tr>
<tr>
<td>2010</td>
<td>7.29%</td>
<td>-0.14%</td>
</tr>
<tr>
<td>2011</td>
<td>8.49%</td>
<td>1.20%</td>
</tr>
<tr>
<td>2012</td>
<td>6.83%</td>
<td>-1.66%</td>
</tr>
<tr>
<td>2013</td>
<td>7.58%</td>
<td>0.75%</td>
</tr>
<tr>
<td>2014</td>
<td>9.86%</td>
<td>2.28%</td>
</tr>
<tr>
<td>2015</td>
<td>7.75%</td>
<td>-2.11%</td>
</tr>
<tr>
<td>2016</td>
<td>8.83%</td>
<td>1.09%</td>
</tr>
<tr>
<td>2017</td>
<td>12.42%</td>
<td>3.59%</td>
</tr>
<tr>
<td>2018</td>
<td>23.56%</td>
<td>11.14%</td>
</tr>
</tbody>
</table>

Table 1: Inflation Rate and Annual Change
At the end of 2008, the total export in the FOM recorded rose to US$219.2M as compared to 2007, which was at US$200.2M. In 2009, the total export accounted for at the end of December increase to US$131.5M as compared to 2008. The trend continues to increase up to 2014, where the total export recorded was US$ 516.9M, decline to US$229.9M in 2015, and increase to US$ 233M in 2018. According to Annex 2 and figure 7, the commodities exported from Liberia through the Freeport of Monrovia include Rubber, Cocoa Beans, Coffee, Iron Ore, round logs, and other commodities. These exports significantly impact Liberia’s economic development because it provides jobs, revenue, and other economic incentives to the Port. The export trade from 2008 to 2010 was faced with domestic and international challenges ranging from narrow export-based, poor state infrastructure, specifically the FOM, leading to an impact on the economy—the decline in the country’s primary export commodities prices and the global economic crisis. After signing the APM terminal concession with the Port and meeting up with some international best practices related to security, it was reliable for shipping activities. The category was referred to as other
commodities, including charcoal, palm oil, scrap metals, and personal effects, which were also part of the export portfolio that impacted shipping, port operations, and economic activities for local inhabitants, and the market government as a whole.

![Export through the Freeport of Monrovia](image)

**Figure 7: Commodities Exported**

Import, as of the end of December 2008, totaled payments of US$919M, as compared to 2007, which was US$501.5M. The commodities imported include but are not limited to rice, the nation staple diet, food, manufactured products, machinery & transport equipment, and petroleum products. According to Annex 3 and Figure 8, in 2009, at the end of December, records show that the totaled expenditure for imports reduced to US$ 617.23M and increased US$ 757.1M at the end of 2010. During the period, of this Freeport of Monrovia was underwent infrastructural recovery and development that attracted more businesses and economic benefits. From 2011, imports started experiencing an upward trend from US$ 1,166M to 2,589.6M in 2014.
and didn’t start experiencing a decline until 2018, which was US$ 1,213.5M. The Freeport of Monrovia experienced an increase in the importation of rice, petroleum, machinery, transport equipment, building material, other capital goods, and other consumable goods. The port is the conduit for the transportation of these goods coming into the country.
3.3 Economic Benefits of the Seaport

The economic impacts of the FOM on the national economy can be categorized into three parts: direct impact, indirect impact, and induced impacts. The direct impacts considered the economic activities targeted by the port, which include employment, GDP, wages, and other economic output that is attributed to the operation and management of the port activities. For example, such as wages paid to FOM employees. This includes terminal operators, dockworkers, tugs, pilotage, NPA, freight forwarders, customs brokers, and trucking (Ibrahim, 2009). Indirect impacts are considered as a result of direct impacts. The employment, wages, GDP, and economic output generate industries activities in and around the port. For example, food sellers supply food for catering to ships and people working at the port, companies providing accounting and legal services to terminal operators (Batista, 2012). Induced impacts are economic impacts created by spending on wages, salaries, and profits earned in direct and indirect economic activities. It captures the economic activity generated by firms' employees directly or indirectly connected to the Port of Buchanan, FOM, Port of Greenville, and the Port of Harper, spending their wages in the general economy (Brooks). For example, a FOM worker might spend his/her wages on food, restaurants, child care, dental services, home renovations, and other items, which, in turn, generates employment in a wide range of sectors of the general economy (Bottasso et al., 2013).

Many governments see the ports as an essential factor in the strengthening of the economies. Examining the economic impact of a seaport is a crucial subject both in the political and scientific debate (Song et al., 2015). The port is seen as a determinant of economic growth; it contributes to developing industrial sectors and the generation of economic benefits. These activities have a very positive effect on the economy and lead to revenue generation, and motivate the government to invest in developing the
existing infrastructure to justify its social costs, usually has political significance on
the economic impacts of a seaport (Jaffar et al., 2005). The researcher believed in the
importance of assessing the economic and social implications of seaport investments
or to justify future port investments. It is worthwhile to perform a scientific evaluation
of a port's economic impacts (Benamara et al., 2011).

According to Nicole et al. (2019), governments have been allocating a significant
amount of money to develop seaport infrastructures during the last two decades.
However, the economy witnessed fluctuations in economic growth rates and decreased
employment rate during the last two decades due to the country's civil war and
transitional arrangement. Nicole et al. (2019) concluded that public investment in
seaport infrastructures has a positive effect on economic growth. Their study also
revealed that the seaport investment infrastructure's biggest beneficiary is the service
sector that creates more jobs that are domestic. Using time-series data, Munim et al.
(2018) estimated a significant positive effect of seaport investment on economic
growth. Uniquely for Liberia, they concluded that seaport investment positively affects
national economic growth, but with apparent differences at the port level. It has also
confirmed the positive impact of the seaport activity on the host country's economic
growth (Dooms et al., 2019).

Overall, Munim et al. (2018) made three conclusions. Firstly, seaport cargo throughput
has significantly impacted Liberia's economic growth. Secondly, the containerized
cargo flow is more significant to FOM, associated with the economy than smaller ones.
Thirdly, the cargo throughput of competing seaports exhibits a positive effect on the
Liberia economy. The researcher concludes that the FOM played an essential role in
heavy industries such as steel, shipbuilding and petrochemical industries. For the
ECOWAS regions, Munim et al. (2018) analyzed the impact of ports activity on
regional GDP, focusing mainly on its spillover effects on the neighboring regions.
They provided that port investment and businesses tend to increase GDP in the locality
where they are located (direct impact) and positively affect nearby regions' GDP.
Seaport investments and activities lead to higher trade activity, increased supply, significant foreign reserves, and reduced prices (Tabakoglu, 2016).

3.4 Summary

To conclude, economic development is a significant component of every nation, and it reflects on the citizenry through GDP, annual inflation rate, and their suitable intend of trade. Through the FOM, export and import increase during the study period, which reflect economic growth in some instances, and decline in some period or considered it as fluctuation in numbers. However, during this period, the GDP increased from 3.7 in 2008 to 6.33 in 2018, with the annual inflation rate growing from 17.49% in 2008 to 23.56% in 2018. This GDP improvement is weighty due to the import and export sector, of which 90% is done through FOM. The benefits the port brings to the economy cannot be underestimated because it is the conduit at which export, import, transshipment, customs duty collection, a different form of fees and taxes imposition and collection occurs, and international trade. The explanation provided in the chapter shows the relationship between imports and export in Liberia from 2008 to 2018 that impact economic development. In addition to the FOM’s performance, the economic relationship between the port and economic development is shown in figures. Moreover, the economy's performance during the period under review will be evaluated and compared to the port performance during the same period (Bottasso et al. 2013).
Chapter Four: Methodology

4.1 Introduction

Chapter four comprised of the methodology and was made up of the research design, the selection criteria for respondents, the research population, sample size, and sampling techniques used in the study (Mason, 2018).

4.2 Research Design

The researcher used qualitative methods to address the research questions. The researcher prepared an open and close-ended questionnaire to obtain primary data through interviews by administering questionnaires to the various respondents. The specific data collection methods include reviewing secondary data to obtain information from books, journals, the internet, and textbooks. The secondary data was used to understand payments and returns on the NPA economic records (Marugama et al., 2014).

4.3 Sampling and Sample Size

This study's complexity used the non-probability sampling method for sample collection and sample size determination. In non-probability sampling, each character of the population does not have a known probability of being selected as an inconvenience or voluntary response surveys (Mason, 2018). Because non-probability sampling methods are based on the researcher's personal choice rather than random selection, statistical theory cannot explain how respondents might behave, and potential sources of bias are likely and sometimes rampant (Marugama et al., 2014). The research question and objectives are technical, allowing only people with expertise and experience in the subject matter to be interviewed or given a
questionnaire for a response. The twenty respondents were selected from the study area; the focus was entirely on people involved with and knowledgeable on the research's objective and purpose (Gray, 2018). They include policymakers, senior and middle managerial levels, advisors, current and former board members, and consultants. Some independent expertise was also selected for both interviews and responses to the questionnaire (Harvey et al., 2016).

4.4 Data Issues

Upon the approval of the WMU Research Ethics Committee form, the researcher sent the questionnaires and sought the respondents' participation in the interview by and through email. The researcher used a qualitative analysis of the data obtained from the study by discussing the data collected (Mason, 2018). The questionnaire is divided into parts A, B, and C. Part A deals with the respondents' information on his/her name, employer, and year of experience (Gray, 2018). Part B of the questionnaire is structured as the closed-ended question, where the respondent selected the choice of the options provided by the researcher, and Part C consisted of the open-ended portion of the questionnaire for the respondents to share knowledge on the relationship between port performance and economic development of the FOM (Marugama et al., 2014).
Chapter Five: Empirical Analysis, Finding and Interpretation

5.1 Introduction

Forty Questionnaires were emailed to professionals in port, revenue, finance, and port-related authorities to get their perspective on the relationship between port performance and the economic development of the FOM. However, twenty (20) of the questionnaires were duly returned with respondents’ feedback.

Given the above, part A of the structured questionnaire outlined the general identification of the respondent, Part B relates to the close-ended part of the questions, and the final part (C) is directly related to the open-ended questions to seek the feedback from the respondents.
5.1 Data Presentation, Analysis and Interpretation

Part A

<table>
<thead>
<tr>
<th>Gender of Respondent</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Male</td>
<td>18</td>
<td>90%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2. Gender

![Gender Ratio](image)

Figure 9: Illustrates Percentage of Gender

Table 2 and Figure 9 illustrate the gender of the respondents. 90% of the respondents are male, representing 18 employees from diverse institutions in the study area, and 10% of the respondents are female representing two employees.
Table 3: Work experience of respondents

<table>
<thead>
<tr>
<th>Range of Experience</th>
<th>Number of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 years</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>11-15 years</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>Above 15 years</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 10: Illustrates the Percentage of respondents work experience

Table 3 and Figure 10 show the work experience of the respondents. It demonstrated that 60% of respondents had between 11 to 15 years of work experience, representing 12 of the respondents; 20% of the respondents had between 6 to 10 years of work experience, constituting for four respondents; 15% of the respondents had under 5 years of work experience, representing three of the respondents; and 5% of the respondents had above 15 years of experience. The table shows the respondents knowledge and suitable in the study area.
<table>
<thead>
<tr>
<th>Educational Qualification</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctorate Degree</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>8</td>
<td>40%</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>Associate’s Degree</td>
<td>3</td>
<td>15%</td>
</tr>
<tr>
<td>Senior Secondary Diploma</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4: Respondents’ Education

![Respondents' Education](image)

Figure 11: Illustrates the Percentage of respondents' Education

Table 4 and Figure 11 show the respondents' level of education in subjects relating to their area of study. It can be seen 40% of the respondents had Master's degree, constituting eight of the respondents; 30% of the respondents had a Bachelor's degree, representing six of the respondents; 15% of the respondents had an Associate's degree, representing three of the respondents; 10% of the respondents had Doctorate degree, constituting of two the respondent; and 5% of the respondents had earned their Senior secondary Diploma, representing a one respondent. These respondents' qualifications are best suited to contributing to the relationship between port performance and economic development at the FOM.
5.2 Data Presentation, Analysis and Interpretation

**Part B**
The questions in this part of the questionnaire, the respondents selected the best option according to their knowledge and experience.

<table>
<thead>
<tr>
<th>Name Employer</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPA</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Shipping Industry</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Port Operator</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Customs Broker Association</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Other Port Users</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>MFDP</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>LRA</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>Port Truckers Union</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table 5: Employer of the respondents
Figure 12: Illustrates the Percentage of Respondents’ Employer

The first concern is the institutions that the respondents are working in that are responsible for the port performance and economic development, as shown in Table 5 and Figure 12 above. Of the 20 respondents, 25% are NPA employees, 25% are MFDP employees, 25% are LRA employees, 5% are from the shipping industry, 5% are from Port Operators, 5% are from Customs Broker Association, 5% are from other port users, and 5% are from port truckers’ union. This is a fair representation of stakeholders in the sector.
The second focused on the ship-working rate of moving a container from the FOM that is tied to the performance of the port and its income.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24hrs</td>
<td>14</td>
<td>70%</td>
</tr>
<tr>
<td>25-48hrs</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>49-72hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>73-100hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>100hrs and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 6: Ship working rate

![Ship-Working Rate](image1)

Figure 13: Illustrate the Percentage on Ship working rate

Table 6 and Figure 13 illustrate the ship-working rate. It can be seen that 70% of the respondents stated that the ship-working rate to move a container off the ship in the port is between 1-24hrs per gross, representing fourteen respondents, and 30% of the respondents recognized that the ship-working rate to move a container out of the ship in the port took between 25-48hrs per gross, representing six respondents. Therefore, within 48hrs gross, a container can come off a ship and into the port.
The third question focused on the waiting rate for the ship to have access to the FOM which is tied to port performance and trade.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24hrs</td>
<td>18</td>
<td>90%</td>
</tr>
<tr>
<td>25-48hrs</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>49-72hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>73-100hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>100hrs and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 7: Waiting rate for ship

![Waiting Rate](image.png)

Figure 14: Illustrate the percentage on the waiting rate for ship

Table 7 and Figure 14 illustrate the waiting rate for a ship to have access to the FOM. 90% of the respondents acknowledged that the waiting rate for a ship to have access to the FOM is between 1-24hrs per gross, representing eighteen respondents. It can be seen that 10% of the respondents said that the waiting rate for a ship to have access to the FOM is between 24-48hrs per gross, this representing three respondents.
Therefore, within 48hrs per gross, every ship requesting access shall have access to the port.

The fourth question focused on the berth occupancy rate working time at the berth of a ship at the FOM. It also depends on the quantity of the cargo on a vessel that is to be loaded or discharged or the type and characteristics of a vessel.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24hrs</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>25-48hrs</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>49-72hrs</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>73-100hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>100hrs and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 8: Berth occupancy rate

![Berth Occupancy Time](image)

Figure 15: Illustrate the percentage on berth occupancy rate

Table 8 and Figure 15 illustrate the berth occupancy rate of a vessel at the FOM. Here 60% of the respondents acknowledged that the berth occupancy rate of a vessel during
loading or discharge at the FOM is between 49-72hrs per gross, representing twelve respondents. Then, 30% of the respondents recognized that the berth occupancy rate of a vessel during loading or discharge at the FOM is between 25-48hrs per gross, representing by six respondents. Finally, 10% of the respondents recognized that the berth occupancy rate of a vessel during loading or discharge at the FOM is between 1-24hrs per gross, representing two of the respondents.
The fifth question focused on the period (in days) container stay at the terminal in the FOM.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24hrs</td>
<td>16</td>
<td>80%</td>
</tr>
<tr>
<td>25-48hrs</td>
<td>4</td>
<td>20%</td>
</tr>
<tr>
<td>49-72hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>73-100hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>100hrs and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 9: Dwelling time

Figure 16: Illustrate the Percentage on dwelling time

Table 9 and Figure 16 illustrate the dwelling time a container must stay at the terminal facility in the FOM. 80% of the respondents mentioned that the dwelling time a container stayed at the terminal facility in the FOM was between 1-24hrs per gross, representing sixteen respondents. 20% of the respondents recognized that the dwelling time a container stayed at the terminal facility at the FOM is between 24-48hrs per
gross, representing four respondents. Therefore, within 48hrs per gross, a container is allowed to stay at a terminal facility in the port.

The sixth question focused on the time between unloading cargo and leaving port.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24hrs</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>25-48hrs</td>
<td>6</td>
<td>30%</td>
</tr>
<tr>
<td>49-72hrs</td>
<td>12</td>
<td>60%</td>
</tr>
<tr>
<td>73-100hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>100hrs and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 10: Time between unloading cargo and leaving port

![Unloading Cargo and Leaving Port](image)

Figure 17: Illustrate the Percentage on unloading cargo and leaving port

Table 10 and Figure 17 illustrate the unloading of cargo on the truck and leaving port time in the FOM. The table indicates that 60% of the respondents recognized that the unloading of cargo on the truck and leaving port time in the FOM is between 49-72hrs
per gross, representing twelve respondents. Then, 30\% of the respondents recognized that the unloading of cargo onto the truck then the port leaving time in the FOM is between 25-48hrs per gross, representing six respondents. Lastly, 10\% of the respondents recognized that the unloading of cargo on the truck and port leaving time in the FOM as between 1-24hrs per gross, representing two respondents.
The seventh question focused on the transit time.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of Respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-24hrs</td>
<td>14</td>
<td>70%</td>
</tr>
<tr>
<td>25-48hrs</td>
<td>5</td>
<td>25%</td>
</tr>
<tr>
<td>49-72hrs</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>73-100hrs</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>100hrs and above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 11: Transit time

![Transit Time Chart]

Figure 18: Illustrates the Percentage on transit time

Table 11 and Figure 18 illustrate the transit time of a truck arriving at the entrance of the terminal gate and its departure from the terminal exit gate in the FOM. It can be seen that 70% of the respondents recognized that the transit time of a truck arriving at the entrance of the terminal gate, and its departure from the terminal exit gate in the FOM is between 1-24hrs per gross, representing fourteen respondents. It can be noted that 25% of the respondents recognized that the transit time of a truck arriving at the entrance gate of the terminal, and its departure from the terminal exit gate in the FOM
is between 25-48hrs per gross, representing five respondents. It can be seen that 5% of the respondents stated that the transit time of a truck arriving at the entrance of the terminal gate, and its departure from the terminal exit gate in the FOM is between 49-72hrs per gross, representing one respondent.

The eighth question focused on the Charge per TEU

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-500USD</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>501-1,000USD</td>
<td>19</td>
<td>95%</td>
</tr>
<tr>
<td>1,001-2,000USD</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2,001USD and above</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 12: Charge per TEU

Figure 19: illustrate the Percentage Charge per TEU

Table 12 and Figure 19 showed the charge per TEU at the FOM. 95% of the respondents mentioned that the charge per TEU is between 501-1,000USD, representing 19 respondents, and 5% of the respondents recognized that the charge per TEU is between 1-501USD, representing one respondent.
The ninth question focused on whether the FOM can contribute to the National Budget.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>18</td>
<td>90%</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Maybe</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 13: Contribution to the National Budget

![Figure 20: Illustrate the percentage on Contribution to National Budget](image)

Table 13 and Figure 20 show whether the FOM contributes to the National Budget of the Republic of Liberia. It can be noted that 90% of the respondents recognized that FOM contributes to the National Budget of the Republic of Liberia, representing eighteen respondents, and 10% of the respondents recognized that the FOM maybe contributes to the National Budget of Liberia, represented by two respondents.
The below question focused on whether excluding the customs duty and shipping line handling charge at the FOM, if the port is collecting other fees.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Maybe</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>I think so</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 14: Any Other Fees

Figure 21: Illustrate the Percentage on Any Other Fees

Table 14 and Figure 20 show whether excluding customs duties and ship line-handling charges or any other fees that need to be paid to get cargo out of the port. It can be noted that 100% of respondents recognized that there are other fees that needed to be paid to get cargo out of the port, constituting twenty respondents.
Question eleven unearthed FOM position among economic infrastructure in Liberia.

<table>
<thead>
<tr>
<th>Option</th>
<th>Number of respondent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>18</td>
<td>90%</td>
</tr>
<tr>
<td>Middle</td>
<td>2</td>
<td>10%</td>
</tr>
<tr>
<td>Bottom</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 15: Ranking Of FOM

![Ranking of FOM](image)

Figure 22 Ranking of FOM

Table 15 and Figure 22 show the ranking of the FOM among economic infrastructure in Liberia. It can be seen that 90% of the respondents acknowledged that FOM is among the top economic infrastructure in Liberia, representing eighteen respondents, and 10% of the respondents acknowledged that FOM is among the top economic infrastructure in Liberia, representing two respondents.
The below figure represents questions twelve, thirteen and fifteen, which is concern to the gross and net income of the FOM during the study period and the contributions of the port to the National Budget of the Republic of Liberia. The Budget is the program of the country that is converted into monetary value.

![Economic trend graph]

Figure 23: Economic Trend of FOM

Figure 23 and annex 3 illustrate the FOM's gross and net income and its contribution to the national budget of Liberia. In 2008, the FOM gross income generated from operations, marine services, stevedoring, land and building rental, miscellaneous and out-port revenue recorded was US$18.4M, net income at US$ 1.48M, and a contribution to the budget of US$ 1.4M. In 2009, the FOM gross income generated an increase from US$ 18.4M to US$ 19.7M, net income from US$ 1.48M to US$ 1.8M, and contribution also increased from US$ 1.4M to US$ 1.5M. In 2010, the port experienced a decline in gross income from US$ 19.7M to US$18.8M. This declined was due to the concession signed with the APM Terminal, but net income increase from US$ 1.8M to US$2.4M and the contribution to the National Budget from US$ 1.5M to US$ 2.2M. According to the records in 2011, gross income decreased from US$ 18.8M to US$17.2M, but net income and the contribution to the budget increased to US$ 3.7M and US$ 3.6M, respectively. In 2012, the FOM gross income stated by respondents was US$26M, with a net income increasing to US$17.1M, and the
The question number fourteen concentrate on the number of ships that dock in the FOM during the study period.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>@</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOM</td>
<td>382</td>
<td>400</td>
<td>438</td>
<td>404</td>
<td>368</td>
<td>401</td>
<td>350</td>
<td>390</td>
<td>412</td>
<td>450</td>
<td>513</td>
</tr>
</tbody>
</table>

Table 16: Ships Dock at the FOM

Figure 24: Illustrate the trend in ships docking at the port

Table 16 and Figure 24 show the number of ships that docked at the FOM during the study period. In 2008 382 ships docked at port, in 2009 400 ships docked at the port, in 2010 438 ships docked at the port, in 2011 404 ships docked at the port, in 2012 368 ships docked at the port, in 2013 401 ships docked at the port, in 2014 350 ships docked at the port, in 2015 390 ships docked at the port, in 2016 412 ships docked at the port, in 2017 450 ships docked at the port, and in 2018 513 ships docked at the port.
<table>
<thead>
<tr>
<th>Current Challenges facing the FOM</th>
<th>Number of times each respondent had the same points of view</th>
<th>Percentage on the number of time each respondent had the same point of view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited stakeholders dialogue</td>
<td>23</td>
<td>19%</td>
</tr>
<tr>
<td>Traffic Congestion</td>
<td>11</td>
<td>9%</td>
</tr>
<tr>
<td>Limited Policy on working rate, waiting rate, berth occupancy rate, dwelling time, unloading cargo, leaving time, and transit time</td>
<td>35</td>
<td>29%</td>
</tr>
<tr>
<td>Limited computerization of the entire activities of the FOM</td>
<td>8</td>
<td>7%</td>
</tr>
<tr>
<td>Wages Disparity</td>
<td>13</td>
<td>11%</td>
</tr>
<tr>
<td>Lack of recession facility</td>
<td>30</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table: 17 Challenge facing the FOM
Figure 25: Illustrate the percentage of the Challenge facing the FOM

Figure 25 and table 17 shows the challenges the FOM is facing in the discharge of the constitutional responsibilities allotted to it by law. It can be noted that 29% of the respondents mentioned that the limitation of policy in the areas of working rate, waiting rate, berth occupancy rate, dwelling time, unloading cargo, leaving time, and transit time at the port challenge the performance and income of the port. It can be seen that 25% of the respondents stated that the lack of recession facility in the FOM is undermining revenue for the port and performance. It can be noted that 19% of the respondents recognized that the limited stakeholders’ dialogue is posing a challenge to economic development and the port performance. It can be noted that 11% of the respondents recognized that wages disparity among staff at the port posts has serious impacts on economic development and port performance. It can be noted that 9% of the respondents stated that traffic congestion in and around the port facility post as a huge challenge to economic development and port performance. It can be seen that 7% of the respondents recognized that the port is challenged by the computerization of all
of its entire activities which has significantly undermined economic development and port performance.

Question number fifteen concentrate on Any Gaps Ratio.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>20</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 18: Any Gaps Ratio

Figure 26: Illustrate the Gaps

Figure 26 and Table 18 shows if there are gaps among stakeholders in the sector. The table shows that the 100% of the respondents agreed that there are gaps among stakeholders but the researcher did not include it in the study area.
Chapter Six: Conclusion

6.1 Summary

According to the data analysis done in chapter four, 90% of the respondents who participated in the research were male, and 10% were female and were selected using the non-probability sampling method. In non-probability sampling, each member of the population does not have a known probability of being selected as an convenience or voluntary response surveys because non-probability sampling methods are based on personal choice rather than random selection. As mentioned 80% of the respondents selected were university educated with qualifications ranging from a bachelor's degree up to a doctoral level qualification, and the remaining 20% of education range from associate degrees to high school diplomas level. However, 85% of the respondents have six years work experience and above in the study area, and the remaining 15% have 5 years or less. These respondents were selected from the NPA, shipping Industry, port operators, customs brokers association, other port users, MFDP, LRA, and Port Truckers association. These institutions are connected and have relationship between the port performance and economic activities taking place in the FOM and, coupled with respondents' experience, make them suitable and knowledgeable in the study area. The respondents' specialization are in port, revenue, economics, management, and logistics. However, 75% of respondents were drawn from NPA, MFDP, and LRA that have a statutory mandate to manage, administer, and supervise the FOM, revenue collection, and fiscal policy in Liberia, and the balance of 25% are from other stakeholders that are involved with the port.
The port handled ocean-borne international cargo carried on ships, and due to the working rate of moving a container from the FOM, 70% of the respondents recognized that the container-moving rate is from 1-24hrs per gross. The remaining 30% acknowledged that the ship-working rate to move a container out of the port is between 25-48hrs per gross. This means that within 48hrs of a ship-working rate, a container should be removed from a ship within the port of FOM. However, there are also ships in line waiting to access the port, the waiting time for a ship to gain access to the FOM, and 90% of the respondents stated that a ships waiting rate for access to the FOM was between 1-24hrs per gross, and 10% recognized that the waiting rate for a ship to attain access to the FOM was between 25-48hrs per gross. The researcher believed that within 48hrs per gross, a ship must gain access to the FOM. Also, the berth occupancy rate depends on the quantity of cargo a vessel has to load or discharge, which the working time at the berth of a ship at the FOM is within 72hrs per gross. Then, 80% of the respondents stated that the dwelling time a container stays at the terminal facility at the FOM is between 1-24hrs per gross and 20% recognized that the dwelling time a container stays at the terminal facility is between 24-48hrs per gross. This means that within 48hrs per gross, a container must stay at a terminal facility in the FOM. The turnaround time for loading a cargo on the truck and leaving the port is within in 72hrs per gross.

However, 95% of the respondents mentioned that a truck’s transit time of arrive at the terminal gate entrance, and its departure from the terminal exit gate in the FOM is 1-48hrs per gross. However, the Twenty-foot Equivalent Unit (TEU) charge in the FOM is 1-1,000USD to the TEU out of the port. Excluding customs duty and shipping line-handling charges, there are other fees paid to get cargo out of the port, according to 100% respondents. The respondents rank FOM as one of Liberia’s top economic infrastructures because it contributes to the country’s national budget. The contribution to the budget is both direct and indirect. The government collects duties on import and export through the revenue authority, and FOM collect other fees from rental, leases, and other operations, amounting to a direct contribution to the budget. Employees, port
operators, and port users' activities in the port and the economy create income and estate taxes. Other forms of income for the government indirectly impact the national budget.

From 2008 to 2018, the FOM generated income from operations, marine services, stevedoring, land and building rental, miscellaneous, and out-port revenue. These port activities led to an increase and decrease in income and contribution to the national budget. Income increase from US$18.4M in 2008 to US$19.7M in 2009, the variance is US$ 1.3M, and contribution increase US$ 1.4M 2008 to US$1.5M in 2009, experiencing a variance of US$ 0.1M upward trend. The respondents' information showed that income decreased from US$ 19.7M in 2009 to US$ 18.8M in 2010 with a negative variance of US$ -0.9M but affects the contribution because of the decline in expectations. At the end of the operating period in 2010, the FOM contributed US$ 2.2M as compared to US$ 1.5M in 2009, a variance of US$ 0.7M increment. The income of the FOM also declines from US$18.8M in 2010 to US$ 17.2M in 2011 with a negative variance US$-1.6 M, and the contribution to the national budget an increase of US$1.4M in 2011. However, the port experienced a sharp increase in revenue in 2012 from US$ 17.2M in 2011 to US$26M, with a variance of US$8.8M. Contribution increased from US$ 3.6M in 2011 to US$ 16.5M showing a variance of US$ 12.9M. In 2013, the FOM contributed US$ 19M as compared to US$ 16.5M in 2012; a variance of US$ 2.5M declined from US$ 12.9M in 2012. The income of the FOM declined in 2014, from US$28.4M in 2013 to US$ 14.3M with a negative variance US$-14.1M, and the contribution to the national budget decrease from US$19M in 2013 to US$ 5.5M in 2014. However, the port experienced an increase in income in 2015 from US$ 14.3M in 2014 to US$16.7M, with a variance of US$2.4M. The Contribution increase from US$ 5.5M in 2014 to US$ 7.5M shows a variance of US$ 2M. The respondents' records showed that income increase from US$ 16.7M in 2015 to US$ 17.6M in 2016, and the contribution to the national budget from US$ 7.5M in 2015 to US$ 8.5M in 2016 with variance US$ 1M. In 2017, Income increased from
US$ 30.4M to US$ 150.7M in 2018, and contribution to the National Budget with an increase from US$ 21.6M to US$ 90M in 2018.

The records show the number of ships that docked at the FOM from 2008 to 2018. At the end of the operations in 2009, 382 ships docked in 2008 compared to 400 ships that docked in 2009 with the variance of 18 ships increment. The ships docked with an increase in 2010 to 438 ships compared to 2009, experiencing an additional increase of 38. It declines in 2011 by 34 and 2012 by 36, but with revenue increases and decreases of the preceding year; in 2013, ships that docked increased from 368 in 2012 to 401 in 2013 with a variance of 33 increments. Two thousand and fourteen ships docking at the port declined by 18 ships and increased by 40 ships in 2015. This increase continues up until 2016, where the port experience an additional 62 ships, a decline in 2017 by 38 ships, and an increase by 92 ships that lead to the increase in revenue. The twenty respondents agreed that gaps faced the FOM are posing challenges in the performance of the port and the annual revenue collections, but the study could not further expand on it due to the scope of work. As it relates to the challenges facing the FOM, the researcher chose to consider all the views mentioned by the respondents because they are key to the performance of the port and generating income for the survival of the entity.

6.2 Implications and Recommendations

The FOM’s performance and economic development are associated with key state actors and other private sector groups, and coordination among stakeholders plus the limitation of the proper policy remains focused on both the researcher and respondents. The FOM is the medium by which approximately 90% of the country’s international trade is conducted and used to transport goods in and out of Liberia and used for transshipment. The FOM is a landlord port that enjoys concessions with some port operators, as mentioned in previous literature. These concessions focused on cargo handling, warehousing, and land leasing, and are limited to the overall policy development. Based on findings mentioned above summarized from the study, the
researcher believes that if these recommendations are implemented, it will better position the FOM, improve economic activities, provide better services to port users, bridge the gaps among stakeholders in the port, and ensure sustainable port management and governance in Liberia.

1. Establish a working group that includes the Port representative, operator(s), users (customs brokers association, port truckers’ association communities, shipbrokers association, marketing association, chamber of commerce, etc.), LIIMA, LRA, MFDP, and academia that have a stake in the port performance and economic development. The group could be named FOM Working Group (FOWG), which is not in place now to bring together stakeholders participating in the day-to-day activities of the port that directly impact the performance and economic activities of the country. The absence of said group poses challenges in cohesive actions to have a sustainable plan for the port, including better services, improved economic activities, and bridge gaps among stakeholders.

The researcher believed that the FOM provided several vessels, cargo, transshipment, and inland transport activity. The satisfaction obtained by shippers and other port users must indicate the level of port performance achieved. Therefore, the FOWG workings will offer satisfactory services to vessel operators, port operators, users and, at the same time, provide ideas for the management of the port based on the expected vessel type and cargo to be handled that will improve the economic envelope of Liberia. Accordingly, the FOWG will relook at measures related to shipping working rate, waiting rate, dwelling time, the rate of loading/unloading the load, transit time for trucks accessing the port, and quality storage/inland transport. There is a strong relationship between these sets of measures and the performance indicators of the FOM. The FOWG should develop a Policy Guide for Stakeholders' activities. This instrument will enhance the effective coordination, and continued stakeholders' dialogue to take measures to bridge the gaps among
stakeholders, work towards providing better, contribute in the development of policy for the approval of port authority, and help the government better her revenue generation.

2. Create a Port Performance Strategy that will bring together stakeholders in the sector to enhance productivity. A product that will measures efficiency and cost-effectiveness of the terminal operations, leases, warehousing, traffic congestion in and around the port, labor, equipment, and business climate. The strategy is intended to look at the output achieved to effort applied comparatively. In the late 1970s, UNCTAD recommended that signatory adopt and follow specific port performance indicators (UNCTAD, 1976). The concept behind this recommendation is to have a uniformed measurement to either improve port performance or enhance the port operations. This fell in the corridor of UNCTAD’s mission to promote and facilitate trade that enhances economic development.

The FOM is a crucial infrastructure for business transactions and needs a strategy that will guide its performance in this new era of computerization and globalization. The strategy will provide clear direction in the areas of terminal operational efficiencies that will generally focus on volume throughput (ship working rate, waiting rate for a ship, movements per crane, dwelling time, per hour; berth occupancy rates; labor ratio per TEU, unloading cargo and leaving the port, and transit time of trucks accessing the port for commercial activities). The strategy will also consider financial performance analysis to set the foundation for economic development in the Republic of Liberia. The financial performance or economic operational will include in its justification the following performance measures like Utilization (= Actual Input/Design Input Capacity, Max. Input); Port Productivity (= Actual Output/Effective Input Capacity); Port Efficiency (= Actual Input/Effective Input Capacity), Port Effectiveness (= Actual Output/Effective Input
3. That the FOM be moved to a Digital Port to enable it to facilitate every activity, including operations, finance, management, and governance. Information gathering on personnel, operations, and finances poses challenges to investors, planners, and policymakers. Digital port or digital technology operating the entire port is a crucial focus and basic prerequisites for implementing responsive digital structures across the port, shipping, and logistics. The digitalization shall serve as enablers to gather, understand, and account for port performance and economic development in the short-medium and long term. Digitalization should be in cloud computing and big data solution. The International Maritime Organization (2012) says that ships are used for transporting human beings and goods from countries to other countries and are responsible for moving approximately 90% of the world's trade, which the Freeport of Monrovia (FOM) is involved. Liberia is expected to start mining oil, huge export of palm oil, cocoa, coffee, rubber, logging, and other natural materials in the coming years. The country also depends hugely on importing goods through the FOM, and the demand for logistics will increase and personnel. These activities will create income for the port and government, which require digital technology to capture all the happening. This will not only be an innovation but will turn attention outward into the business ecosystem of information exchange and digital communications with customers, suppliers, and partners, and other actors to create new services, products, and experiences.

6.3 Limitation and Areas for Further Research

The limitation of the research is the reliability of the data from different sources. Collecting accurate port throughput and shipping data on the shipping sector of Liberia
is a challenge. This is due to several factors prominent among which is the inadequacy of data collection systems, suspicions to provide shipping and port throughput data for publication, and the lack of data processing and preparation culture. Despite these apparent challenges, the best effort was made to collect data that provide an accurate picture of shipping activities for the period under review and data for previous comparative analyses. Also, the limitation of information on traffic congestion in and around the port and recession facility in the port for the handling of waste is challenging to the performance of the port and will lead to an impact on economic activities in the country.

6.4 Conclusion

To conclude, the FOM is the largest seaport among Liberia's four ports and essential economic infrastructure. The port is challenged with information about the operations, finances, management, and governance. Additionally, the challenge of stakeholder coordination and regular dialogue among participants in the sector imposes obstacles to the port's business climate. However, the researcher decided to study the relationship between the port's performance and economic development to assess the relationship between port performance and economic development and identified and analyzed the contribution of the FOM to Liberia's economic growth from 2008 to 2018. Based on the purpose, the researcher used the qualitative method and conducted both an open and closed-ended questionnaire to obtain primary data through interviews by administering questionnaires to twenty respondents who are stakeholders in the sector. The secondary data obtained from books, journals, the internet, and very useful textbooks. Because of the study's complexity, the researcher used a non-probability sampling method to determine sample collection and sample size. Non-probability sampling created an environment where each character of the population does not have a known probability of being selected as an inconvenience or voluntary response surveys, so personal choice rather than random selection.
The respondents who agreed to participate in the study are educated and have work
from six-year above in the study area of NPA, shipping industry, port operators,
customs brokers association, other port users, MFDIP, LRA, and Port Truckers
association. The respondents' selection was free of bias and are knowledgeable and
suitable in the research area. The performance and economic indicators are tied to the
inflow of international transport activities in the seaport. The working rate for moving
a container is within 48hrs per gross, the waiting rate for a ship to have access to the
FOM done within 48hrs per gross, and the berth occupancy rate also depends on the
quantity of cargo on a vessel to be loaded or discharged, but within the 72hrs per gross,
this can be done. The dwelling time a container stays at the terminal facility is within
48hrs per gross, and within 72hrs per gross, unloading of cargo on the truck and
leaving port to occur in the FOM. However, within 48hrs gross, a truck arrives at the
terminal gate entrance and its departure from the terminal exit gate. The Twenty-foot
Equivalent Unit (TEU) charge in the FOM is 1-1,000USD to the TEU out of the port
and to which cost excludes customs duty and shipping line-handling charges. The port
receives other fees paid to get cargo out of the port, and it is ranked as one of the top
economic infrastructures in Liberia because it contributes to the country's national
budget.

The government collects duties on imports and exports through the revenue authority,
and FOM collect other fees from operations, marine services, stevedoring, land and
building rental, miscellaneous, and out-port revenue, amounting to a direct
contribution to the budget. Employees, port operators, and port users' activities in the
port create income and concession fees, directly impacting the national budget. The
researcher believed that establishing a working group among stakeholders would
enhance coordination, collaboration, and promote cordial working relationship that
will limit challenges among actors in the port. Limited information on the port
activities is posting challenges in the port performance and the annual revenue
collections. Still, the study was unable to expand on it due to the scope of work
further. As it relates to the FOM challenges, the researcher chose to consider all the
views mentioned, which include a limited policy on working rate, waiting rate, berth occupancy rate, dwelling rate, unloading cargo leaving time, and transit time for a truck. Other challenges include limited dialogue among stakeholders, traffic congestion, lack of recession facility, and wage disparity.

The researcher concluded that the development of a Port Performance Strategy is vital for the FOM and would help mitigate the port's challenges due to the appropriate policy's limitation to address gaps. The paper noticed that the port's current approach is challenged with policy instruments to guide port performance and enable the government to generate needed revenue is insufficient to the sustainable management, operations, finance, and governance of the port. This is also having adverse impacts on the performance of the port and income generation. A Digital Port is the best way to address the challenges of information on operations, finance, management, and governance.
References


Economics - maritime economics and logistics; reports from Hong Kong University add new data to findings in maritime economics and logistics (does more competition result in better port performance?). (2019, Feb 5). *Journal of Technology* Retrieved from https://search.proquest.com/docview/2176596425


Appendices

Appendix I

DEANNA DOLOBAH-TOGBA

Shipping Management and Logistics
World Maritime University (WMU)
WhatsApp No.
Email:

Dissertation Questionnaires

Dear Sir/Madam,

I am a Liberian, studying at the World Maritime University (WMU) in Sweden. As a requirement to earn an MSc in Shipping Management and Logistics (SML), I am conducting a research on the topic “ASSESSING THE RELATIONSHIP BETWEEN PORT PERFORMANCE AND ECONOMIC DEVELOPMENT: CASE STUDY ON THE FREEPORT OF MONROVIA”. The purpose of this questionnaire is to gather information about port performance and economic development, and if there is a gap, contribute toward providing appropriate suggestions to stakeholders in the Port Industry.

I will highly appreciate your participation in contributing to by answering the questions and email your feedback through the same medium. Let me assure you that all the information you will share with me will be treated with confidentiality and only used for educational purposes.

Objectives are:
1. Identify and highlight the contribution of port performance to economic development in Liberia.

2. To evaluate the level of port performance to economic growth and contributing factors.
3. To identify the challenges faced in port performance in economic development.

4. To identify policy gaps if any and then develop some new suggestions for management actions that will improve and increase economic growth in Liberia

**Part A: Demographic Data**

What is your full name?

What is your gender? Male [], Female []

What is your range of experience? [ ] under 5yrs, [ ] 5yrs-10yrs, [ ] 10yrs-15yrs, [ ] above 15

What is your highest level of education? [ ] Senior Secondary Diploma, [ ] Associate’s Degree,
[ ] Bachelor’s Degree, [ ] Master’s Degree, [ ] Doctorate Degree

**Part B: Close-ended Questions**

1. What sector do you work in? [ ] National Port Authority, [ ] Shipping Industry,
   [ ] Port Operator, [ ] Customs Broker Association, [ ] Other Port Users [ ] Ministry of Finance, [ ] Liberia Revenue Authority, [ ] Port Truckers Union.

2. What is the ship working rate for moving a container from the Freeport of Monrovia? [ ] 1hr-24hrs, [ ] 25hrs-48hrs, [ ] 49hrs-72hrs, [ ] 73hrs-100hrs, [ ] 100hrs and above.
3. What is the waiting rate for ships to have access to the freeport of Monrovia? [ ] 1hr- 24hrs, [ ] 25hrs- 48hrs, [ ] 49hrs-72hrs, [ ] 73hrs- 100hrs, [ ] 100hrs and above.

4. What is the berth occupancy rate working time at berth? [ ] 1hr-24hrs, [ ] 25hrs-48hrs, [ ] 49hrs-72hrs, [ ] 73hrs-100hrs, [ ] 100hrs and above

5. What is the cargo dwelling time in the Freeport of Monrovia? [ ] 1hr-24hrs, [ ] 25hrs-48hrs, [ ] 49hrs-72hrs, [ ] 73hrs-100hrs, [ ] 100hrs and above

6. What is the time between unloading cargo, and leaving the Port when deployed? [ ] 1hr-24hrs, [ ] 25hrs-48hrs, [ ] 49hrs-72hrs, [ ] 73hrs-100hrs, [ ] 100hrs and above

7. What is the transit time required for a container to leave the port? [ ] 1hr-24hrs, [ ] 25hrs-48hrs, [ ] 49hrs-72hrs, [ ] 73hrs-100hrs, [ ] 100hrs and above

8. What is the Charge per TEU in the Freeport of Monrovia? [ ] 1USD-500USD, [ ] 501USD-1,000USD, [ ] 1,001USD-2,000USD, [ ] 2,001 USD and above.

9. Does the Port of Monrovia contribute to the National Budget of Liberia? [ ] Yes, [ ] No,
   [ ] Maybe [ ] I don’t know.

10. Excluding Customs duty and shipping line handling charges are there any other fees paid in getting cargo out of the port? [ ] Yes, [ ] No, [ ] Maybe [ ] I don’t know [ ] I think so

Part C: Open-ended Question

12. What was the gross income of the freeport of monrovia during the fiscal year 2008 and 2018?

13. What was the net income of the freeport of monrovia during the fiscal period 2008 and 2018?

14. What is the total number of ships that dock in the freeport of monrovia during the period of 2008 and 2018?

15. What was the contributing of the freeport of monrovia to the National Budget during the period 2008 and 2018?

16. What are the current challenges facing the freeport of Monrovia?

17. Is there any gap(s) between stakeholders managing the port sector in freeport of Monrovia?
Annex 1

Commodities composition Export
2008-2018
(US$ Millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber</td>
<td>206.8</td>
<td>93.1</td>
<td>157</td>
<td>226.1</td>
<td>176.8</td>
<td>132.8</td>
<td>98</td>
<td>61.1</td>
<td>55.9</td>
<td>77</td>
<td>79.8</td>
</tr>
<tr>
<td>Cocoa beans &amp; Coffee</td>
<td>3.4</td>
<td>3.7</td>
<td>5.3</td>
<td>14.4</td>
<td>6.68</td>
<td>5.6</td>
<td>3.9</td>
<td>12.6</td>
<td>12.5</td>
<td>3.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>1.5</td>
<td>2.4</td>
<td>3.1</td>
<td>22.2</td>
<td>117.1</td>
<td>314.2</td>
<td>380.2</td>
<td>141.8</td>
<td>48.2</td>
<td>48.7</td>
<td>106.7</td>
</tr>
<tr>
<td>Round Logs</td>
<td>0.2</td>
<td>1.1</td>
<td>2.7</td>
<td>21.3</td>
<td>48.4</td>
<td>20.8</td>
<td>23.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other Commodities</td>
<td>7.3</td>
<td>31.2</td>
<td>18.8</td>
<td>50.4</td>
<td>92</td>
<td>47.8</td>
<td>11.4</td>
<td>14.4</td>
<td>17.6</td>
<td>29.7</td>
<td>45.1</td>
</tr>
<tr>
<td>Total</td>
<td>219.2</td>
<td>131.5</td>
<td>186.9</td>
<td>334.4</td>
<td>440.98</td>
<td>521.2</td>
<td>516.9</td>
<td>229.9</td>
<td>134.2</td>
<td>158.5</td>
<td>233</td>
</tr>
</tbody>
</table>
## Annex 2

### Commodities composition Imported (US$ Millions)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and Live Animals</td>
<td>206.8</td>
<td>161.75</td>
<td>185.4</td>
<td>306.1</td>
<td>195.3</td>
<td>159.1</td>
<td>364.1</td>
<td>327.4</td>
<td>268</td>
<td>268.03</td>
<td>244.6</td>
</tr>
<tr>
<td>O/w Commercial Rice</td>
<td>105.6</td>
<td>65.65</td>
<td>47.3</td>
<td>121.8</td>
<td>68.7</td>
<td>88.6</td>
<td>155.6</td>
<td>148.7</td>
<td>99.5</td>
<td>121.4</td>
<td>91.6</td>
</tr>
<tr>
<td>Beverages and Tobacco</td>
<td>13.9</td>
<td>18.59</td>
<td>17.6</td>
<td>20.4</td>
<td>21.5</td>
<td>84.1</td>
<td>20.6</td>
<td>24.9</td>
<td>22.4</td>
<td>15.34</td>
<td>18.9</td>
</tr>
<tr>
<td>Crude Material &amp; Inedible Except Fuel</td>
<td>12.9</td>
<td>14.35</td>
<td>6</td>
<td>5.4</td>
<td>6.3</td>
<td>14.9</td>
<td>27.7</td>
<td>22.1</td>
<td>16.1</td>
<td>16.9</td>
<td>21.1</td>
</tr>
<tr>
<td>Mineral, Fuel, Lubricants</td>
<td>13.2</td>
<td>10.47</td>
<td>64.5</td>
<td>62</td>
<td>318.9</td>
<td>269.8</td>
<td>296.4</td>
<td>431.6</td>
<td>337.5</td>
<td>216.71</td>
<td>156.1</td>
</tr>
<tr>
<td>Animals and Vegetable Oil</td>
<td>2.9</td>
<td>12.14</td>
<td>11.5</td>
<td>11.5</td>
<td>256.9</td>
<td>27.1</td>
<td>22.7</td>
<td>20.8</td>
<td>23.2</td>
<td>26.1</td>
<td>21</td>
</tr>
<tr>
<td>Chemicals &amp; Related products</td>
<td>36.5</td>
<td>29.63</td>
<td>31.8</td>
<td>35.4</td>
<td>31.3</td>
<td>66.9</td>
<td>343.3</td>
<td>145.3</td>
<td>95</td>
<td>94.84</td>
<td>98.7</td>
</tr>
<tr>
<td>Mfg. goods classified chiefly by Materials</td>
<td>104.7</td>
<td>84.03</td>
<td>70.7</td>
<td>94.1</td>
<td>48</td>
<td>128.7</td>
<td>155</td>
<td>159.4</td>
<td>136.5</td>
<td>117.73</td>
<td>155.5</td>
</tr>
<tr>
<td>Machinery &amp; Transport Equipment</td>
<td>215.2</td>
<td>125.14</td>
<td>126.7</td>
<td>250.9</td>
<td>115.4</td>
<td>245.4</td>
<td>667.7</td>
<td>371.8</td>
<td>271.1</td>
<td>222</td>
<td>260.7</td>
</tr>
<tr>
<td>Petroleum Products</td>
<td>147.2</td>
<td>68.49</td>
<td>150.8</td>
<td>216.9</td>
<td>310.9</td>
<td>234</td>
<td>333.7</td>
<td>365.7</td>
<td>297.8</td>
<td>192.41</td>
<td>112.5</td>
</tr>
<tr>
<td>Misc. Mfg. Articles</td>
<td>60.1</td>
<td>26.99</td>
<td>44.8</td>
<td>41.5</td>
<td>28.8</td>
<td>23.6</td>
<td>173.9</td>
<td>48.2</td>
<td>31.3</td>
<td>34.69</td>
<td>32.8</td>
</tr>
<tr>
<td>Comm. &amp; transaction not elsewhere classified</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3.8</td>
<td>0</td>
<td>28.9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>919</td>
<td>617.23</td>
<td>757.1</td>
<td>1166</td>
<td>1405.8</td>
<td>1342.2</td>
<td>2589.6</td>
<td>2065.9</td>
<td>1598.4</td>
<td>1326.15</td>
<td>1213.5</td>
</tr>
</tbody>
</table>
Annex 3

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Income</td>
<td>18.4M</td>
<td>19.7M</td>
<td>18.8M</td>
<td>17.2M</td>
<td>26M</td>
<td>28.4M</td>
<td>14.3M</td>
<td>16.7M</td>
<td>17.6M</td>
<td>30.4M</td>
<td>150.7M</td>
</tr>
<tr>
<td>Net Income</td>
<td>1.48M</td>
<td>1.8M</td>
<td>2.4M</td>
<td>3.7M</td>
<td>17.1M</td>
<td>19.2M</td>
<td>5.7M</td>
<td>7.9M</td>
<td>8.9M</td>
<td>21.9M</td>
<td>90M</td>
</tr>
<tr>
<td>Cont. Nat. Bud.</td>
<td>1.4M</td>
<td>1.5M</td>
<td>2.2M</td>
<td>3.6M</td>
<td>16.5M</td>
<td>19M</td>
<td>5.5M</td>
<td>7.5M</td>
<td>8.5M</td>
<td>21.6M</td>
<td>90M</td>
</tr>
</tbody>
</table>