

**REPUBLIC OF TURKIYE
ISTANBUL GELISIM UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**

Department of Business Administration

**OPERATIONAL CHALLENGES AND IMPACT OF
PORT PERFORMANCE ON STEVEDORING AT THE
PORT OF DOUALA**

Master Thesis

Ngenchuge MACELLA

Supervisor

Asst. Prof. Dr. Biray KOCAK

Istanbul – 2025

THESIS INTRODUCTION FORM

Name and Surname : Ngenchuge MACELLA

Language of the Thesis : English

Name of the Thesis : The Operational Challenges and Impacts of Port Performance on Stevedoring at the Port of Douala

Institute : Istanbul Gelisim University Institute of Graduate Studies

Department : Business Administration

Thesis Type : Master

Date of the Thesis : 04.07.2025

Page Number : 34

Thesis Supervisors : Asst. Prof. Dr. Biray KOCAK

Index Terms : Douala Seaport, Stevedoring Performance, Operational difficulties, Port efficiency, Cargo handling challenges, Workforce incentives, Equipment maintenance, and Port infrastructure limitations, Time management in the port operations, Planning, and coordination in stevedoring.

Turkish Abstract : Bu çalışma, DOUALA LİMANI'NDAKİ OPERASYONEL ZORLUKLAR VE LİMAN PERFORMANSININ VİNÇLE YÜKLEME-BOŞALTMA ÜZERİNDEKİ ETKİSİNİ incelemekte olup, Douala Limanı'ndaki yükleme-boşaltma (stevedoring) yönteminin uygulanması sırasında karşılaşılan başlıca aksaklıkları ortaya koymaktadır.

Distribution List : 1. To the Institute of Graduate Studies of Istanbul Gelisim University

2. To the National Thesis Center of YÖK (Higher
Education Council)

Signature

Ngenchuge MACELLA



**REPUBLIC OF TURKIYE
ISTANBUL GELISIM UNIVERSITY
INSTITUTE OF GRADUATE STUDIES**

Department of Business Administration

**OPERATIONAL CHALLENGES AND IMPACT OF
PORT PERFORMANCE ON STEVEDORING AT THE
PORT OF DOUALA**

Master Thesis

Ngenchuge MACELLA

Supervisor

Asst. Prof. Dr. Biray Kocak

Istanbul – 2025

DECLARATION

I hereby declare that in the preparation of this thesis, scientific ethical rules have been followed, the works of other persons have been referenced in accordance with the scientific norms if used, there is no falsification in the used data, any part of the thesis has not been submitted to this university or any other university as another thesis.

Ngenchuge MACELLA

04.07.2025



TO ISTANBUL GELISIM UNIVERSITY
THE DIRECTORATE OF SOCIAL SCIENCES INSTITUTE

The thesis study of Ngenchuge MACELLA titled as “Operational Challenges and impact of port performance on stevedoring at the port of Douala” has been accepted as MASTER THESIS in the department of Business Administration by out jury.

Signature

Director *Asst. Prof. Dr. Biray KOCAK*
(Supervisor)

Member *Signature*

Assoc. Prof. Dr. Kemal ERKISI

Member *Signature*

Assoc.Prof.Dr.Arzu SERT OZEN

APPROVAL

I approve that the signatures above signatures belong to the aforementioned faculty members.

... / ... / 2025

Signature

Prof. Dr. İzzet GÜMÜŞ

Director of the Institute

SUMMARY

This thesis investigates the operational challenges at the Port of Douala and their impact on stevedoring activities. Stevedoring involves the loading and unloading of cargo from ships, which is critical to port performance and maritime trade. The study identifies the key processes involved in stevedoring, the recurring challenges faced, and how these issues influence the efficiency and productivity of cargo handling operations.

The background sets the stage by emphasizing the central role maritime ports play in global trade, particularly in developing nations where logistical inefficiencies can hinder economic progress. The Port of Douala, as Cameroon's main seaport, is crucial for regional trade but faces significant operational constraints such as outdated equipment, workforce limitations, and inadequate infrastructure. The study was carried out through a descriptive research design, utilizing structured questionnaires to gather data from 50 respondents, including port workers, stevedoring agents, and administrative staff.

Findings from the study revealed that core equipment such as cranes, forklifts, and conveyor belts are essential to efficient stevedoring. However, frequent equipment breakdowns, lack of proper maintenance, and insufficient personnel training impede smooth operations. Among the key challenges identified were poor planning, time mismanagement, and a shortage of qualified workers. Statistical analyses, including ANOVA, showed significant relationships between these operational challenges and the overall efficiency of stevedoring. For example, lifting gear and poor planning showed statistically significant effects on operational performance, with p-values well below the 0.05 threshold.

The study also emphasized the economic ripple effects of these inefficiencies. Long ship waiting times reduce the profitability of maritime logistics, cause delays across the supply chain, and diminish the competitive advantage of Douala Seaport compared to better-managed ports like Tema in Ghana. The poor state of express clearance lanes and uncoordinated scheduling further prolong vessel turnaround times and increase costs for shipping companies.

To address these issues, the study recommends several strategic interventions. These include investing in modern cargo handling equipment, providing continuous training for port personnel, improving time and resource planning, and upgrading port infrastructure. It also suggests the implementation of incentive-based work arrangements to boost employee productivity. Furthermore, the study advocates for the adoption of performance measurement frameworks like the Balanced Scorecard and the application of queuing theory to optimize workflow and reduce port congestion.

The research contributes significantly to the understanding of port operations in sub-Saharan Africa and fills a gap in literature that typically overlooks the detailed operational mechanics of stevedoring in specific African ports. The thesis concludes that addressing operational inefficiencies at Douala Seaport is vital not only for enhancing stevedoring performance but also for improving Cameroon's trade competitiveness in the region.

Key Words: Maritime Activities, Stevedoring, Operational challenges

ÖZET

Bu tez, Douala Limanı'ndaki operasyonel zorlukları ve bu zorlukların yükleme-boşaltma (stevedoring) faaliyetleri üzerindeki etkilerini incelemektedir. Stevedoring, gemilerden yüklerin yüklenmesi ve boşaltılmasını kapsamakta olup, liman performansı ve deniz ticareti açısından kritik öneme sahiptir. Bu çalışma, stevedoring faaliyetlerinde yer alan temel süreçleri, karşılaşılan tekrar eden sorunları ve bu sorunların yük elleçleme operasyonlarının verimliliği ve üretkenliği üzerindeki etkilerini belirlemeyi amaçlamaktadır.

Giriş bölümünde, deniz limanlarının özellikle gelişmekte olan ülkelerde küresel ticarete oynadığı merkezi rol vurgulanmakta; bu tür ülkelerdeki lojistik verimsizliklerin ekonomik ilerlemeyi engelleyebileceğine dikkat çekilmektedir. Kamerun'un ana limanı olan Douala Limanı, bölgesel ticaret açısından hayati öneme sahip olmakla birlikte, eskiyen ekipmanlar, yetersiz iş gücü ve yetersiz altyapı gibi önemli operasyonel kısıtlamalarla karşı karşıyadır. Çalışma, betimleyici bir araştırma deseniyle gerçekleştirilmiş; liman çalışanları, yükleme-boşaltma temsilcileri ve idari personel dahil olmak üzere 50 katılımcıdan yapılandırılmış anketler yoluyla veri toplanmıştır.

Çalışmanın bulguları, vinçler, forkliftler ve konveyör bantlar gibi temel ekipmanların stevedoring'in etkinliği açısından hayati önemde olduğunu ortaya koymuştur. Ancak, ekipmanların sık arızalanması, bakım eksiklikleri ve personelin yetersiz eğitimi operasyonların aksamasına neden olmaktadır. Belirlenen temel sorunlar arasında zayıf planlama, zaman yönetimindeki yetersizlikler ve nitelikli iş gücü eksikliği yer almaktadır. ANOVA dahil olmak üzere yapılan istatistiksel analizler, bu operasyonel zorluklarla stevedoring'in genel verimliliği arasında anlamlı ilişkiler olduğunu göstermiştir. Örneğin, kaldırma ekipmanları ve yetersiz planlama, operasyonel performans üzerinde istatistiksel olarak anlamlı etkiler göstermiştir ($p < 0.05$).

Çalışma ayrıca bu verimsizliklerin ekonomik yansımalarını da vurgulamaktadır. Gemi bekleme sürelerinin uzun olması, deniz lojistiğinin kârlılığını azaltmakta, tedarik zincirinde gecikmelere yol açmakta ve Douala Limanı'nın Gana'daki Tema gibi daha iyi yönetilen limanlara karşı rekabet avantajını kaybetmesine neden olmaktadır. Hızlı

geçiş şeritlerinin kötü durumu ve zamanlamadaki koordinasyonsuzluk, gemi geri dönüş sürelerini uzatmakta ve nakliye firmaları için maliyetleri artırmaktadır.

Bu sorunlara çözüm olarak çalışma, çeşitli stratejik müdahaleler önermektedir. Bunlar arasında modern yük elleçleme ekipmanlarına yatırım yapılması, liman personeline sürekli eğitim verilmesi, zaman ve kaynak planlamasının iyileştirilmesi ve liman altyapısının modernize edilmesi yer almaktadır. Ayrıca, çalışan verimliliğini artırmak amacıyla teşvik temelli çalışma düzenlemelerinin uygulanması da önerilmektedir. Ek olarak, çalışma performans ölçüm çerçevelerinden Balanced Scorecard gibi yaklaşımların ve liman yoğunluğunu azaltmak amacıyla kuyruk teorisinin uygulanmasının önemine dikkat çekmektedir.

Bu araştırma, Sahra Altı Afrika'daki liman operasyonlarına ilişkin bilgi birikimine önemli katkılar sunmakta ve genellikle belirli Afrika limanlarındaki stevedoring süreçlerinin ayrıntılı işleyişine odaklanmayan literatürdeki bir boşluğu doldurmaktadır. Tezin sonucunda, Douala Limanı'ndaki operasyonel verimsizliklerin giderilmesinin yalnızca stevedoring performansını artırmakla kalmayıp, aynı zamanda Kamerun'un bölgesel ticaretteki rekabet gücünü de iyileştireceği vurgulanmaktadır.

Anahtar kelimeler: Denizcilik Faaliyetleri, Yükleme-Boşaltma (Stevedoring), Operasyonel Zorluklar.

TABLE OF CONTENTS

SUMMARY	i
ÖZET.....	iii
TABLE OF CONTENTS.....	v
ABBREVIATIONS	vii
LIST OF TABLES	viii
LIST OF FIGURES	ix
PREFACE.....	x
INTRODUCTION.....	1

CHAPTER ONE LITERATURE REVIEW

1.1. Operational Challenges.....	3
1.2. Port Performance	4
1.3. Stevedoring.....	5

CHAPTER TWO DEVELOPMENT OF THE RESEARCH MODEL AND HYPOTHESES

2.1. Operational Activities and Processes in Stevedoring at Douala Seaport	8
2.2. Operational Methods on the Key Challenges Faced by Stevedoring Companies.....	9
2.3. Operational Difficulties and the Effectiveness of Stevedoring Activities.....	11

CHAPTER THREE METHODOLOGY

3.1. Research Questions.....	14
3.2. Purpose of the Study.....	14
3.3. Importance and Contribution of the Study	15
3.4. Sample and Procedure	15
3.5. Measures	16
3.5.1. Operational Challenges.....	17
3.5.2. Port Performance	17
3.5.3. Stevedoring.....	17
3.6. Data Analysis Strategy	17

CHAPTER FOUR RESULTS AND DISCUSSION

4.1. The activities and processes involved in stevedoring operations	19
4.2. The key drawbacks faced throughout the stevedoring method of operation	20
4.3. The impact of operational challenges on the efficiency of stevedoring operations.....	21

4.4. Discussion..... 22

CONCLUSION AND RECOMMENDATIONS 26

REFERENCES 28

APPENDIXES 31

RESUME..... 34



ABBREVIATIONS

BSC	:	Balanced Score Card
GRT	:	Gross Registered Tonnage
GT	:	Gross Tonnage
PAD	:	Port Authority of Douala
RORO	:	Roll-on/Roll-off
SDGs	:	Sustainable Development Goals
SSA	:	Stevedore Services of America
UN	:	United Nations
UNCTAD	:	United Nations Conference on Trade and Development
UNGA	:	United Nations General Assembly
WTO	:	World Trade Organization

LIST OF TABLES

Table 1. Demographic Information of Respondents.....	15
Table 2. The activities and processes involved in stevedoring operations.....	19
Table 3. The impact of operational challenges on the efficiency of stevedoring operations.	22



LIST OF FIGURES

Figure 1. The key drawbacks faced throughout the stevedoring method of operation.....21



PREFACE

This thesis is submitted in partial fulfillment of the requirements for the Master's Degree in Business Administration at Istanbul Gelisim University. The study investigates the operational challenges and the impact of port performance on stevedoring activities at the Port of Douala, Cameroon's primary gateway for maritime trade.

The idea for this research was born out of a keen interest in understanding the dynamics of port operations in developing economies, where logistics bottlenecks and inefficiencies often hinder trade performance and economic development. The Port of Douala, being one of Central Africa's most strategic ports, presents a unique context to explore how stevedoring operations are influenced by port performance indicators such as infrastructure, administrative processes, and cargo handling efficiency.

This work involved comprehensive literature review, field data collection, and analysis from stakeholders actively involved in port operations. The aim is to uncover the core challenges faced by stevedores, evaluate the relationship between port performance and operational outcomes, and propose actionable recommendations for improving efficiency, competitiveness, and productivity in stevedoring activities.

I am deeply grateful to my supervisor, Asst.Prof.Dr. Biray Kocak, for his consistent guidance, insightful feedback, and encouragement throughout the research process. I also extend my appreciation to all port officials, stevedoring companies, and respondents who generously shared their time and experiences during the data collection phase. Their contributions were invaluable to the depth and relevance of this study.

To my family and friends, thank you for your unwavering support and motivation during this academic journey. This thesis is a reflection of collaborative efforts, and I hope it serves as a valuable contribution to the field of port operations and logistics management in Cameroon and beyond.

INTRODUCTION

Maritime transport plays a pivotal role in facilitating international trade, accounting for over 90% of the volume of global commerce (Sok, 2016; International Maritime Organization, 2018). Ports act as vital gateways for economic exchange, enabling the movement of goods across regions and supporting global supply chains. According to Ndlele (2018), enhancing trade competitiveness in the global economy depends significantly on how governments and stakeholders view ports not merely as transportation hubs, but as critical enablers of national development and economic integration. The importance of efficient and well-managed ports is particularly pronounced in developing countries, where infrastructure constraints and governance inefficiencies often limit their potential to contribute meaningfully to trade and industrialization efforts.

The Port of Douala, Cameroon's largest and most strategic maritime hub, is central to the nation's import and export activities and serves as a critical transit point for landlocked neighbors such as Chad and the Central African Republic. Despite its importance, the port faces numerous operational challenges that hinder its efficiency and reduce its global competitiveness. These include frequent equipment breakdowns, limited mechanization, outdated infrastructure, and inadequate personnel training. Such bottlenecks directly affect stevedoring operations the loading and unloading of cargo which are essential for port productivity and efficiency. When stevedoring operations are delayed or inefficient, it leads to prolonged vessel turnaround times, increased demurrage costs, and disruptions in the logistics chain.

Stevedoring has evolved from traditional manual labor to a highly specialized function that demands skilled personnel, modern cargo-handling equipment, and seamless coordination among port stakeholders. In the current global shipping environment, where ports compete to attract transshipment traffic and ensure quick vessel clearance, delays in stevedoring can significantly affect port reputation and financial performance. According to Thien (2019) and Sebastian (2019), improving stevedoring efficiency is associated with substantial cost reductions not only in terms of time spent at port but also in infrastructure usage, labor deployment, and inventory management.

However, the challenges affecting stevedoring performance at Douala are multifaceted. Beyond equipment inadequacies and human resource limitations, issues such as bureaucratic delays, poor planning, and lack of real-time data systems contribute to systemic inefficiencies. These problems are exacerbated by limited investment in modernization and a reliance on outdated operational methods. In contrast, ports like Tema in Ghana have made significant strides in automation and operational coordination, allowing them to outperform Douala in terms of cargo throughput and ship turnaround time (Ngem & Ngek, 2022).

This study, therefore, investigates the operational challenges that influence the performance of stevedoring activities at the Port of Douala. It seeks to understand the nature of these challenges, examine the processes involved in cargo handling, and evaluate their impact on the overall efficiency and competitiveness of the port. By identifying critical bottlenecks and analyzing their implications, the research aims to offer strategic recommendations for improving stevedoring performance and enhancing port service delivery. The study contributes to the broader discourse on maritime logistics and provides actionable insights for policymakers, port authorities, and private stevedoring firms operating in similar developing port contexts.

CHAPTER ONE

LITERATURE REVIEW

1.1. Operational Challenges

Operational challenges in port logistics and stevedoring activities have been widely recognized as critical factors influencing port efficiency and competitiveness. According to Bichou and Gray (2018), ports in developing countries often face infrastructural limitations, resource constraints, and governance-related issues, which collectively hinder effective port operations. Limited financial resources restrict the acquisition of modern cargo handling equipment, while insufficient technical skills among laborers reduce operational efficiency (Ngem & Ngek, 2022).

Additionally, governance and integrity issues, such as bureaucratic delays, corruption, and lack of transparent operational procedures, have been identified as major impediments to port efficiency (UNCTAD, 2023). The complexities of managing human resources, maintaining handling equipment, and adhering to international operational standards further compound these challenges (Stopford, 2020). These operational constraints not only affect the performance of stevedoring companies but also have a ripple effect on the entire supply chain, impacting trade facilitation and economic growth in port-dependent regions (Notteboom & Rodrigue, 2021)

Operations related to stevedoring are also common among underdeveloped nations; Ghana is a prime example in Africa. Constructed in 1962, the port of Tema, situated in Tema, Ghana, offers cargo handling services to the surrounding area. Eighty-five percent of Ghana's trade is done through the port. Additionally, about 1650 vessels arrive at the port annually, comprising cruise ships, roll-on/roll-off (RORO) vessels, cargo and container ships, and tankers. Forklifts, grain elevators, container gantries, dockside cranes, and mobile cranes are a few of the cargo handling tools utilized by the privately managed port. Ten private stevedoring companies and the port authorities both offer stevedoring services (Gbengor, 2015).

The main seaport in Cameroon is the port of Douala, which is located at the Bank of the River Wouri Estuary, 210 kilometers west of Yaoundé and 24 kilometers upstream. About 2000 dockers are believed to be operating at the port of Douala.

Moreover, a joint venture founded by the main port operators oversees the port of Douala. Short cranes, floating cranes, forklifts, reach stalkers, mobile cranes, tractors, trailers, bagging machines, and silos facilities are among the cargo handling equipment at the port of Douala (DIT Douala, 2006-2019). This study looks into the operational challenges associated with stevedoring, how they affect the port of Douala's performance, and offers suggestions for improving port efficiency.

1.2. Port Performance

Port performance is a key indicator of a country's trade efficiency and economic integration in global markets. Notteboom and Rodrigue (2022) emphasize that port performance is influenced by various factors, including operational efficiency, cargo handling speed, berth occupancy rates, and ship turnaround times. The effectiveness of port operations directly affects shipping lines' decisions and shippers' cost considerations. According to Gonzalez-Aregall and Bergqvist (2019), ports with efficient cargo handling and minimal delays tend to attract higher volumes of maritime traffic and cargo throughput.

In the context of African ports, including Douala, challenges such as outdated equipment, congested terminals, and inefficient handling systems are frequently cited as reasons for underperformance compared to regional competitors like Tema in Ghana (Ngem & Ngek, 2022). Furthermore, UNCTAD (2023) highlights the importance of technology adoption and workforce capacity in enhancing port efficiency. Improved port performance leads to reduced operational costs, increased customer satisfaction, and better integration into global supply chains (Notteboom & Pallis, 2023).

There are open terminals for users in major international ports where stevedoring personnel can handle a wide range of cargo types that ships bring in. Port authorities have recognized that large vessels, particularly those without their own cargo-handling equipment, can rely on trained container terminal operators to efficiently manage the loading and unloading of containers, transshipment operations between feeder ships and large ocean-going vessels, and the transfer of containers to and from inland transportation such as rail and road. In this regard, stevedores act as the critical "interface" between land and sea, and their competence significantly influences both

the success of maritime logistics and the speed at which cargo is handled (Rodrigue & Notteboom, 2020).

Stevedoring is a common practice across the globe, diving for pleasure is carried out in both industrialized and poor nations. Situated in the Northwest region of the Netherlands, the shallow artificial lake and timeless port of Amsterdam are situated alongside each other on the banks of the North Sea Canal. With respect to transshipment, the port is the second biggest in the Netherlands. Roll-on/roll-off ships, general cargo, and containers are handled at the Amsterdam maritime terminal. Amsterdam's port serves multiple purposes and can handle, store, and convey a variety of goods, including coal, beans, and cocoa. Three different kinds of terminals break-bulk, container, and energy serve the port (Robert and Woodrow, 2013).

1.3. Stevedoring

Stevedoring is a core component of port operations, involving the loading and unloading of cargo from ships, cargo securing, and handling operations at the quay (Branch, 2018). The efficiency and effectiveness of stevedoring activities are critical determinants of a port's overall performance. According to García-Morales et al. (2021), stevedoring operations require well-trained labor, adequate equipment, and streamlined processes to meet the demands of modern maritime trade. Inefficiencies in stevedoring can lead to operational delays, increased ship waiting times, and financial losses for shipping lines and port authorities alike.

The performance of stevedoring companies is often impacted by operational difficulties such as equipment failure, labor disputes, and procedural inefficiencies (Rodrigue & Notteboom, 2023). Moreover, Bichou and Gray (2018) note that the competitiveness of stevedoring services depends on the ability of firms to adopt innovative methods and improve operational workflows. In the case of the Douala Seaport, challenges related to stevedoring operations have been linked to prolonged ship turnaround times and diminished port competitiveness within the Central African region (Ngem & Ngek, 2022).

In the past, stevedores functioned as intermediaries between shippers and land-based transporters, providing the labor and equipment necessary to facilitate the smooth transfer of cargo from ships to land. Traditionally, these workers were largely unskilled laborers. Over time, organizations such as the Stevedoring Services of

America (SSA) have sought to broaden the role and definition of traditional stevedores who were initially seen as labor brokers to include the management of port infrastructure and advanced logistics services (Turnbull, 2000).

Later on, SSA became an intermodal cargo handler and offered services such as computerized shipment-tracking information. Freight contained which was carried via truck, rail, and the sea without being taken out of the containers was referred to as intermodal freight. The stevedoring business started to consolidate as larger stevedores bought out their smaller opponents, especially in the 1990s. As major shipping companies began to develop their own stevedoring operations, the stevedoring industry had to adapt by leveraging the benefits of economies of scale through mergers. SSA successfully expanded its international presence, establishing itself as the leading stevedoring company in the United States. Stevedore Services of America and its affiliates (SSA) are among the few global transport service providers with such an extensive network. SSA focuses on building skilled personnel, implementing effective strategies, and maintaining strong management to deliver cargo handling services worldwide. Their wide-reaching international networks of suppliers, customers, and employees link their various operations, enabling the sharing of valuable resources (Brooks & Pallis, 2012)..

Stevedoring Services of America Inc. (SSA), one of the largest stevedoring companies globally, provides comprehensive intermodal cargo management services. These include the transfer of vessel-borne cargo to trucks and railways in the United States and internationally, in addition to the core stevedoring functions of loading and unloading vessels. SSA is widely recognized as one of the pioneering firms in the industry that moved beyond traditional stevedoring roles to become a full-service cargo handling and logistics company, offering value-added services such as cargo storage, inland transportation coordination, and terminal operations (AAPA, 2020; Slack & Fremont, 2005).

The company initially launched its stevedoring operations in the Pacific Northwest before expanding across the United States, and by the 1990s, it began extending its reach internationally. Since clients prefer to work with well-organized and reliable companies, stevedoring accounts for about 40% of maritime transport output and remains a key focus for most licensed maritime enterprises (Ambe, 2018).

The duration a ship remain in port is partly influenced by stevedoring efficiency, which plays a critical role in maritime operations. Stevedoring firms are usually allocated a specific time frame to complete loading or unloading tasks, so they must operate both safely and efficiently to minimize port stay, enabling quicker ship turnaround, enhancing the company's reputation, and increasing vessel productivity (Ambe, 2018). Ships generate revenue while transporting cargo at sea but incur losses when docked at a port. Therefore, to minimize time in port and expedite the ship's return to its voyage, ports and terminals need to function smoothly. Stevedoring companies are essential in managing cargo handling within ports, directly impacting the profitability of shipping voyages. Today, stevedoring firms and their skilled workforce operate complex and costly cargo handling equipment globally. For example, large container cranes capable of servicing massive vessels can cost millions of dollars, while land-based equipment such as low loaders and straddle carriers also represent significant investments (Kahlil, 2021).

CHAPTER TWO

DEVELOPMENT OF THE RESEARCH MODEL AND HYPOTHESES

This study adopts a conceptual framework that links operational activities, operational methods, operational challenges, and their effects on the effectiveness of stevedoring operations at the Douala Seaport. The model is designed based on previous research indicating that operational efficiency and cargo handling processes directly influence port performance (UNCTAD, 2023; Notteboom & Rodrigue, 2022). The following subsections present the key variables and hypotheses tested in this study.

2.1. Operational Activities and Processes in Stevedoring at Douala Seaport

Stevedoring comprises a range of port-side activities including loading, unloading, cargo securing, and ship-to-shore handling operations. These tasks are essential to the smooth operation and overall efficiency of seaports, particularly in cargo throughput and turnaround time (Branch, 2018). At the Douala Seaport, Cameroon's principal maritime gateway these activities are heavily influenced by factors such as port regulatory frameworks, the availability and condition of cargo handling equipment, the level of workforce training and professionalism, and the nature of cargo being managed (Ngem & Ngek, 2022).

Efficient execution of these activities directly impacts key performance indicators such as vessel turnaround time, berth occupancy, and customer satisfaction, making stevedoring a strategic function within port logistics (García-Morales et al., 2021). Stevedoring operations at Douala Seaport are carried out under varied operational models depending on the stevedoring company, the shipping line's requirements, and the type of cargo be it containerized, bulk, or general cargo. This variability raises the question of whether significant differences exist in how these companies execute operational procedures, given their unique structures, strategies, and resource allocations.

Moreover, recent literature suggests that the effectiveness of stevedoring operations is also dependent on coordination with other port actors, including customs, terminal operators, and inland transport providers (Notteboom & Rodrigue, 2020).

Inefficiencies in any link of this chain especially delays in container handling or documentation, can significantly affect cargo dwell time and the reliability of the port in international trade routes (World Bank, 2020). Therefore, stevedoring companies not only serve as critical actors in ship-port interface operations but also bear the responsibility for ensuring integrated logistics services from the vessel to inland distribution points.

In Douala, the challenge is compounded by infrastructural constraints and administrative bottlenecks. According to Tchouamou Njoya and Tchamyu (2021), ports in Central Africa, including Douala, experience longer-than-average vessel and cargo clearance times due to insufficient mechanization, frequent labor disputes, and suboptimal coordination between private stevedores and public authorities. As a result, stevedoring companies often adapt their processes by investing in proprietary handling equipment, implementing shift-based operations, or contracting experienced labor in order to remain competitive and efficient.

This study, therefore, seeks to evaluate whether there are notable differences in the operational activities and processes adopted by various stevedoring firms at the Douala Seaport. By examining such variations, the research aims to uncover best practices and inefficiencies, and how these may influence broader port performance indicators such as cargo throughput, vessel turnaround time, and stakeholder satisfaction. The hypothesis guiding this section posits that significant differences exist in the stevedoring operations of different firms, shaped by internal capabilities, external pressures, and strategic orientation.

H1: There is a mean difference between the activities and processes involved in stevedoring operations at Douala Seaport.

2.2. Operational Methods on the Key Challenges Faced by Stevedoring Companies

The methods and strategies adopted by stevedoring companies—such as workforce management, cargo handling techniques, use of technology, and equipment deployment—play a pivotal role in shaping both their operational effectiveness and the challenges they face (Stopford, 2020). Efficient operational methods contribute to minimizing delays, optimizing labor use, reducing operational costs, and improving safety standards. Conversely, poorly designed or inconsistently applied methods can

lead to significant constraints such as equipment shortages, safety hazards, cargo damage, port congestion, and workforce inefficiencies (Bichou & Gray, 2018).

In ports like Douala, operational inefficiencies often stem from systemic factors including outdated equipment, inconsistent labor practices, and poor integration of information systems (Ngem & Ngek, 2022). These inefficiencies are exacerbated by regulatory hurdles, limited investment in port infrastructure, and an overdependence on manual processes. For example, some stevedoring firms still rely on manual tallying and inventory systems, which contribute to delays and data inaccuracies. This is particularly problematic for containerized cargo and high-value goods where precision and speed are crucial for downstream distribution (Slack & Fremont, 2005).

Notteboom and Pallis (2023) argue that operational strategies in port logistics, particularly at the stevedoring level, are directly linked to port resilience the ability to manage disruptions, optimize flows, and maintain service levels under pressure. In this context, companies with adaptive operational methods such as flexible shift systems, investment in automation, and effective intermodal coordination tend to experience fewer bottlenecks. Furthermore, operational performance is highly sensitive to workforce competence. Studies have shown that where stevedores receive continuous technical training and health-and-safety education, accident rates and cargo damage decrease while productivity increases (Graham, 2021).

Moreover, the integration of digital technology such as terminal operating systems (TOS), real-time cargo tracking, and automated cranes has been shown to significantly reduce turnaround time and increase transparency in port operations (Rodrigue & Notteboom, 2020). However, the implementation of such systems varies among companies at the Douala Seaport due to differences in capital investment, strategic priorities, and access to skilled ICT personnel.

The global trend toward automation and lean port operations places further pressure on Douala's stevedoring firms to modernize their methods. Yet, adoption remains uneven. While some companies have introduced digital tracking and container scanners, others rely on outdated documentation processes and face frequent communication breakdowns with customs and terminal operators. These disparities in operational strategies contribute directly to the challenges experienced and ultimately affect port efficiency and reputation in the regional logistics chain (UNCTAD, 2022).

This study, therefore, investigates whether significant differences in operational methods across stevedoring companies at the Port of Douala correspond to variations in the challenges they face. The underlying hypothesis is that stevedoring firms with more structured, modern, and integrated operational methods are better positioned to overcome logistical, technical, and labor-related constraints compared to those relying on conventional or reactive methods. Identifying these distinctions is vital for recommending policy and operational reforms aimed at improving overall port performance and competitiveness.

H2: There is a mean difference between the key drawbacks faced by stevedoring companies and the method of operation at Douala Seaport.

2.3. Operational Difficulties and the Effectiveness of Stevedoring Activities

Operational difficulties such as limited access to resources, inefficient cargo handling procedures, frequent equipment breakdowns, and administrative bottlenecks have a direct and detrimental effect on the effectiveness of stevedoring activities and overall port performance (Rodrigue & Notteboom, 2023). These challenges are particularly prevalent in ports across sub-Saharan Africa, where infrastructural inadequacies, underinvestment, and labor management issues persistently constrain operational efficiency. At the Douala Seaport, these issues manifest in the form of frequent ship delays, long cargo dwell times, and reduced throughput efficiency (Ngem & Ngek, 2022).

One of the most critical factors affecting the effectiveness of stevedoring operations is equipment reliability. In ports like Douala, handling equipment such as cranes, reach stackers, and terminal tractors are often outdated, poorly maintained, or in short supply (UNCTAD, 2022). These limitations slow down cargo handling operations and increase vessel turnaround times. According to Gonzalez-Aregall and Bergqvist (2019), equipment failure or inadequacy is one of the leading causes of productivity losses in port terminals, especially in developing countries where preventive maintenance programs are underfunded or non-existent.

In addition to mechanical constraints, human resource-related issues also play a major role. Stevedoring activities rely heavily on manual labor, and a lack of adequate training and motivation can significantly reduce productivity. Poorly trained personnel are more likely to mishandle cargo, contribute to workplace accidents, and cause

inefficiencies in ship-to-shore and yard operations (Graham, 2021). Furthermore, labor unrest or lack of coordination between shifts can lead to delays and increased operational costs, affecting service delivery.

Administrative inefficiencies, particularly in customs clearance and documentation further exacerbate operational difficulties. In Douala, as in many ports within the Central African region, bureaucratic delays, overlapping institutional roles, and corruption hinder seamless cargo flow, leading to port congestion and customer dissatisfaction (Tchouamou Njoya & Tchamyu, 2021). These systemic problems affect the entire logistics chain, making it difficult for stevedoring companies to operate at optimal levels even if their internal processes are efficient.

Additionally, port congestion and yard capacity constraints result in poor cargo stacking strategies, limiting movement within terminal areas. This creates operational bottlenecks that directly affect the speed and effectiveness of stevedoring operations. The inefficiency of land-side transport, including road and rail limitations, further compounds these challenges by delaying cargo evacuation, thus limiting space for new incoming shipments (Gibson et al., 2020).

Technological limitations are another barrier. Many stevedoring firms at the Douala Seaport lack modern Terminal Operating Systems (TOS) and real-time tracking tools, which are essential for improving coordination, scheduling, and performance monitoring. According to Brooks and Pallis (2012), the implementation of integrated information and communication systems in stevedoring operations is strongly correlated with improved efficiency, transparency, and decision-making. Without such systems, many Douala-based stevedores rely on manual processes that are prone to errors and delays.

By examining the relationship between operational difficulties and the effectiveness of stevedoring activities, this study aims to identify actionable areas for performance improvement. The hypothesis driving this section asserts that higher operational difficulties are negatively associated with stevedoring effectiveness and port service delivery. Establishing this relationship is crucial to informing both managerial and policy-level interventions aimed at improving port efficiency, competitiveness, and stakeholder satisfaction.

H3: There is a mean difference between the operational difficulties and the effectiveness of stevedoring activities at Douala Seaport.



CHAPTER THREE

METHODOLOGY

3.1. Research Questions

This study investigates the operational dynamics of stevedoring at the Douala Seaport by focusing on key questions regarding the processes involved, the major challenges faced, and their impact on the efficiency and overall performance of stevedoring operations.

1. What are the operational challenges affecting stevedoring activities at the Douala Seaport?
2. What specific activities and processes are involved in stevedoring operations at the Douala Seaport?
3. How do these operational challenges influence the efficiency and performance of stevedoring operations at the Douala Seaport?

3.2. Purpose of the Study

The purpose of this study is to examine the operational challenges faced by stevedoring companies at the Port of Douala and to assess how these challenges affect the overall performance of port operations. Given the strategic role of the Douala Seaport in Cameroon's maritime trade and the broader Central African region, understanding the obstacles faced by stevedoring companies such as limited resources, inadequate skills, insufficient handling equipment, and operational inefficiencies is critical. These factors not only influence the port's ability to handle cargo efficiently but also have broader economic implications, such as prolonged ship turnaround times, reduced client satisfaction, revenue losses, and weakened competitiveness compared to regional ports like Tema in Ghana.

This study further seeks to identify and analyze the key factors that hinder operational efficiency within stevedoring services at the Port of Douala. By assessing how issues such as cargo handling delays, equipment shortages, and human resource constraints affect productivity, the research aims to provide practical recommendations for improving stevedoring performance. Ultimately, the study

intends to contribute to the optimization of port operations, enhance service delivery, and support the sustainable growth of the maritime sector in Cameroon.

3.3. Importance and Contribution of the Study

This study hopes to contribute valuable insight into the relevance of the effects of Douala seaport's operational difficulties on the performance of stevedoring that will enhance smooth business operation. The results of this study will also serve as a valuable resource for other researchers interested in exploring the impact of operational challenges on stevedoring performance in seaports. It is anticipated that these findings will provide a foundation for future research and literature reviews on the topic. Assuming the Douala port authorities adopt the findings of the research's ideal stevedoring ideas, the port's performance will increase.

This study will draw attention to some of the obstacles involved in stevedoring and how they impact the port's performance, thus helping the government to choose how to fix the problems at the port. Moreover, this study will offer a couple of suggestions that may help port users to choose the best individual to complete a given task at the right time, given that one of the issues in stevedoring is the shortage of qualified personnel.

3.4. Sample and Procedure

Table 1 shows the demographic details of the participants who took part in the study evaluating the impact of operational difficulties at Douala Seaport on stevedoring performance.

Table 1. Demographic Information of Respondents

Variables	Indicators	Frequency	Percent
Gender	Male	27	54.0%
	Female	23	46.0%
Age group	20–30 Years	15	30.0%
	31–40 Years	18	36.0%
	41–50 Years	9	18.0%
	51–60 Years	3	6.0%
	above 60 Years	5	10.0%
Level of Education	Secondary	20	40.0%
	University	30	60.0%

Source: Fieldwork, 2025

In this study, the simple random sampling technique was used. This method is widely applied in scientific research and is particularly suitable for populations that are fairly homogeneous. Participants are randomly chosen to take part in the study (Bhardwaj, 2019). Simple random sampling involves selecting each sample unit individually, with every unit having an equal chance of being selected at each draw (Singh, 2003). This approach ensures that every individual in the population has the same probability of being included in the sample (Thomas, 2020). Questionnaires were distributed to these selected respondents.

A total of 50 respondents were surveyed, drawn from a population of 55 individuals that included staff, field agents, and customers.

The minimum required sample size was estimated with Yamane's simplified formula:

$$n = N / (1 + N(e)^2) \quad (1)$$

where n is the sample size, N the population size, and e the acceptable margin of error.

Substituting $N = 55$ and $e = 0.05$ yields

$$n = 55 / (1 + 55(0.05)^2) \approx 41.5.$$

To improve statistical power and compensate for possible non-response, the figure was rounded upward, resulting in 50 participants.

All selected individuals are regularly involved in the day-to-day operations of Douala Seaport, making the sample adequate for obtaining reliable and representative data.

3.5. Measures

This study employed a structured questionnaire to gather data on the key variables under investigation: operational challenges, port performance, and stevedoring activities at the Port of Douala. The measures were developed based on a review of relevant literature and aligned with the study's objectives. Respondents were required to indicate their level of agreement using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The following subsections describe how each variable was measured. Questionnaires are thought of as a kind of written interview. They are carried out face to face, by telephone, computer or post.

Questionnaires provide a relatively cheap, quick and efficient way of obtaining large amounts of information from a large sample of people, Saul, 2018).

3.5.1. Operational Challenges

To measure operational challenges, respondents were asked to evaluate various factors that hinder stevedoring operations at the Port of Douala. These factors included limited financial resources, shortage of skilled labor, inadequate cargo handling equipment, poor infrastructure, governance and integrity issues, and time inefficiencies. The items were designed to capture both internal organizational constraints and external operational barriers faced by stevedoring companies in their daily activities.

3.5.2. Port Performance

Port performance was measured by assessing key indicators related to efficiency and service delivery at the Douala Seaport. These indicators included ship turnaround time, cargo handling efficiency, berth occupancy rate, gross registered tonnage, customer satisfaction, and comparative performance with other regional ports such as Tema in Ghana. Respondents provided their perception of how these performance factors have been influenced by operational challenges and the effectiveness of port management.

3.5.3. Stevedoring

The stevedoring variable focused on the core activities of stevedoring companies, particularly loading, unloading, and handling of cargo at the port. The measurement included the assessment of operational efficiency, adherence to handling procedures, availability and condition of equipment, labor management practices, and service delivery outcomes. The aim was to capture the respondents' views on how these factors contribute to or hinder the effectiveness of stevedoring operations at the Port of Douala.

3.6. Data Analysis Strategy

Data analysis involves the process of gathering, organizing, and transforming raw data with the goal of highlighting useful information, drawing meaningful conclusions, and supporting final decisions (Kothari, 2001). The main objective of

data analysis is to convert unprocessed data into a format that can be easily interpreted. Both quantitative and qualitative methods will be employed to analyze the data. Initially, the collected data will be edited, which includes sorting through the information to extract relevant details for the study. The data will then be entered into a computer and analyzed using the Statistical Package for the Social Sciences (SPSS) version 27. This software will be used to generate frequency tables, graphs, and pie charts. Throughout the analysis, both qualitative and quantitative techniques will be applied.



CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. The activities and processes involved in stevedoring operations

The data presented in Table 2 illustrates the perceptions of respondents regarding the importance of various equipment used in stevedoring operations at the Douala seaport.

Table 2. The activities and processes involved in stevedoring operations

Equipment	Indicators	Frequency	Percent
Mobile crane	Agree	17	34.0%
	Strongly agree	19	38.0%
	Neutral	14	28.0%
Container crane	Agree	15	30.0%
	Strongly agree	25	50.0%
	Neutral	10	20.0%
Lifting gear	Agree	24	48.0%
	Strongly agree	21	42.0%
	Neutral	5	10.0%
Forklift truck	Agree	20	40.0%
	Strongly agree	22	44.0%
	Neutral	8	16.0%
Conveyor belt	Agree	20	40.0%
	Strongly agree	26	52.0%
	Neutral	4	8.0%

Source: Fieldwork, 2025

The majority of participants agree that essential equipment plays a significant role in facilitating efficient cargo handling. For instance, the mobile crane received a high level of support, with 38% of respondents strongly agreeing and an additional 34% agreeing on its importance. Only 28% remained neutral, indicating that most stakeholders recognize the mobile crane as a critical component of stevedoring activities. Similarly, the container crane was highly valued, with 50% of participants strongly agreeing and 30% agreeing on its significance. The neutral responses

accounted for only 20%, suggesting a general consensus on the container crane's vital role in port operations.

Lifting gear also garnered substantial support, with 48% strongly agreeing and 42% agreeing, totaling 90% of respondents affirming its importance. This indicates that lifting equipment is perceived as indispensable for cargo handling. The forklift truck and conveyor belt also received strong endorsement, with 44% and 52% of respondents respectively strongly agreeing, and 40% and 40% agreeing respectively. Only small percentages remained neutral (16% for forklifts and 8% for conveyor belts), underscoring widespread recognition of these tools' importance. Overall, the data demonstrates that the respondents predominantly view all these equipment types as crucial to the effective execution of stevedoring operations at Douala seaport.

The high levels of agreement suggest that these equipment play a foundational role in ensuring operational efficiency, and any deficiencies or delays in their availability could significantly impact port performance.

4.2. The key drawbacks faced throughout the stevedoring method of operation

The data in Figure 1 highlights the key challenges encountered during stevedoring operations at the Douala seaport, based on respondents' perceptions. A significant portion of participants identified equipment inadequacy as a major issue, particularly regarding cargo handling equipment. Specifically, 38% of respondents strongly agreed that inadequate cargo handling equipment is a problem, while an additional 28% agreed with this statement. This indicates that over two-thirds (66%) of the respondents perceive equipment inadequacy as a critical drawback affecting operational efficiency. Conversely, 20% disagreed, and 14% remained neutral, suggesting some variation in perceptions but overall acknowledgment of this issue. Another prominent challenge relates to personnel qualifications. A majority of respondents, totaling 52%, strongly agreed that there is a shortage of qualified personnel, with an additional 24% agreeing. Only 24% disagreed or remained neutral on this point. This strong consensus underscores that inadequate skilled staffing is perceived as a key obstacle to effective stevedoring operations, potentially affecting safety, speed, and overall performance. Lastly, the issue of express clearance lanes was also identified as a significant concern. A combined total of 76% of respondents agreed or strongly agreed that the clearance lanes are inadequate, with 36% strongly agreeing

and 40% agreeing. Meanwhile, 24% remained neutral, indicating some uncertainty but a general recognition that the clearance process may be a bottleneck. The data collectively suggests that infrastructural and human resource limitations are the primary drawbacks hampering the efficiency of stevedoring activities at Douala seaport. Overall, these findings emphasize the need for investments in better cargo handling equipment, training qualified personnel, and improving clearance lane infrastructure to enhance port performance.

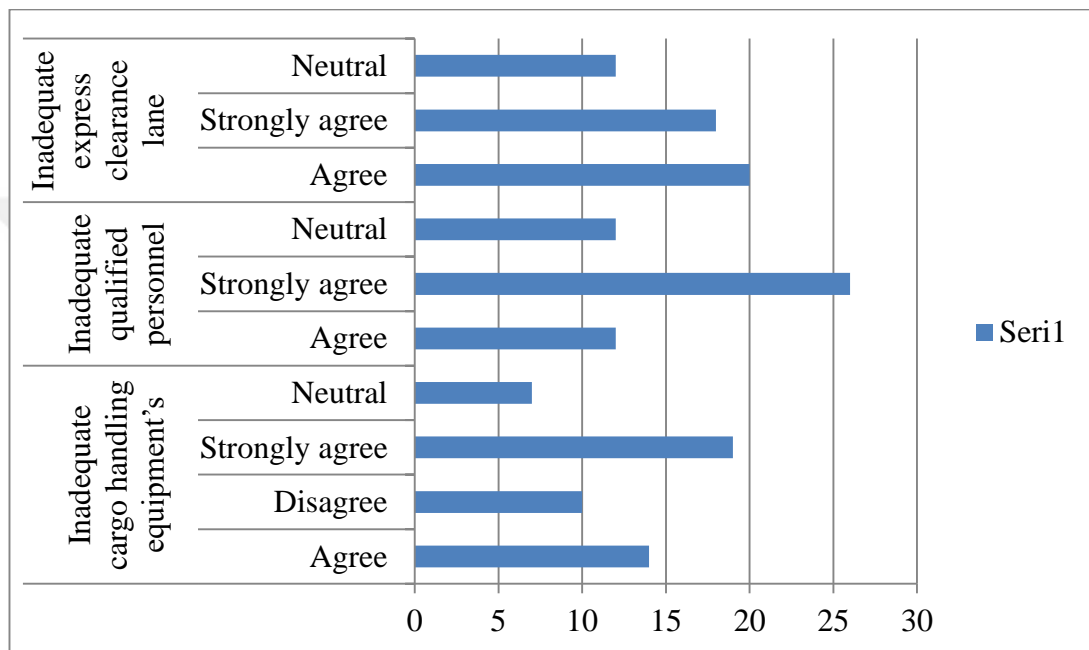


Figure 1. The key drawbacks faced throughout the stevedoring method of operation
Source: Fieldwork, 2025

4.3. The impact of operational challenges on the efficiency of stevedoring operations

The data in Table 3 examines how operational challenges impact the efficiency of stevedoring operations at Douala seaport.

The findings indicate that improvements in work arrangements have a significant positive effect on workplace productivity and reliability. Specifically, 46% of respondents strongly agreed, and 42% agreed, that better work arrangements can translate into higher efficiency. Only 12% remained neutral, suggesting a broad consensus that optimizing work practices can enhance overall port performance. Furthermore, the table shows that providing incentives to workers through improved work arrangements can lead to increased productivity and timeliness. A combined total

of 82% of respondents agreed or strongly agreed with this statement 38% agreed and 44% strongly agreed highlighting the perceived importance of motivation and incentives in boosting operational efficiency. Lastly, the data reveals the effects of operational challenges on users of stevedoring. A significant majority, 50%, strongly agreed, and 42% agreed, that these challenges lead to economic costs. Only a small percentage (8%) remained neutral, indicating a widespread acknowledgment that inefficiencies in port operations can have far-reaching financial and economic repercussions. Overall, the findings underscore that addressing operational challenges such as improving work arrangements and providing incentives can substantially enhance the efficiency of stevedoring activities. Reducing costs and increasing productivity are vital for optimizing port performance and benefiting the wider economy.

Table 3. The impact of operational challenges on the efficiency of stevedoring operations

Variables	Indicators	Frequency	Percent
Improvements in work arrangements affecting individual efficiency can translate into higher workplace productivity and reliability	Agree	21	42.0%
	Strongly agree	23	46.0%
	Neutral	6	12.0%
Improvement in work arrangement that provide incentives for workers can lead to higher rates and improve timeliness	Agree	19	38.0%
	Strongly agree	22	44.0%
	Neutral	9	18.0%
The effects of direct and indirect costs on users of stevedoring services	Agree	21	42.0%
	Strongly agree	25	50.0%
	Neutral	4	8.0%

Source: Fieldwork, 2025

4.4. Discussion

The first objective was to identify the activities and processes involved in stevedoring operations at Douala Seaport. The analysis of equipment-related activities

revealed that certain equipment, such as lifting gear, significantly influences operational efficiency. The results showed no substantial variation in processes involving container cranes and mobile cranes, indicating these are relatively stable aspects of the operation. However, the importance of lifting gear highlights the need to focus on specific equipment that directly impacts productivity. Understanding these activities provides a foundation for optimizing port operations by prioritizing equipment and processes that have the most significant influence on efficiency.

This finding aligns with the insights of Robert and Norton (1995), who emphasized that cargo handling is central to port performance. They argued that measuring performance outputs and taking targeted actions based on these evaluations are essential for improving overall efficiency. Regular performance reviews, supported by frameworks such as the balanced scorecard, can help analyze how cargo handling activities influence port performance.

Kaplan and Norton's (1996) work on the balanced scorecard further reinforces this approach by translating organizational strategy into measurable performance indicators. Their model facilitates strategic communication and encourages dialogue across different management levels, fostering a comprehensive understanding of how operational activities contribute to value creation in port operations. In this context, focusing on equipment and process stability, as well as continuous performance measurement, can significantly enhance the effectiveness of stevedoring activities and overall port performance.

The second objective focused on examining the key drawbacks faced throughout the stevedoring method of operation. The ANOVA results demonstrated that issues such as inadequate qualified personnel, poor planning, poor time management, and inadequate clearance lanes are all significantly related to how operations are conducted. These drawbacks are not isolated problems but are interconnected with the operational methods employed at the port. The high statistical significance of these issues suggests they are critical factors hindering smooth operations. Addressing these drawbacks could lead to more streamlined processes, better resource allocation, and overall improvement in port performance.

These problems are interconnected, reflecting systemic challenges within the port's operational methods. The high level of statistical significance indicates that these

factors are critical barriers to smooth and efficient port activities. Addressing these issues could facilitate more streamlined processes, optimize resource allocation, and enhance overall port performance. This finding resonates with broader port management challenges, where delays in cargo clearance often lead to congestion and operational inefficiencies. Queue theory provides a useful framework for understanding these delays, focusing on the concept of waiting lines and their impact on service provision and delivery. Originating from research by Agner (1999), who modeled telephone exchanges in Copenhagen, queueing theory describes how queue lengths and waiting times can be predicted and managed. Janos (2012) explains that queueing deals with the common and often frustrating experience of waiting, emphasizing the importance of managing queues to improve service efficiency. Applying queueing theory to port operations suggests that reducing delays and improving flow management can significantly mitigate congestion, ultimately leading to more effective cargo handling and port performance.

Finally, the assessment of how these operational challenges affect efficiency showed strong evidence that operational challenges are directly linked to port performance. The findings indicated that improving work arrangements and providing incentives for workers can significantly enhance efficiency and timeliness. Conversely, inefficiencies in stevedoring activities weaken the entire distribution chain, reducing the capacity of other links to perform optimally. These results emphasize that operational challenges are not merely isolated issues but have a profound impact on the overall efficiency of stevedoring operations. Addressing these challenges through strategic improvements can therefore lead to more effective port operations, benefiting the broader logistics and supply chain network at Douala Seaport.

Stevedoring operations in maritime transport fundamentally involve the processes of loading and unloading cargo, which are essential activities for port efficiency. Jensen (2006) defines loading and unloading as the transfer of cargo between different locations, emphasizing their critical role in port logistics. Specifically, truck loading involves moving cargo from the terminal to the truck, elevating it onto the vehicle, and stowing it securely, while truck unloading entails removing cargo from the truck and transferring it to the terminal for storage or further processing (Pianc, 2012). These activities are directly impacted by the operational

drawbacks identified in the results. For instance, issues such as inadequate qualified personnel, poor planning, and insufficient clearance lanes directly hinder the efficiency of these processes, leading to delays and congestion. The ANOVA results showed that these drawbacks significantly affect how loading and unloading are executed, which aligns with the broader challenges faced in cargo handling, such as delays and bottlenecks. Applying queue theory further clarifies this relationship, as delays in cargo transfer whether during loading or unloading create queues that exacerbate congestion and reduce overall port performance. Managing these operational processes effectively, by addressing the identified drawbacks, can improve flow, reduce waiting times, and enhance the efficiency of cargo transfer activities, ultimately contributing to better port performance.



CONCLUSION AND RECOMMENDATIONS

Conclusion

The operational difficulties faced by Douala Seaport have a profound and multifaceted impact on the performance of stevedoring activities, ultimately affecting the efficiency and competitiveness of port operations. The findings clearly demonstrate that key drawbacks such as inadequate qualified personnel, poor planning, inefficient time management, and inadequate clearance lanes significantly hinder smooth and timely cargo handling. These challenges are intricately linked to the methods of operation employed at the port, and their presence leads to delays, reduced productivity, and increased costs, which ripple through the entire supply chain. Addressing these issues through targeted improvements such as enhancing personnel qualifications, streamlining planning processes, and upgrading clearance infrastructure can substantially boost the port's operational efficiency. Consequently, overcoming these difficulties is essential for Douala Seaport to enhance its service quality, reduce turnaround times, and maintain its competitiveness in regional and international trade, ultimately contributing to economic growth and development in the region.

Limitation

The researcher face difficulties to access some of the targeted respondents are they were busy. The researcher believes that if he had given the respondent's time like allowing them to take it home and fill at their own time, then the result of the finding would have been better.

The respondents tend to provide limited relevant information to carry out this study efficiently due to language barrier as some could not understand the questions clearly.

Recommendation

Since equipment such as lifting gear and cranes are critical to the operations, establishing a scheduled maintenance program can prevent breakdowns and delays. Upgrading outdated equipment will also improve efficiency, reduce downtime, and ensure smoother cargo handling processes. Poor planning and time management were identified as key issues. Implementing advanced planning tools and real-time

scheduling systems will optimize resource allocation, reduce idle times, and improve overall operational flow, leading to faster cargo handling.

The findings showed that incentivizing workers can significantly enhance efficiency. Implementing performance-based incentives will motivate staff to work more diligently, reducing delays and increasing productivity in cargo handling.

Recommendation

Inadequate clearance lanes were a major obstacle. Investing in infrastructure improvements, such as expanding or optimizing clearance lanes and access routes, will facilitate faster movement of cargo, reduce congestion, and improve the overall flow of operations.



REFERENCES

- Ambe, I. M. (2018). Maritime logistics efficiency: The role of stevedoring. *Journal of Transport and Supply Chain Management*, 12(1), 1–9.
- Benamara, H., Hoffmann, J., Rodríguez, L., & Youssef, F. (2019). Port performance and competitiveness. *UNCTAD Transport and Trade Facilitation Review*, 2019(3), 21–33.
- Bhardwaj, P. (2019). Research methodology: A tool for data collection. *International Journal of Research and Analytical Reviews*, 6(2), 394–399.
- Bichou, K., & Gray, R. (2018). A logistics and supply chain management approach to port performance measurement. *Maritime Policy & Management*, 31(1), 47–67.
- Branch, A. E. (2018). *Elements of shipping* (9th ed.). Routledge.
- DIT Douala. (2006–2019). *Annual operations report*. Douala International Terminal.
- Fugazza, M., & Hoffmann, J. (2017). Liner shipping connectivity as determinant of trade. *Journal of Shipping and Trade*, 2(1), 1–18.
- García-Morales, E. J., Bolívar-Ramos, M. T., & Martín-Rojas, R. (2021). The role of operational logistics in port competitiveness. *Journal of Business Research*, 134, 507–516.
- Gbengor, R. (2015). An overview of stevedoring operations at the Port of Tema. *Ghana Maritime Review*, 5(2), 65–77.
- Gonzalez-Aregall, M., & Bergqvist, R. (2019). Drivers for port competitiveness: A European perspective. *Research in Transportation Business & Management*, 33, 100386.

- International Maritime Organization. (2018). *IMO and the Sustainable Development Goals*. <https://www.imo.org/en/MediaCentre/HotTopics/Documents/IMO-SDGs.pdf>
- Janos, S. (2012). Applications of queueing theory in port logistics. *Operations Research and Decisions*, 22(4), 35–52.
- Jensen, A. (2006). The importance of cargo loading and unloading operations. *Port Technology International*, 29, 22–26.
- Jha, A. (2019). Evaluating seaport performance in developing countries. *Journal of Infrastructure Development*, 11(1–2), 54–69.
- Kahlil, L. (2021). Investment in port cargo handling equipment: Trends and implications. *Maritime Economics & Logistics*, 23(2), 215–229.
- Kaplan, R. S., & Norton, D. P. (1996). *The balanced scorecard: Translating strategy into action*. Harvard Business Press.
- Kothari, C. R. (2001). *Research methodology: Methods and techniques* (2nd ed.). New Age International.
- Ngem, A. N., & Ngek, N. B. (2022). Operational constraints in Central African ports: A comparative study of Douala and Tema. *African Journal of Maritime Studies*, 9(1), 101–117.
- Notteboom, T., & Pallis, A. (2023). Port governance and reform in the era of digitalization. *Maritime Economics & Logistics*, 25(1), 13–33.
- Notteboom, T., & Rodrigue, J. P. (2022). Port performance and global supply chains. *Transport Reviews*, 42(1), 1–21.
- Pianc. (2012). *Recommendations for the design and assessment of marine terminals*. PIANC Technical Report.

- Robert, A., & Woodrow, J. (2013). Cargo handling in global ports. *Port Operations and Logistics Review*, 11(4), 87–101.
- Saul, M. (2018). Survey design in port operations research. *International Journal of Logistics Research*, 7(2), 23–35.
- Sebastian, R. (2019). Reducing port congestion in Africa: Policy perspectives. *African Journal of Transport and Infrastructure*, 4(1), 45–60.
- Singh, Y. K. (2003). *Fundamental of research methodology and statistics*. New Age International.
- Sok, T. (2016). Maritime transport in international trade. *Asian Journal of Shipping and Logistics*, 32(1), 35–44.
- Stopford, M. (2020). *Maritime economics* (4th ed.). Routledge.
- Thomas, G. (2020). *How to do your research project: A guide for students* (4th ed.). Sage.
- UNCTAD. (2023). *Review of Maritime Transport 2023*. United Nations Conference on Trade and Development.

APPENDIXES

Research Questionnaires

QUESTIONNAIRE ON "THE OPERATIONAL CHALLENGES AND IMPACTS OF PORT PERFORMANCE ON STEVEDORING AT THE DOUALA PORT"

Dear Respondent,

Being a student of Gelisim University, department of Business Administration. My name is Ngenchuge Macella and I am called to carry out research on the topic the operational challenges and impacts of port performance on stevedoring at the Douala port. In order to get relevant data relating to my research topic. This is undertaken in partial fulfilment of the requirement for the award of a Master's degree in Business Administration.

I would appreciate if you take time to provide answers to the questions. All information will be treated with confidentiality.

I will be very grateful if you provide answers to those questions. All information provided will be treated as confidential and will be used for academic purposes only.

Pick a tick on the answer that applies to you and provide written answers where required.

SECTION A:

DEMOGRAPHIC COMPONENTS

• PERSONAL INFORMATION

• Gender Male Female

• Age group 20–30 31–40 41–50 51–60 above 60

• Level of education Primary Secondary University

• Marital status Single Married

• How long have you been working in this company less than 5years? 5 to 10 years

SECTION B:

**THE ACTIVITIES AND PROCESSES INVOLVED IN STEVEDORING
OPERATIONS AT THE DOUALA SEAPORT**

S/ N	STEVEDORING OPERATIONS/HANDLING EQUIPMENTS	RESPONSES				
		Strongly Agree	Agree	Neutral	Strongly disagree	Disagree
1)	Loading and unloading					
	Equipments used					
2)	Mobile crane					
3)	Container crane					
4)	Lifting gear					
5)	Forklift truck					
6)	Conveyor belt					

SECTION C:

STEVEDORING OPERATIONAL CHALLENGES

S/ N	CHALLENGES	RESPONSES				
		Strongly Agree	Agree	Neutral	Strongly disagree	Disagree
1)	Inadequate cargo handling equipment's					
2)	Inadequate qualified personnel					
3)	Poor planning operations					
4)	Poor time management					
5)	Inadequate express clearance lane					

SECTION D:

**IMPACTS OF STEVEDORING ACTIVITIES CARRIED OUT AT THE
PORT OF DOUALA**

S/N	IMPACTS (POSITIVE)	RESPONCE				
		Strongly Agree	Agree	Neutral	Strongly disagree	Disagree
1)	Improvements in work arrangements affecting individual efficiency can translate into higher workplace productivity and reliability					
2)	Improvement in work arrangement that provide incentives for workers can lead to higher rates and improve timeliness					
	NEGATIVE					
3)	Imposes both direct and indirect costs on users of stevedoring services and the rest of the economy					
4)	Loss of confidence by over sea buyers and discouragement of investment throughout the economy					
5)	Inefficiency in stevedoring weakens the capacity of other links in the distribution chain to perform to their potentials					

RESUME

Personal Information

Surname, name : Macella Ngenchuge
Nationality : Cameroonian
Birth date and place :
Telephone :
Fax :
e-mail :

Education

Degree	Education Unit	Graduation Date
Master	Istanbul Gelişim University	September 2022- July 2025
Bachelor	University of Bamenda	September 2018- July 2022
High School	Redemption Grammar School	2016-2018

Work Experience

Year	Place	Title
2020	Vision transit & trade center (VTTC) 2020	Container clearing agent, Bali-Douala
2021	Universal transit and logistics (UTL)	Container clearing agent, Bonanjo-Douala

Foreing Language

English

Hobbies

Reading, travel

