Analysis of the pros and cons of the acquisition of training ships by METIs

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ANALYSIS OF THE PROS AND CONS OF THE ACQUISITION OF TRAINING SHIPS BY METIs

A CASE STUDY OF THE REGIONAL MARITIME UNIVERSITY

JEREMIAH YAW FRIMPONG

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of Master of Science in Maritime Affairs

2023

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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): ............................................

(Date): ..................................................
Acknowledgements

“Trust in the LORD with all thine heart; and lean not unto thine own understanding. In all thy ways acknowledge Him, and He shall direct thy paths”

(Proverbs 3:5-6).

First and foremost, my deepest gratitude goes to the Almighty God who bestowed upon me the requisite divine wisdom, knowledge and understanding needed to complete this piece of work. I am eternally grateful. Secondly, I thank my wonderful family who have consistently kept me in their prayers while I faced my academic hurdles in the wonderful but taxing environment of the World Maritime University. Thirdly, a very hearty thank you to Professor Raymond Lawrence Nana Ofosu Boateng and Professor Samuel Osei-Bonsu Oppong of the Regional Maritime University whose relentless guidance as well as emotional and financial help made me come this far. I say God richly bless you. I would like to also say a cheerful thank you to my specialization faculty, especially Professor Momoko Kitada whose effective supervision and unwavering support led me to the completion of this piece of work. Special shout-outs to all my wonderful Ghanaian compatriots in the likes of Capt. Bernard Kuwornu, Louisa Pokua Sarkodie, Emelia Akurubire and Salahudeen Mustapha Abdallah who made my stay at WMU absolutely wonderful. Last but not least, I would like to extend my heartfelt appreciation to my two-found best friends Sichumile Koyo and Beauty Maghoromi Ebiere for their consistent emotional support and encouragement throughout this academic journey. Long live our friendship! For friendship is the only cement that holds the world together.
Abstract

Title of Dissertation: Analysis of the pros and cons of the acquisition of training ships by METIs: A case study of the Regional Maritime University

Degree: Master of Science

In an ever-evolving global maritime industry, the acquisition of training ships by Maritime Education and Training Institutions (METIs) has become a topic of considerable relevance. This dissertation presents an in-depth analysis of the potential advantages and disadvantages of a training ship acquisition with the overarching aim of enhancing the competencies of graduates of the Regional Maritime University (RMU) and Ghanaian seafarers for increased competitiveness on the international stage. A brief historical background on training ships and METIs is discussed to appreciate their evolution. Also, an overview of maritime education and training in Ghana is done to see the flaws and how to potentially harness its presence as a maritime nation. From the rather small pool of literature on training ships, this paper discusses from a thematic literature review the usefulness of training ships, their types, the experience of some maritime nations who use them, the pros and cons of the acquisition of training ships and optimization factors, some learning theories associated with them as well as the future generation of training ships. This paper adopts a mixed-methods approach comprising both qualitative and quantitative research methods. By utilizing a comparative approach, four distinct cases are examined, providing a comprehensive overview of the diverse strategies employed by METIs across the globe. These cases encompass a developed nation’s successful utilization of a training ship (Japan), a developing nation’s adoption of this approach (the Philippines), a developed nation’s reliance on simulators over training ships (the Netherlands), and a developing nation’s intention to acquire and use a training ship in the case of Ghana-the Regional Maritime University. Through rigorous examination of these case studies, this paper conducts a SWOT analysis of four selected institutions to identify the strengths, weaknesses, opportunities and threats associated with their maritime education and training. It considers factors such as financial implications, technological advancements, regulatory compliance, and the impact on student learning experiences. It was found in the study that the acquisition of a training ship in RMU will impact its educational quality by improving enrolment, enhancing its reputation and increasing the employability prospects of RMU graduates. To conclude, the findings of this study are intended to guide RMU in making informed decisions about investing in a training ship, emphasizing the potential benefits in terms of skill development, global competitiveness and industry relevance.

KEYWORDS: Training ship, Maritime Education and Training (MET), Maritime Education and Training Institutions (METIs), Comparative analysis, SWOT analysis, Regional Maritime University, Simulation, STCW, Learning theory, etc.
Table of Contents

Declaration 1
Acknowledgements 2
Abstract 3
Table of Content 4
List of Tables 7
List of Figures 8
List of Abbreviations 9

CHAPTER ONE 10
INTRODUCTION 10
  1.1 Background history 10
    1.1.1 Overview of Maritime Education and Training in Ghana 11
    1.1.2 The Regional Maritime University 13
  1.2 Problem statement 14
  1.3 Research aim or purpose and objectives 15
  1.4 Research questions 16
  1.5 Significance of the Study 16
  1.6 Scope and delimitation of the Study 16
  1.7 Limitations of the Study 17
  1.8 Justification of the Study 17
  1.9 Organization of the research 18

CHAPTER TWO 19
LITERATURE REVIEW 19
  2.1 Introduction 19
  2.2 Training ships and their usefulness to METIs 19
  2.3 METIs Experience and types of training ships 21
    2.3.1 Experience of some METIs in owning and operating training ships 21
    2.3.2 Types of training ships based on purpose 24
  2.4 Pros, Cons and Optimization factors of Training ships 26
    2.4.1 Advantages in the acquisition of training ships for METIs 26
    2.4.2 Disadvantages in the acquisition of training ships for METIs 29
    2.4.3 Optimization of the use of training ships 30
2.5 Training ships Vs Merchant ship training Vs Simulator-based training

2.6 Learning theories underpinning training on-board training ships

2.6.1 Experiential Learning Theory

2.6.2 Social Learning Theory

2.6.3 Resource Management Theory

2.7 The next generation of training ships

2.8 Summary of Chapter

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

3.2 Research design

3.3 Target population and sample size

3.4 Sampling techniques and response rate

3.4.1 Demographical information of respondents

3.5 Data analysis instruments

3.6 Methods of data collection

3.6.1 Primary data

3.6.1.1 Survey questionnaire

3.6.1.2 Semi-structured interviews

3.6.2 Secondary data

3.7 Research participants and respondents

3.8 Ethical considerations

3.9 Summary of Chapter

CHAPTER FOUR
ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

4.2 Quantitative data from the survey questionnaire

4.2.1 Descriptive statistics from quantitave data

4.2.2 Inferential statistics from quantitative data

4.3 Qualitative data from the survey questionnaire

4.4 Qualitative data from semi-structured interview

4.4.1 Advantages of Training Ship Acquisition in RMU

4.4.2 Disadvantages of training ship acquisition in RMU
4.4.3 How to optimize the benefits and mitigate the drawbacks of training ship acquisition in RMU

4.5 Summary of chapter

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

5.2 Comparative analysis of the form of training based on National context

5.2.1 A developed country that uses a training ship in its METIs (Japan-JMETS)

5.2.2 A developing country that uses a training ship in its METIs (The Philippines-MAAP)

5.2.3 A developed country that does not use a training ship but simulators (The Netherlands-Maritime Institute Willem Barentsz)

5.2.4 A developing country that does not use a training ship in its METI but intends to do so (Ghana-RMU)

5.3 How have the research questions been answered?

5.3.1 How will the acquisition of a training ship contribute to the educational quality of the Regional Maritime University?

5.3.2 What will be the advantages and disadvantages of a training ship acquisition in the Regional Maritime University?

5.3.3 How can the Regional Maritime University optimize the benefits and mitigate the drawbacks of training ship acquisition?

5.4 Summary of Chapter

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

6.2 Recommendations

6.4 Limitations and future research

References

Appendices
List of Tables

Table 1: Demographic Information of Respondents (N=144)................................. 41
Table 2: Response Distribution by Country ............................................................... 43
Table 3: Interview Participants by Country and Role............................................... 45
Table 4: Descriptive Statistics of Survey Items from SPSS .................................... 52
Table 5: Reliability Statistics for all ten items........................................................... 53
Table 6: SWOT Analysis of Japan- JMETS ............................................................... 67
Table 7: SWOT Analysis of the Philippines-MAAP ............................................... 69
Table 8: SWOT Analysis of the Netherlands-Maritime Institute Willem Barentsz... 71
Table 9: SWOT Analysis of Ghana-RMU .................................................................. 73
List of Figures

Figure 1: The training vessel Seiyo-Maru II at the pond in Shinagawa Campus in Japan ................................................................. 21

Figure 2: MV KAPITAN GREGORIO OCA Training Ship................................. 23

Figure 3: MV KAPITAN FELIX OCA Training Ship...................................... 23

Figure 4: The Five Training Ships used by JMETS in Japan ............................ 24

Figure 5: Education and training activity curriculum .................................... 27

Figure 6: The Next Generation of Training Ships ........................................... 35

Figure 7: Generic Research Design Process .................................................... 38

Figure 8: Specific and Simplified Research Design Process ............................. 39

Figure 9: Indicators of Educational Quality at RMU ....................................... 49

Figure 10: Respondents’ perceptions on the impact of training ships on the educational quality at RMU .................................................. 51

Figure 11: Total Cost for 5 Training Ships in a Fiscal Year ............................... 66
List of Abbreviations

AI       Artificial Intelligence
BSM      Bernhard Schulte Shipmanagement
DNV-GL   Det Norske Veritas-Germanischer Lloyd
ER       Extended Reality
GMA      Ghana Maritime Authority
GPS      Global Positioning System
HMS      Her Majesty’s Ship
IAMU     International Association of Maritime Universities
IMO      International Maritime Organization
IoT      Internet of Things
ISM      International Safety Management
JMETS    Japanese agency of Maritime Education and Training for Seafarers
LNG      Liquified Natural Gas
MAAP     Maritime Academy of Asia and the Pacific
ME       Marine Engineering
MET      Maritime Education and Training
MINCONMAR Ministerial Conference of West and Central African States on Maritime Transport
MoU      Memorandum of Understanding
MOWCA    Maritime Organisation of West and Central Africa
MSSC     Maritime Safety and Security Centre
NS       Nautical Science
PIL      Pacific International Lines
PPE      Personal Protective Equipment
QCA      Qualitative Comparative Analysis
RMA      Regional Maritime Academy
RMU      Regional Maritime University
SPSS     Statistical Package for Social Sciences
STCW     International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
SWOT     Strengths, Weaknesses, Opportunities and Threats
TS       Training Ship
US       United States
USA      United States of America
WHO      World Health Organization
WMU      World Maritime University
CHAPTER ONE

INTRODUCTION

1.1 Background history

Training ships have a long-standing history, with their use spanning centuries in nations around the world. These vessels are dedicated to teaching seafaring skills such as navigation, sailing, and seamanship. Their use has evolved over the years, but their importance in Maritime Education and Training (MET) remains as strong as ever. The first recorded use of a training ship dates back to 15th-century Venice (Pouti, 2013). The Venetian Navy used a vessel called the Bucentaur to train young noblemen in the skills necessary for naval warfare. This was the first example of a dedicated training vessel, and the concept soon spread across Europe. In the 19th century, training ships were adopted by navies around the world. The Royal Navy of Britain was the first to use them extensively, with their first training ship, HMS Gannet, being commissioned in 1878 (Mowll, 2018). The purpose of these ships was to provide hands-on education to prospective naval officers. This was especially important during a time when steam power was rapidly replacing sail power, as the Royal Navy needed to ensure that its officers were up to date on the latest technology. In the early 20th century, the use of training ships expanded to include non-naval applications. Germany, for example, began using them to train merchant mariners. This was a way to ensure that Germany had a steady supply of qualified sailors (Žuvić, n.d.) to man its trade fleets. Many of these ships were equipped with modern navigation and communication equipment, allowing sailors to learn the latest technologies. The use of training ships has continued to evolve in the 21st century. Today, many navies and merchant mariners use them to train personnel in the latest technologies, such as satellite navigation. They provide a unique environment, combining hands-on learning with modern technology, to produce the skilled sailors needed to keep the world’s oceans safe and secure. By helping to educate and train the next generation of seafarers, they ensure that the maritime industry remains strong for years to come.
Training ships are an invaluable asset connected with maritime education and training. The evolution of maritime education and training can be traced back to the 17th century when the first formal maritime training schools were established. The first naval academy was founded by the Cardinal Duke of Richelieu in 1627. In 1629, he imposed the appointment of hydrography professors to give free maritime education to coastal cities. Despite this law, maritime institutions did not take off until the years 1665–1681 (Manuel & Baumler, 2020), when a dozen maritime schools for the navy and shipping were officially recognized. The development of these schools was driven by the need to provide a skilled workforce for the growing maritime industry, as well as to ensure the safety of seafarers. The curriculum was often focused on practical skills, such as navigation, boat handling, and other maritime-related tasks. In the early 20th century, the development of training ships and maritime education and training continued. According to Wakefield (2010), these institutions provide formal training for merchant mariners and naval officers to safely maintain their position within the maritime industry. In the United States (US), the lack of motivation to go to sea resulted in a decline in the number of merchant marine officers on ships. To address this, a nautical school was set up in New York and a training ship was further granted to the school. The school began accepting students in 1874 and provided the fundamental instruction required to train ship’s officers by integrating both institutionalized training in a classroom environment and aboard the training vessel. Since then, the US has been using these training ships as a crucial training platform for its maritime education and training curriculum. Also, the US Maritime Service was established in 1938 (Axelsson et al., 2018) and provided formal training for merchant mariners.

1.1.1 Overview of Maritime Education and Training in Ghana
Ghana's maritime sector is expanding, and Maritime Education and Training (MET) is crucial to that growth. Ghana is a coastal country that significantly depends on its maritime sector for its economic success therefore MET is a crucial part of its education and training system. The maritime administration in charge of the maritime affairs of the nation is the Ghana Maritime Authority (GMA). It was created by an act
of parliament, the Ghana Maritime Authority Act 2002 (630), and is ministerially supervised by the Ministry of Transport in Ghana (Akyeampong, 2019). It is tasked with the duty of supervising, regulating, and coordinating the activities in Ghana's maritime industry. MET in Ghana is based on vocational and academic approaches at the post-secondary school level. By this, vocational training is aimed at the acquisition of hands-on practical skills and task-oriented training whereas the academic approach subsumes a much higher degree of cognitive, in-depth analytical and critical thinking skills (Manuel, 2017). Numerous opportunities arise from Ghana being a maritime country. The tremendous growth potential of Ghana's maritime industry is one of the primary opportunities. The nation's strategic location and abundant natural resources make it a desirable place for maritime development, opening up many opportunities. Furthermore, a regional status held by the country’s only Maritime Education and Training Institution (the Regional Maritime University) could be leveraged and make it compete strongly with the several other vibrant institutions globally that are all striving for the churning out of well-educated and competent seafarers who are the lifeblood of the global maritime industry. Maritime Education and Training in Ghana has made great progress, but the industry still faces some obstacles. After the collapse of the Black Star Line which was the only national shipping fleet, no other national fleet has surfaced making it extremely difficult for Ghanaian seafarers to have their sea time. Additionally, Ghana has only one maritime education and training institution (the Regional Maritime University) which even though has a regional status cannot be compared to the number of METIs in other competing maritime nations such as the Philippines, Singapore, Norway, India, and many more. Accredited maritime instructors and trainers are also in low supply in Ghana as it is quite difficult to find faculties with both high academic qualifications and professional experience. To ensure that MET quality is realized in the future, it is necessary to discover ways of inspiring and attracting suitably trained instructors (Kiplimo & Ikua, 2017) as well as providing career advancement opportunities to current instructors. A brain drain of qualified teachers to other nations is also a contributing factor in this shortfall as low pay and unfavourable working conditions make them demotivated.
1.1.2 The Regional Maritime University
The Regional Maritime University (RMU) is an autonomous international tertiary institution located in Accra, Ghana, which specializes in maritime education and training, research and consultancy, and the advancement and development of the Maritime industry in the West African Sub-region. It was called the Ghana Nautical College when it was first established on December 11, 1958. The Ghana Nautical College was established by the Government of the Republic of Ghana with the primary purpose of training seafarers primarily for the national fleet, the Black Star Line. An agreement to transfer the Ghana Nautical College to the Ministerial Conference of West and Central African States on Maritime Transport (MINCONMAR), now known as the Maritime Organisation of West and Central Africa (MOWCA), which negotiated for the college's regionalization, served as the university's legal foundation. The Regional Maritime Academy (RMA) was afterwards given as the new name for the College. The Republics of Cameroon, The Gambia, Ghana, Liberia, and Sierra Leone served as the RMA's founding members during its official opening on May 26, 1983 (Regional Maritime University, 2018). The regionalization of the university was done to foster cooperation, particularly concerning the training of employees to ensure the maritime industry's continued growth and development in the sub-region and beyond, hence, recognizing that the building of human resource capacity for their various maritime industries lies in training and pooling of resources together. The RMA was upgraded from a diploma-awarding institution to a degree-awarding one after around 25 years of operation.

So, on October 25, 2007, His Excellency, the President of the Republic of Ghana, officially commissioned the Regional Maritime University (RMU). Similar to the RMA, the RMU was established by five MOWCA members: the Republics of Cameroon, The Gambia, Ghana, Liberia, and Sierra Leone. The Regional Maritime University's goal is to address the demands of the international maritime community by offering top-notch education and training in the maritime industry (Nyarko, 2020). The creation and execution of creative academic programs and training courses that
adhere to international standards and are receptive to industry needs help the institution fulfil its objective. To fulfil the goals of the founding members, the University started offering professional and vocational training as soon as it was founded. This was done to provide a steady supply of competent workers for the merchant and fishing fleets operating in the sub-region and beyond.

The Regional Maritime University offers a range of academic programs at the undergraduate and postgraduate levels in various fields of maritime studies. These programs include Nautical Science, Ports and Shipping Administration, Logistics Management, Marine Engineering, Mechanical Engineering, Computer Engineering, Marine Electrical and Electronic Engineering, Computer Science, and many other postgraduate and diploma programs as well as short courses. The University can boast of good facilities to aid maritime education, training and research activities. Unfortunately, a training ship for cadet training which the school is missing could be the quantum leap in Ghana’s maritime education and training dilemma.

1.2 Problem statement

I am researching the pros and cons of the acquisition of training ships for Maritime Education and Training Institutions (METIs) with a case study of the Regional Maritime University (RMU) because I want to find out how a training ship can complement the knowledge of students who are prospective seafarers and facilitate their career paths. Seven out of ten students of RMU after graduation will have to go out there to find their ships to do their cadetship training. Bernhard Schulte Shipmanagement (BSM) which is the only dominant shipping company the University has signed a Memorandum of Understanding (MoU) can only recruit a handful of students at any particular time. Most shipping companies also feel reluctant to recruit, train, and retain prospective seafarers because they think it’s a rather expensive venture (Acharya, 2022) and will be ready to poach and employ already trained seafarers than to train and retain them. This problem makes it extremely difficult for the students without ships to progress with their career paths and may in no time deviate from the seafaring profession to do anything they can find within the waiting period. The
International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) prescribes four different methods for demonstrating competence viz ship-in-service training (merchant or commercial ship training), by use of training ships, simulator-based training, and laboratory equipment training (IMO, 2017). The biggest challenge, therefore, is to find the optimum mode of training delivery to help Maritime Education and Training Institutions (METIs) appreciate a new paradigm shift. The acquisition of training ships for METIs has long been a topic of debate. The debate has been driven by the need to provide students with a realistic and comprehensive learning experience to ensure that they are adequately prepared for the rigours of life in the maritime industry. If a training ship is available, it will be integrated into the curriculum such that all students can get the opportunity to do their sea time as cadets and will be assured of their employability on a merchant ship after school. On one hand, the acquisition of training ships provides an opportunity for students to gain hands-on experience in the field and become familiar with the various systems and operations of a ship at sea. On the other hand, the cost of acquiring a training ship can be substantial, the return on investment may not be realized for some time and the maintenance of such a vessel can be a daunting task.

1.3 Research aim or purpose and objectives

This paper was written with the primary motive of contributing invaluable insights to fill the gap in the literature about the significance of training ships for METIs and the maritime industry to a large extent. The study aims to analyze the advantages and disadvantages of the acquisition of training ships by Maritime Education and Training Institutions such as the Regional Maritime University and assess the implications of such an endeavour in the facilitation and bolstering of maritime education and training. The objectives of this research include the following:

- To evaluate the impact of training ship acquisition on the educational quality of the Regional Maritime University.
To examine the benefits and drawbacks associated with the acquisition of a training ship in the Regional Maritime University.

To provide recommendations for the Regional Maritime University considering the acquisition of a training ship.

1.4 Research questions
Three research questions were posited by the researcher. These include:

1. How will the acquisition of a training ship contribute to the educational quality of the Regional Maritime University?

2. What will be the advantages and disadvantages of a training ship acquisition in the Regional Maritime University?

3. How can the Regional Maritime University optimize the benefits and mitigate the drawbacks of a training ship acquisition?

1.5 Significance of the Study
This research is relevant to all maritime industry stakeholders, particularly those in Maritime Education and Training Institutions who have the industry at heart and who want to see technological and socio-economic advancements in the maritime industry and how seafarers’ competency standards can be improved going into the future. The study will inform governments and policymakers in formulating and implementing policies and programs to develop maritime education and training that supports efforts to bring about sustainable development within the maritime industry. Furthermore, the study will add to the body of growing literature on maritime education and training and serve as a reference document for future researchers to build upon existing knowledge. That is because, the research focuses on state involvement in the acquisition of training ships for METIs; an area where research is lacking. Research into training ships as compared to merchant ship training and simulator training is woefully inadequate and this is a knowledge gap the researcher attempts to address or fill.

1.6 Scope and delimitation of the Study
This research will focus on exploring the advantages and disadvantages of acquiring a training ship for Maritime Education and Training Institutes (METIs) using the
Regional Maritime University in Ghana as a case study in its quest to acquire one. The study will cover the period from September 2022 to October 2023 and involve students, faculty, industry experts, and seafarers who have experience with maritime education and training. The research will use a mixed-methods approach, combining quantitative data analysis with qualitative interviews and case studies. The research will focus on the Regional Maritime University in Ghana, which may limit the generalizability of the findings to other METIs in different contexts. Despite these delimitations, the study is still significant as it will provide valuable insights into the specific challenges and opportunities that arise in the context of METIs in developing countries, which may differ from those in developed countries.

1.7 Limitations of the Study

In pursuit of this research work, the researcher encountered a few challenges. Academic literature on the use of training ships by METIs across the world and specifically from the African perspective for the training of cadets is woefully inadequate as opposed to that on merchant ships or commercial ship training and simulator-based training. This made searching for articles and other literature extremely cumbersome. Additionally, the analysis of the data had to take into account the participants' unwillingness to divulge information because of their hectic schedules and the potential for them to not be truthful in their responses. As an academic work, a time frame was considered to meet the deadline for submission of this piece of work and the researcher had to combine time dedicated to his studies with this research.

1.8 Justification of the Study

The result of this study will throw more light on the remarkable socio-economic developments that will be achieved by developing countries in the sub-region should they focus more on acquiring training ships for their METIs. The study's findings can inform the development of evidence-based policies and strategies for enhancing the quality of maritime education and training, which is crucial for the industry's sustainable growth. Furthermore, the findings of this research will serve as a beacon in any future attempts by governments and METIs around the world in the acquisition of training ships.
1.9 Organization of the research

The study consists of six chapters which are described below:

Chapter one is the introduction of the study comprising the background history, problem statement, aims and objectives of the study, research questions, significance of the study, scope, limitations, justification of the study and the organization of the research.

Chapter two consists of a review of the literature for the research. It discusses relevant themes such as training ships, their usefulness to METIs, and learning theories underpinning training on board training ships. A comparative analysis of the use of training ships for cadet training as opposed to the other methods of training is discussed from the perspectives of developed and developing countries.

Chapter three discusses the research methodology used in obtaining data from the respondents. They consist of the research design, methods of data collection, and data analysis, among others.

Chapter four looks at the analysis of the findings relating to the challenges and opportunities in the acquisition of training ships by METIs such as the RMU in Ghana and assesses its impact on the quality of maritime education and training.

Chapter five provides the summary of the analysis by discussing the findings from the survey and interviews thereby answering the research questions.

Chapter six concludes the study and provides recommendations for future research.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
Many recent studies on onboard training have surrounded the use of simulators or commercial/merchant ships involved in trade (Lvov & Popova, 2019; Wendie & Gerrit, 2021; Kim et al., 2021) while that on training ships is woefully inadequate. This research therefore adds to the literature on training ships. A thematic literature review was adopted by the researcher from the rather small pool of available literature on the topic and discusses relevant themes such as the advantages and disadvantages of training ships and how to optimize their usage. The experience with the use of training ships from some selected Asian countries was reviewed in the literature.

2.2 Training ships and their usefulness to METIs
Training Ships are a special kind of vessel used to complete the onboard training requirements needed for candidates to obtain officer and engineer certification under Section A II/1 and A III/1 of the STCW Code\(^1\) with more than 100 people embarking including instructors, officers, engineers, ratings, and students (Yoon et al., 2010). These ships are crucial to METIs because they give students the chance to obtain practical experience in real ship settings and help students apply the theoretical knowledge they learn in the classroom on the field. Various practical skills in navigation, seamanship, marine engineering, and maritime safety and security, are taught on these ships. Students can receive this practical experience using and maintaining marine systems and equipment due to the latest facilities and equipment that are on board these ships.

Training ships serve the purposes of on-the-job training, practical laboratory, and familiarization facilities for METIs as they provide a safe and collegial atmosphere for

\(^1\) The STCW Code supplements the STCW Convention which is supported by relevant sections in the STCW Code. Generally speaking, the Convention contains basic requirements which are then enlarged upon and explained in the Code. It consists of two parts: Part A which is the mandatory standard of competence required for seagoing personnel and Part B which contains the recommended guidance intended to help parties implement the Convention.
the trainees to work and acquire other crucial social skills like leadership, teamwork, and communication skills. These abilities are necessary for a successful career in the maritime sector (Emi, 2007), where teamwork is vital for the operation of ships and offshore structures safely as well as for the safety of passengers and personnel. Training ships are utilized by METIs for research and development in addition to giving students hands-on instruction. These ships have specialized machinery that can be used to research oceanography, marine ecosystems, and other branches of marine science. For example, for the previous 34 years, up until its replacement in 2021, Seiyo-Maru II served as a training ship operated by Tokyo University of Marine Science and Technology with capabilities of oceanographic observations. For both Tokyo University of Fisheries and its predecessor, Tokyo University of Marine Science and Technology, the ship undertook numerous training and research excursions. METIs depend on type-specific training methods such as training ships or simulators for the maritime education and training of their students since they give the institution the chance to work with other maritime industry stakeholders such as the case with Kongsberg Digital and the University of South Eastern Norway where a partnership agreement between them has been signed in order to provide cloud-based simulation exercises for their maritime education programs. (Kongsberg Digital, 2021). Joint training exercises with the Navy, coast guard, and other groups might be held on training ships to enhance collaboration and coordination in emergencies such as that between the Chinese Navy and the local military of Polynesia and Barbados who collaborated on the Peace-friendship and Mission-harmony exercise in 2015 (Li et al., 2016). The training of seafarers and maritime professionals who are currently

---

2 The Tokyo University of Marine Science and Technology owned the training ship Seiyo-Maru II. In October 1987, Tokyo University of Fisheries, the organization that would later become Tokyo University of Marine Science and Technology, began construction on the ship. The vessel’s primary purpose was to provide undergraduate students with training in the fields of fisheries and ocean sciences, including the required boarding experience needed to obtain a license as a navigation officer.

3 Cloud-based simulation is an emerging technological development that creates a new condition for decentralized interaction where its content and functionality mirrors traditional on-site simulator software. It runs on a cloud (internet domain) and enables users to model and simulate various scenarios and systems.
employed in the field can also be done on training ships to hone their skills and upskill them.

**Figure 1**
The training vessel Seiyo-Maru II at the pond in Shinagawa Campus in Japan

![Image](image_url)

*Source:* Kanda et al. (2022)

### 2.3 METIs Experience and types of training ships

#### 2.3.1 Experience of some METIs in owning and operating training ships

The concept of training ships has gained popularity over many years and a majority of METIs across the world, specifically in Europe, the Americas and Asia, have strongly bought into the idea and are utilizing them. The Philippines is one maritime country with a long-standing dominance in maritime education and training. They can boast of two training ships—*MV Kapitán Gregorio Oca* and *MV Kapitán Félix Oca* which have been operational for 5 years and 55 years respectively. According to MarineTraffic (2023), these two training ships are used in the Philippines for the cadetship training of students from the Maritime Academy of Asia and the Pacific (MAAP) and other prestigious maritime institutions even before they start working on merchant ships. This goes a long way to build the competence of the cadets making them fit and ready for the job market. It is no doubt the Philippines has over the years dominated as the world’s largest producer of seafarers for the maritime industry.
A similar success story can be said of Japanese METIs specifically the Japanese agency of Maritime Education and Training for Seafarers (JMETS) which can boast of 5 training ships. These include two tall\(^4\) training ships (*Nippon Maru* and *Kaiwo Maru*) and three steam turbine ships (*Ginga Maru*, *Seiun Maru* and *Taisei Maru*). Students from Japanese high schools, colleges of education and polytechnics enroll in JMETS to undergo stringent maritime training with the help of these training ships which are used for coastal navigation and short sea voyages. These training ships are still active today and continue to impact maritime education and training in Japan.

The Republic of Korea is another very dominant maritime country that believes in the use of training ships for their METIs. Like most maritime nations, their training ships are government-owned and are used for both coastal and international navigation by all 7 METIs in Korea. Even though some Korean METIs have safety management protocols, all 10 training ships in the Korean METIs face safety management and operational expertise challenges because the protocols do not match those prescribed in the International Safety Management (ISM)\(^5\) Code (Choi et al., 2022).

According to Lloyd's List (2021), there have been 6 training ships in various maritime institutions throughout the United States up to this point and the American Maritime Administration is the owner of them. With well-equipped facilities and a conducive instructor-trainee learning environment, they are used in training as many as over 100 cadets from both deck and engine departments at the same time. Some images of these training ships are shown below.

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\(^4\) A tall ship is a sizable sailing boat with traditional sails. The term "tall ship" is frequently applied to enormous, traditional sailing ships in the twenty-first century. According to the Merriam-Webster dictionary, "it is a vessel with at least two masts".

\(^5\) The International Safety Management (ISM) Code is the International Maritime Organization (IMO) standard for the safe management and operation of ships at sea.
Figure 2

*MV KAPITAN GREGORIO OCA Training Ship*

Source: MarineTraffic (2023)

Figure 3

*MV KAPITAN FELIX OCA Training Ship*

Source: MarineTraffic (2022)
2.3.2 Types of training ships based on purpose

Training ships are widely categorized based on the purpose they serve or their propulsion types. For the classification based on propulsion type, Emi (2007) categorized them as sail-powered vessels, motor vessels and steam turbine vessels. Based on purpose, different types of training ships are used by Maritime Education and Training Institutions (METIs) to provide practical training to maritime students depending on the specific goals of the METIs and the learning outcomes expected to be achieved. Some of these include:

- Cadet Training Ships: These are dedicated training ships with a structured program purposely built to give students or cadets who want to become deck officers or marine engineers practical hands-on experience. These types of ships have classrooms where cadets go for lectures and other
practical lessons such as chart work. They are overseen by qualified and competent training instructors who train and supervise the students while on the ship and can accommodate a large number of students usually from 100-250 cadets at a goal. Radars, Global Positioning System (GPS), and communication systems are among the navigation and communication equipment found on these ships. Students are taught how to drop an anchor and ropework such as splicing and knot-tying. An example of a dedicated cadet training ship is the MV KAPITAN GREGORIO OCA Training Ship shown in Figure 2 above.

- Research Training Vessels: METIs employ these vessels to carry out research and development tasks in oceanography, marine science, and other fields associated with the maritime sector. These types of vessels are mostly found in METIs offering biological and marine sciences instead of seagoing programs. An example is the Seiyo-Maru II in Figure 1 above which has been replaced with Shioji-Maru IV. With such vessels, researchers can investigate marine ecosystems, marine animals, and other aspects of the marine environment because research vessels are outfitted with specialized equipment including water samplers, acoustic sensors, and cameras.

- Offshore Training Ships: These are specialized training ships that students with a career in the petroleum and offshore industry can utilize to get hands-on training. Cranes, winches, and drilling systems are just a few of the specialized machinery that offshore training ships are outfitted with, giving students practical hands-on experience in using and maintaining offshore machinery. They are used to teach trainees Dynamic Positioning of oil rigs and drilling platforms. Offshore training ships are another option
for students who do not want to pursue a career at sea even after completing a maritime program.

2.4 Pros, Cons and Optimization factors of Training ships

2.4.1 Advantages in the acquisition of training ships for METIs

The acquisition of training ships by METIs for the training of cadets provides many advantages as opposed to the other forms of training which are prescribed by the STCW viz ship-in-service training (merchant or commercial ship training), simulator training, or laboratory equipment training. Some of these advantages include structured training curricula and training environment, provision of a training environment closer to reality, dedicated training personnel, standardization of training to many cadets at once, and allowing the cadets to commit real mistakes as well as providing real remedial procedure training.

The cadetship training carried on board a training ship is dependent on a structured training curriculum because these types of ships are mainly dedicated to learning and scheduled training. The combination of lecture-based learning in the onboard classrooms with practical exercises results in a good training program (Cicek et al., 2001) where the cadets can acquire hands-on skills and knowledge because their conceptual and theoretical knowledge is augmented with practical knowledge. The curriculum is designed such that the trainees are all able to effectively carry out dedicated tasks such as safe watchkeeping, maintenance tasks, safety training, handling of mooring lines and windlasses, dropping an anchor, and many more. Also, to give cadets practice with ship handling and manoeuvring, voyages on the training ships are designed to pass through busy traffic separation schemes, rivers, and many other navigational channels (Axelsson et al., 2018). In addition to the planned curriculum used for conducting the training by the instructors, a hidden curriculum is somewhat inherent within the training program on such ships. It consists of all those positive and negative learning experiences that are not explicated in the training curriculum but that result in changes in the attitudes, beliefs, values, and learning
culture among the cadet trainees. An adapted curriculum blend for use is shown in Figure 5 below.

**Figure 5**

*Education and training activity curriculum*

Source: *Note. Adapted from “Role and importance of the simulator instructor Role and importance of the simulator instructor,” by A. Ali, 2006, World Maritime University Dissertations, 282, p 50. ([https://commons.wmu.se/all_dissertations/282](https://commons.wmu.se/all_dissertations/282)). Copyright 2006 by The Author.*

Apart from the merchant or commercial ship training, the next type of training which is closer to reality but still ‘mimics the real-world situation’ (because they do not usually go over long voyages and deep seas) is the use of training ships. In their paper titled ‘A Comparative Study of Training Methods for Training and Education of Marine Engineering Students of IAMU Universities’, Cicek et al. (2001) used ‘realism’ as a criterion to distinguish the different training methods suggested by the STCW. Training ships are the next in the hierarchy of reflecting reality when compared to merchant ships with simulators being the least realistic. It is closer to covering most of the methods for demonstrating competence such as planning and scheduling operations, using internal communication systems; testing, detecting faults, and restoring control equipment. Weather conditions such as fog, snow, or even storms encountered will trigger certain behavioural markers including seasickness. After
several such circumstances, the cadets become well-versed in handling panic attacks and stress which could be a foundation to facilitate situational learning. Planned activities such as navigation through busy traffic make the cadets alert (Axelsson et al., 2018) and the exigencies of the situation most times call for extra work duties. This makes it possible for the instructors to test the mental fortitude and responsiveness of the cadets and in the long run, help them become mentally agile and resilient.

Another great advantage worthy of mention in the use of training ships by METIs for the training of their cadets is the presence of qualified, experienced, and dedicated training instructors or personnel for both deck and engine cadets. In addition, there are Professors, Safety officers, Physical trainers, and other instructors with specialized roles combined to give the cadets uniform training (Conev & Dimitrakiev, n.d.). Training ship instructors have no assigned duties apart from solely supervising and monitoring the cadets in the discharge of their duties and therefore have sufficient time to evaluate the progress of the trainees. On merchant ships, however, the officers are already busy with other assigned duties such as watchkeeping and at the same time are in charge of supervising the cadets. The cadet training is disadvantaged in this regard most of the time and learning becomes ineffective. The usual practice then will be that the officers wrongly endorse cadets to the master who will just sign and declare the cadet as proficient in the tasks stipulated in the training record book (Barsan & Muntean, 2009).

In addition to the aforementioned advantages, training ships also allow for the standardization of training to a large number of both deck and engine cadets concurrently. The majority of training ships employed by METIs in the training of cadets can accommodate over 100 students in addition to the instructors and other crew. In many jurisdictions such as Japan, students from different METIs are recruited on the same training ship. In such instances where the students come on board with varied degrees of theoretical and practical knowledge, the onboard training on the training ships creates room for standardization (Emi, 2007) which consequently
bridges the knowledge gap among the different students. The students are taught the same things, undertake the same duties, and learn the same things thereby creating a level playing field.

Last but not least, training ships just like simulators allow the cadets to intentionally commit real mistakes to a certain degree which one cannot do on commercial or merchant ships-in-service en route. This is because the schedule of the training ship is not under any commercial pressure in terms of route or time constraints as compared to merchant ships. A very popular technical challenge onboard all ships is ‘black-out’ or main engine emergency breakdown. It has the potential to halt all operations onboard the ship with very dire repercussions should it occur. On the training ships, however, the trainees are periodically taken through these black-out drills and are taught how to supply electricity from the auxiliary engine to the most important pieces of equipment for the time being. At the same time, the cadets learn how to deal with nearby traffic and comply with collision regulations (Conev & Dimitrakiev, n.d.). Going through such drills periodically makes the cadets mentally strong and resilient as well as helps them develop emergency response skills.

2.4.2 Disadvantages in the acquisition of training ships for METIs

Notwithstanding the many advantages offered by training ships, a few disadvantages in their acquisition exist. Some disadvantages that can be attributed to the acquisition of training ships by METIs include the following: financial/capital intensive, non-ocean going, and a large instructor-to-trainee ratio which inhibits learning most times. According to Ma (2020), ships’ costs consist of capital, operating, and voyage costs. Holding the capital cost constant for all ships, the operating costs of training ships are incredibly high with components of crew or labour costs as well as maintenance and repair costs. The crew or labour costs have to do with the payment of the training instructors and lecturers on the ship. These are usually retired seafarers with years of experience. They still need to live a normal livelihood and failure to pay them well will make them demotivated which could translate to ineffective delivery. The voyage costs include fuel or bunker costs and port tariffs. These vessels do not usually go on
long ocean voyages and therefore do not spend so much on fuel as compared to merchant ships plying their trade. Nevertheless, the fuel costs for the short sea voyages are very substantial since the ships need to be fuelled daily to keep them running.

Another challenge worthy of mention is that a training ship lacks the commercial aspect of shipping because they are a non-ocean-going type of ship and not favourable to long sea voyages. They also do not have cargo-carrying capacity unlike merchant ships plying their trade along long ocean voyages. Commercial concepts such as Bill of lading, chartering, containerization, freight forwarding and supply chain management will not make sense to the cadets if they do not have first-hand experience with them en route.

Last but not least, because training ships are designed to accommodate a large number of cadets usually over 100 of them, learning outcomes onboard such ships are hampered. During some lessons, only one responsible instructor is in charge of training all the cadets at a goal. For example, during navigational chart work lessons, the navigation instructor in charge must go around making sure all the students are doing the same thing and also shouting out instructions to students who are not compliant. This issue of instructor-trainee ratio greatly hampers learning onboard training ships as opposed to merchant ship training (Emi, 2007) where only two or three cadets receive instructions from their officers thereby creating an effective learning environment.

2.4.3 Optimization of the use of training ships

The requirement of onboard training systems as part of the training process for working on commercial ships is thought to be a step in the right direction toward improving technical and practical skills (Jeong, 2004) by providing opportunities for real-world experiences based on the theoretical knowledge that the students have studied in school. Close ties between METIs, the shipping sector, and the government are also necessary to consistently ensure that the training program is relevant to the needs of the shipping sector (Sugimoto 2004). In addressing the disadvantages posed
by training ships, it is necessary to find ways of optimizing their usage to promote effective learning.

First, the acquisition of smaller size training ships will not only help reduce operating and maintenance costs but also decrease the instructor-trainee ratio thereby creating an active and interactive learning environment. Furthermore, there should be an optimum arrangement of onboard training allowing cadets from different METIs to take turns in undertaking their training. Following this approach, the trainees can be put in groups of 20 or 25 for voyages of about 2-3 months. Additionally, the training ship during its free time can be leased out to other institutes or private organizations involved in ocean exploration and research to generate some revenue (Emi, 2007) which can be used to recoup operational and maintenance costs. The METI can also adopt a dual-model approach of training and trading to generate extra cash to offset huge operational and maintenance costs. Government and industry support should also be heightened through the provision of berths in ports and free port tariffs. Moreover, the training program should be of a good standard, properly integrated into the curriculum, regularly reviewed and combined with merchant ship training so that cadets can have knowledge of the commercial aspect of shipping.

2.5 Training ships Vs Merchant ship training Vs Simulator-based training

The different methods used to train cadets or seafarers as reiterated earlier include training aboard training ships, commercial/merchant ships-in-service, and simulator-based training. Each approach has its own advantages and disadvantages, and the selection of one particular type may be influenced by elements like the resources at hand, the experience level of the trainees, and the training goals. Actual ships are utilized for training as training vessels and in the case of merchant ships. They give students real-world exposure through hands-on learning. Training ships can be used to provide fundamental knowledge of seamanship, navigation, and engine upkeep. Additionally, they help students learn communication, leadership, and teamwork skills (Wahl & Kongsvik, 2018). However, the availability of training ships may be constrained, and they can be expensive to maintain and run.
On the other hand, training onboard commercial ships is a part of merchant ship training. This approach also gives students hands-on exposure in a real commercial environment. Trainees can get up-to-date knowledge of navigation, ship operation, and cargo handling. On commercial ships, however, there can be fewer opportunities for training (Conev & Dimitrakiev, n.d.) and fewer resources available than on a ship that is specifically designed for training. With the aid of computer-based simulators, on the other hand, real-world situations are simulated during training in a safe and regulated setting. This enables the trainees to encounter a variety of circumstances through various scenarios practised and skills like navigation, ship control, and emergency response can be taught using the simulators with behavioural markers being monitored by hidden cameras. Additionally, they can be used to practice and teach decision-making techniques (Reul, 2015) as well as follow guidelines. Comparatively speaking, simulators can be more widely available and are typically less expensive than training ships and merchant ships.

2.6 Learning theories underpinning training on-board training ships

Learning theories are conceptual frameworks that aim to explain how humans pick up new information, abilities, and perspectives. They offer insights into the intricate processes of learning and can assist trainers and educators in creating environments and teaching methods that are effective. Different emphasis is placed on the role of the student, the teacher, the environment, and the subject matter being taught in these theories, which are varied and have evolved.

2.6.1 Experiential Learning Theory

All key facets of active learning are supported by Kolb's theory, which is acknowledged as a learning theory. It offers a theoretical defence of self-directed learning, active learning, project-based learning, and problem-based learning (Moon, 2013). On the training ships, students gain a deeper, more meaningful knowledge of course topics and how they function in the real world through experiential lessons, which allow them to explore concepts first-hand. This is the type of learning which most people refer to as “trial and error”. For example, cadets learning how to tie a knot
for the first time will have to do it several times before mastery. Many mistakes will be made in the early stages but as they continue to experiment, they gain more experience and become better at them.

2.6.2 Social Learning Theory
The Social Learning Theory, as put forth by Albert Bandura, emphasizes the value of seeing, mimicking, and copying the actions, attitudes, and emotional responses of others (McLeod, 2011) and takes into account how environmental and cognitive elements interact to affect human learning and behaviour. This idea contends that because some social components cannot be taught, not all learning styles are addressed by the academic activities or programs provided by METIs. Sometimes, students tend to understand things better when they learn from their peers just from observation. For instance, a cadet can be able to learn how to do chipping just by observing his or her other colleagues do the same simply because they are mostly together and can relate well with each other rather than with their instructors.

2.6.3 Resource Management Theory
The training ship like any asset or organization requires proper and effective management (Guo, 2005) to ensure its long-term sustainability. First, the training ship itself is a capital resource involving hundreds of million-dollar investments from navigational to engine equipment and therefore requires proper management in order to prevent accruing extra operational and maintenance costs. Secondly, the training ship requires competent and qualified personnel to assume its managerial as well as operational roles. They are manned by qualified, competent and experienced training instructors who are employed on these types of vessels to offer structured training to the cadets.
2.7 The next generation of training ships

According to Axelsson et al. (2018), future training programs will incorporate an increasing number of simulators, both on land and on new training ships, as our industry continues to expand and turns to technology for solutions. The new era of the 4th Industrial Revolution and the advent of modern technology such as the Internet of Things (IoT), Artificial Intelligence (AI), and Extended Reality (ER) will revolutionize training ships and the maritime industry as a whole in so many ways. Seafarers might have to adapt to such new technologies (Baum-Talmor & Kitada, 2022) which will mean the development of new skills and competencies. With an increase in automation technology and digital twin technology gaining popularity, the next generation of training ships promises to be very fascinating. Jobs that will require manual labour may be cut off completely and be carried out just by pressing a button or turning on a switch. Bridge navigational equipment will be made with a more tech-heavy design allowing them to operate with a higher degree of accuracy with additional functionalities. With a focus on sustainability, these training ships may employ solar panels for power generation as well as a hybrid diesel-electric propulsion system and battery pack to lessen the impact of global warming and greenhouse gas emissions (Tunnicliffe, 2020).
2.8 Summary of Chapter

This chapter discussed some useful themes from the rather limited literature on training ships. The purpose of the comparative analysis discussed in this paper is not to decide what training method is the best for cadets and seafarers but to have some comparative results for this type of training inherent in different jurisdictions so that some relevant recommendations to maritime institutions including the Regional Maritime University can be made. The next chapter describes the research methodology adopted by the researcher in solving the research problem identified from the background of the study on training ships and consequently providing answers to the research questions.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
Research methodology refers to the approach followed by a researcher in the collection and analysis of data to provide answers to a particular research problem. This chapter explains the methodology that was used to gather the information for the study. It explains the research design, target population and sample size, sampling techniques and response rate, data collection methods, and instruments used in the data analysis as well as the ethical considerations that prevailed. The reason for this choice, the ethical issue that prevailed, and how the researcher involved them to analytically deduce the framework have all been explained. This study is qualitative research and exploratory but the researcher applied a quantitative approach for a better understanding of the study.

3.2 Research design
A mixed-method research design incorporating both qualitative and quantitative research methods was selected for this dissertation topic. Qualitative research is used to explore topics in-depth, to understand the perspectives of participants, and to gain insight into the meanings and interpretations of individuals (Pathak et al., 2013). Qualitative methods such as interviews and a case study will be used to gather in-depth information on the opinions of stakeholders. This approach will provide a deeper understanding of the challenges and opportunities encountered in the acquisition of training vessels by METIs, as well as understand the interpretations of the participants in the case study. The type of qualitative and quantitative research designs the researcher will employ is a case study and survey to gather data and measure the perceptions of stakeholders such as students, faculties, alumni, and industry professionals on the acquisition of training vessels. According to Creswell (2009), using a mixed-methods approach provides a more comprehensive analysis and increases the validity and reliability of the results.
To juxtapose the use of training ships in other jurisdictions to the case of the Regional Maritime University, different cases were critically reviewed through a comparative analysis. According to Yin (1994, p.13), a Case Study is “an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. Even while some have critiqued case studies for lacking scientific rigour and dependability, they do have many benefits. For instance, they allow researchers to develop comprehensive perspectives of particular occurrences or sequences of events. If numerous case studies result in some sort of replication, they also enable the generalization of findings (Noor, 2008).

Concerning the mode of training in different jurisdictions as reiterated earlier, the researcher explored using Qualitative Comparative Analysis (QCA) for the study. According to Ragin (2008), QCA bridges the gap between qualitative and quantitative analysis. The seafarer or cadet training onboard training ships will be juxtaposed with a merchant ship and simulator training to analyze the benefits and challenges in each case and how learning outcomes are achieved. The researcher compared four different cases:

1. A developed country that uses a training ship in its METIs (eg. Japan).
2. A developed country that does not use a training ship in its METIs but something else such as simulators (eg. The Netherlands).
3. A developing country that uses a training ship in its METIs (eg. The Philippines).
4. A developing country that does not use a training ship in its METIs and intends to do so (eg. RMU-Ghana).

To evaluate the efficacy of the training program offered by the training ship, it is hypothesized that the training itself will be a major contribution to the overall educational quality of the Regional Maritime University. The hypothesis (H1) states: The advantages of training ships will contribute to the educational quality at the Regional Maritime University.
Figure 7

Generic Research Design Process

Source: Author
Figure 8
Specific and Simplified Research Design Process

Source: Author
3.3 Target population and sample size

The total population for this study consists of all stakeholders in the maritime industry which comprise the seafarers, students and faculties of METIs, and maritime administrations. The target population of the study, therefore, consists of all deck and engineering students of the Regional Maritime University, alumni, faculties, seafarers, and managerial and non-managerial staff serving in the university as well as the maritime administration of Ghana. Hence, the estimated target population is over 1000 people. To make data collection and management easier, the researcher, based on his discretion, took out the managerial and non-managerial staff of the University and the Maritime Administration of Ghana and thereby assumed a population size of approximately 1,000 people. According to Kibuacha (2021), to calculate the optimum sample size for research work, the variables needed include confidence level, confidence interval (margin of error), population proportion, and population size. The researcher used an online sample size calculator and for a confidence level of 95%, a margin of error of 5%, a population proportion of 50%, and an estimated population size of 1000 people, the optimum sample size is at least 278.

3.4 Sampling techniques and response rate

The researcher adopted a non-probability sampling method (specifically purposive sampling) for the study. This technique is based on the judgment of the researcher to select some qualified and experienced stakeholders who are deemed good prospects for the information the researcher needs. Even though one would have it subjective, the criteria adopted in making the judgments about the respondents were solely their willingness to answer the research questions. The researcher considered in this study, seafarers, MET faculty, and maritime administrations for a more balanced sampling. The researcher sent out the survey questionnaire via social media platforms predominantly WhatsApp to the many target groups the researcher could get access to. A total of 417 people viewed the survey just by opening the link and 148 responses were received in total. After filtering, 144 responses were considered valid and used for the study equivalent to a completion rate of 97.3%. Consequently, the true sample
size of 144 respondents did not match the estimated value of 278 thereby creating a sampling error.

3.4.1 Demographical information of respondents

In this study, 144 maritime professionals participated and completed the survey. They include academic staff, administrative staff, students, alumni of the Regional Maritime University, and seafarers designated as “others”. As expected, more than half of the respondents were students (61%) and an overwhelming number of 135 respondents corresponding to 96% were males. The majority of the respondents (81 people, representing 56%) have a Bachelor’s degree whereas only 2 people corresponding to 1% of the sample size have postdoctoral educational levels. It was not surprising that a majority of 87 respondents corresponding to 61% were in the 25-34 age range as most of the respondents are students. Even though only one person was above 64 years, the number of respondents with more than 10 years of maritime experience was 24. Statistics on the various roles, levels of education, genders, ages and years of experience in the maritime industry are illustrated in Table 1 below. Regarding the response distribution by country, the respondents answered the survey from 14 different countries with Ghana being the highest as that was the place of the study. The response distribution by country is shown in Table 2.

Table 1

Demographic Information of Respondents (N=144)

<table>
<thead>
<tr>
<th>Role</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Staff</td>
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<td>10</td>
</tr>
<tr>
<td>Administrative Staff</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Student</td>
<td>88</td>
<td>61</td>
</tr>
<tr>
<td>Others</td>
<td>32</td>
<td>22</td>
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41
<table>
<thead>
<tr>
<th>Educational level</th>
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<th></th>
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<tbody>
<tr>
<td>Undergraduate</td>
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<td>18</td>
</tr>
<tr>
<td>Diploma</td>
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<td>14</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
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<td>56</td>
</tr>
<tr>
<td>Master’s degree</td>
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<td>8</td>
</tr>
<tr>
<td>Doctorate</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Postdoctoral</td>
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<table>
<thead>
<tr>
<th>Gender</th>
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<tbody>
<tr>
<td>Male</td>
<td>135</td>
<td>94</td>
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<tr>
<td>Female</td>
<td>9</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Age (years)</th>
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<tbody>
<tr>
<td>Under 25</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>25-34</td>
<td>87</td>
<td>61</td>
</tr>
<tr>
<td>35-44</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>45-54</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>55-64</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Above 64</td>
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<table>
<thead>
<tr>
<th>Maritime Experience</th>
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<tbody>
<tr>
<td>Less than 1 year</td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>1-3 years</td>
<td>50</td>
<td>34</td>
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<tr>
<td>4-6 years</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>7-9 years</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>10 years or more</td>
<td>24</td>
<td>17</td>
</tr>
</tbody>
</table>
Table 2

Response Distribution by Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Response rate</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghana</td>
<td>81.94%</td>
<td>118</td>
</tr>
<tr>
<td>US</td>
<td>4.17%</td>
<td>6</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2.78%</td>
<td>4</td>
</tr>
<tr>
<td>Great Britain</td>
<td>2.08%</td>
<td>3</td>
</tr>
<tr>
<td>Gambia</td>
<td>1.39%</td>
<td>2</td>
</tr>
<tr>
<td>Canada</td>
<td>1.39%</td>
<td>2</td>
</tr>
<tr>
<td>France</td>
<td>1.39%</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.69%</td>
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</tr>
<tr>
<td>Australia</td>
<td>0.69%</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td>0.69%</td>
<td>1</td>
</tr>
<tr>
<td>Korea</td>
<td>0.69%</td>
<td>1</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>0.69%</td>
<td>1</td>
</tr>
<tr>
<td>Spain</td>
<td>0.69%</td>
<td>1</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.69%</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>144</strong></td>
</tr>
</tbody>
</table>

Source: Author

3.5 Data analysis instruments

The instruments for the analysis of data employed by the researcher are thematic analysis for qualitative data and statistical analysis comprising both descriptive and inferential statistical analysis for quantitative data. The researcher used both Excel and SPSS for data management, analysis and interpretation of Likert scale data as an ordinal measure. The thematic analysis for the qualitative data was used to identify recurrent patterns and themes as well as extract insights from the interviews and open-ended survey responses. Descriptive statistical analysis such as measures of central tendency and dispersion were used to describe and summarize characteristics of the
data set and study sample whereas inferential statistical analysis was used to infer and draw conclusions from the analyzed data and make generalizations for the study population.

3.6 Methods of data collection
The researcher combined both primary and secondary data sources for this study. The primary data collection methods used in gathering the necessary information were survey questionnaires and semi-structured interviews which will not require a face-to-face interpersonal role where an interviewer asked respondents questions designed to draw out appropriate answers to the questions. The questionnaires and interviews were designed based on the aims, objectives, and literature of the study. During this process, the researcher’s objectives were translated into questions. Both survey and interview questionnaires were pilot-tested to determine the duration it would take for such instruments and to make any adjustments if possible. Surprisingly, the surveys took an average time of 15 minutes to complete while that of the interview took 45 minutes.

3.6.1 Primary data

3.6.1.1 Survey questionnaire
The questionnaire was made of 40 questions that were a combination of 28 closed and 12 open-ended questions. The open-ended questions guaranteed that all the responses given were consistent with the topic under study. The questionnaire was divided into six main sections where the first part required respondents to answer questions on personal details such as age, gender, education level, category of stakeholder, and the number of years served in the maritime sector. The second to the sixth sections of the questionnaire have various constructions that sought answers to the research questions of the study. These sections were captioned as follows: implications of introducing a training ship in METIs, pros, and cons of the acquisition of a training ship at RMU, optimizing the use of a training ship at RMU, perception of impact of training ship on the educational quality at RMU, and comparison of other METIs. Except for the open-ended and yes or no questions, the majority of the questions were based on a six-point Likert scale in many variations which for example measures; ‘1=Strongly Agree’; ‘2=
Agree’; ‘3= Neutral’; ‘4= Disagree’; ‘5= Strongly Disagree’ and ‘6= I don’t know’.

The purpose of the scale was for the respondents to state how strongly they agreed or disagreed with each constructed statement.

3.6.1.2 Semi-structured interviews

Semi-structured interviews are a type of qualitative research method in which the interviewer uses a flexible interview guide that includes a set of open-ended questions but also allows for follow-up questions and the exploration of new topics that may arise during the interview. They are useful in gathering in-depth information about a particular topic, as they allow the interviewer to probe more deeply into a respondent’s answers and explore unexpected avenues of inquiry (Harvey-Jordan & Long, 2001). For this study, the researcher carried out 7 different interviews all in an attempt to answer the research questions and meet the research objectives. The researcher designed 2 different interview guides—one for countries that use training ships in their METIs and the other for countries that do not. A purposive sampling was adopted to select the participants for the interview who for this study and ethical reasons will be called respondents A, B, C, D, E, F, and G respectively. These respondents are well-versed in training ships and range from Training Ship (T.S) instructors (both deck and engine) to senior faculties of both Nautical studies (N.S) and Marine engineering (M.E) of METIs.

Table 3

Interview Participants by Country and Role

<table>
<thead>
<tr>
<th>Country</th>
<th>T.S Deck Instructor</th>
<th>T.S Engine Instructor</th>
<th>Simulator Instructor</th>
<th>Senior Faculty, N.S</th>
<th>Senior Faculty, M.E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Philippines</td>
<td>1</td>
<td>1</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Netherlands</td>
<td>x</td>
<td>x</td>
<td>1</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
3.6.2 Secondary data

The secondary data were sought through a careful search of different texts in the WMU library, journals, magazines, published research, textbooks, lecture notes, circulars, and other periodicals with subject matters related to the study of the researcher. Another option that was used by the researcher was the use of the internet to obtain historic and relevant information which was needed for the accomplishment of this study.

3.7 Research participants and respondents

As reiterated earlier, the research participants include all seafarers and students serving on deck and engine departments on the ship, alumni, Nautical Science and Marine Engineering Faculties, and managerial and non-managerial staff of the Regional Maritime University. Except for the 7 respondents who were interviewed by the researcher, the rest of the research participants were eligible for partaking in the surveys conducted. Two of the experts interviewed were from the Regional Maritime University while the remaining five were experts from Japan, the Netherlands, and the Philippines.

3.8 Ethical considerations

For all researchers, ethical considerations are of utmost importance and the guiding principles of research ethics aim to protect those involved in the study from damage, manipulation, and misconduct in all of their settings and communities. According to the World Health Organization (WHO), when conducting research involving human participants, it should be done in a manner that puts value on the safety, dignity, and rights of the individuals (World Health Organization, 2013, p.3). Furthermore, the WMU Research Ethics Committee has laid down protocols to be followed when
conducting research involving human participants and so, the researcher followed all the necessary protocols. Participants were briefed about the study and assured of the privacy of their information and their identities so they could overcome their reservations about providing sensitive and confidential information. Participants were made to understand that their contributions were voluntary and that they had full authority to withdraw from participating if they wanted to.

3.9 Summary of Chapter
This chapter discussed the methodology adopted by the researcher in conducting this study. The research design which incorporated a mixed methods design was used to better understand the study. The study population, sampling techniques, and sample size were all discussed in this chapter. The methods of data collection used are mainly semi-structured interviews and survey questionnaires for primary data which sought to gather the perceptions of respondents and participants on the subject. The ethical issues which prevailed in the conduct of the research were also discussed in this chapter. The next chapter will analyze and present the findings deduced from the 7 interviews conducted and 144 completed survey responses received.
CHAPTER FOUR
ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction
This chapter analyses and presents the quantitative and qualitative findings obtained from the survey questionnaires and the qualitative data from the semi-structured interviews. The data analysis was done with the help of a statistical analysis tool (SPSS) for quantitative data and a thematic analysis technique for qualitative data. Regarding the methodology discussed in chapter three, this chapter is presented as follows: quantitative data from the survey questionnaire, qualitative data from the survey questionnaire and qualitative data from the seven semi-structured interviews.

4.2 Quantitative data from the survey questionnaire
The paper’s first research question, “How will the acquisition of a training ship contribute to the educational quality of the Regional Maritime University?” tested the hypothesis: H1- “some advantages of training ships will contribute to educational quality at the Regional Maritime University”. The researcher designed the survey questionnaire comprising 28 close-ended questions and 12 open-ended questions including that of respondent demographical information. The close-ended questions with Likert scale ordinal measure in section E which was made up of 10 items were designed to address the first research question: "How will the acquisition of a training ship contribute to the educational quality of the Regional Maritime University?”. From the survey inferential statistics, it was deduced that the educational quality of the Regional Maritime University which will be impacted by training ships mainly depends on improved enrolment, enhanced reputation, and increased employability prospects. These factors are consequently moderated by the optimization factors of training ships and their interaction with each other is shown in Figure 9 below.
**Figure 9**

*Indicators of Educational Quality at RMU*

### Source: Survey analysis by Author

Of the 10 survey items in section E, the most agreed-upon was item 23-*The presence of training ships improves the overall student enrolment in maritime education and training at the Regional Maritime University* with an overwhelming majority of 113 respondents corresponding to 78.5%. Twenty-five (25) respondents corresponding to 17.4% somewhat agreed with the same survey item whereas 6 respondents corresponding to 4.2% maintained a neutral position (neither agreed nor disagreed). Altogether, 144 respondents showed a perception range from strongly agree to neither agree nor disagree. None of the respondents showed any form of disagreement with survey item 23 implying that all the respondents (age groups and roles) agreed with the perception that training ships will improve the overall student enrolment in maritime education and training at the Regional Maritime University.

The second most agreed-upon survey item was item 21 with the construct *“The acquisition of training ships by METIs positively impacts students’ understanding of*
maritime operations”. By inspection, 83 respondents corresponding to 57.6% strongly agreed with the survey item. Forty-four (44) respondents corresponding to 30.6% somewhat agreed with the construct whereas 12 respondents representing 8.3% neither agreed nor disagreed with the survey item. Even though 5 respondents somewhat disagreed with the survey construct, the algebraic sum of the level of agreement was 139 out of the total of 144 respondents implying that training ships will positively impact students’ understanding of maritime operations.

Both survey items 25 and 28 with the constructs “The availability of training ships enhances students’ hands-on skills development” and “The acquisition of training ships offers students exposure to other professionals in the maritime industry” placed third with 137 respondents choosing the option of agreement. For item 25, a total of 91 respondents corresponding to 63.2% strongly agreed whereas 38 respondents representing 26.4% somewhat agreed with the same survey construct. Also, 8 participants remained neutral by neither agreeing nor disagreeing whereas none of the participants showed any level of disagreement with the survey construct. Even though 6 respondents (4.2%) somewhat disagreed and 1 person (0.7%) strongly disagreed with item 28, a total of 79 respondents corresponding to 54.9% strongly agreed, 47 respondents corresponding to 32.6% somewhat agreed and 11 respondents corresponding to 7.6% neither agreed nor disagreed with the same survey construct.

The least agreed-upon in its entirety was item 27 with the construct “Students have sufficient access to training ship resources for effective learning” which has an algebraic sum of 130 respondents in agreement with the survey construct. A total of 77 respondents corresponding to 53.5% strongly agreed, 46 respondents corresponding to 31.9% somewhat agreed whereas 7 respondents representing 4.9% retained a neutral position by neither agreeing nor disagreeing to the same survey construct. However, a total of 14 respondents corresponding to 9.7% showed a level of disagreement with the survey item even though no participant strongly disagreed.
with the same construct. Comparing all the 10 survey items, this particular one was the most somewhat disagreed with followed by item 24 with 13 participants.

By logical reasoning and inference from the presented data and findings, the researcher deduced that all 10 survey items (Q.20-Q.29) which goes to prove the hypothesis that the acquisition of a training ship will increase employability prospects of RMU graduates which will consequently enhance the reputation and improve student enrolment at the university. The proof of the hypothesis answers the first research question thereby meeting the objective that training ship acquisition has a great impact on the educational quality of the Regional Maritime University. A graphical representation of the analysis is shown in Figure 10 below.

**Figure 10**

*Respondents’ perceptions on the impact of training ships on the educational quality at RMU*

![Bar chart showing respondents' perceptions on the impact of training ships on the educational quality at RMU.](chart.png)

*Source: Author*
4.2.1 Descriptive statistics from quantitative data

According to Bhandari (2020), the best type of descriptive statistics for the ordinal scale of measurement is the mode and median which are both measures of central tendency. The mode refers to the observation with the highest frequency whereas the median refers to the middle observation which separates the higher half of the data sample from the lower half. The mode and median observation for each of the 10 items after measuring the respondents’ perception of the overall quality of education at the Regional Maritime University was calculated with the help of the SPSS data analysis software. Coincidentally, all the 10 Likert scale survey items in section E measured “5” and “5.00” respectively for both mode and median. This means that the majority of the 144 respondents strongly agreed to all 10 items implying that a training ship acquisition will have a high impact on the educational quality of the Regional Maritime University. The statistics displayed by the SPSS software are shown below.

Table 4

*Descriptive Statistics of Survey Items from SPSS*

<table>
<thead>
<tr>
<th>Statistics</th>
<th>N</th>
<th>Valid</th>
<th>Median</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquiring training ships by METIs enhances the practical training experience for students</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>The acquisition of training ships by METIs positively impacts students' understanding of maritime operations</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>Training ships provided by METIs boost students' confidence in their future maritime careers</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>The presence of training ships improves the overall student enrollment in maritime education and training</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>The acquisition of training ships by METIs contributes to the university's reputation in the maritime industry</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>The availability of training ships enhances students' hands-on skills development</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>METIs' investment in training ships ensures a good balance between theoretical and practical learning experiences</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>Students have sufficient access to training ship resources (facilities, equipment, etc.) for effective learning</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>The acquisition of training ships offers students valuable networking opportunities in the maritime industry</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
<tr>
<td>METIs' partnership in providing training ships positively influences students' employability prospects after graduation</td>
<td>144</td>
<td>144</td>
<td>5.00</td>
<td>5</td>
</tr>
</tbody>
</table>

NB: The Likert scale for the ordinal data in section E was designated in the SPSS as follows
1- Strongly disagree 4- Somewhat disagree
2- Somewhat disagree 5- Strongly agree
3- Neither agree nor disagree

4.2.2 Inferential statistics from quantitative data

According to Tavakol & Dennick (2011), the reliability of an instrument is closely associated with its validity and an instrument cannot be valid unless it is reliable. The Cronbach’s Alpha coefficient (α) which is the most widely used objective measure of reliability was used to ascertain the reliability and internal consistency of the survey items in section E of the survey questionnaire which was designed to address the first research question. According to Bujang et al. (2018), Cronbach’s alpha has a value between 0 and 1, with greater values indicating that the items are measuring the same dimension. Instead, if the value of Cronbach’s alpha is low (close to 0), it indicates that some or all of the items are not measuring the same dimension. The measurement of the coefficient indicated a 0.925 reliability for all 10 items indicating a very high level of reliability and internal data consistency. The results of the reliability statistics for all 10 items as well as that of the individual items based on a standardized ordinal scale measure are shown in Table 5 below and Appendix E respectively.

Table 5

<table>
<thead>
<tr>
<th>Cronbach’s Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.925</td>
<td>10</td>
</tr>
</tbody>
</table>

Regarding the hypothesis test summary for item normality (Kolmogorov-Smirnov Test), the null hypothesis that the distribution of each item is normal was rejected. The Kolmogorov-Smirnov Test values were used because the sample size for the study is greater than 50 (N=144). For each item, the significance level with a p-value of 0.05 was less than 0.001 indicating that each item is not normally distributed.
Coincidentally, the Shapiro-Wilk test which is best for a sample size of less than 50 also indicated a significance level of less than 0.001 against the same p-value of 0.050. The normality tests for each item as calculated by the SPSS software are shown in Appendix F.

The researcher also employed the Kruskal-Wallis H test which is a type of comparative hypothesis test to find out if the perception of respondents across their various roles is the same. According to McKight & Najab (2010), the Kruskal-Wallis test is a nonparametric statistical analysis that compares three or more independently sampled groups on a single continuous variable that is not regularly distributed. It is appropriate for non-normally distributed data, such as ordinal or rank data. Regarding the hypothesis test summary by role, the null hypothesis test that the distribution of the items is the same across the various roles (academic staff, administrative staff, students and others) was retained for items 23, 24 and 29 with significance levels of 0.810, 0.815, and 0.819 respectively against the same p-value of 0.050. The Kruskal-Wallis test showed that there was no statistically significant difference in the perception of the first four Likert scale items in section E. The perception of the impact on students’ understanding of maritime operations was the highest followed by that of the impact of training ships on the educational quality at the Regional Maritime University. In contrast, the perception of the respondents on the last six Likert scale items in section E was rejected with significance level values of less than 0.050. The Kruskal-Wallis tests for each item as calculated by the SPSS software are shown in Appendix G.

4.3 Qualitative data from the survey questionnaire
The survey questionnaire was made up of 12 open-ended questions surrounding the implications of introducing a training ship in METIs in terms of their pros and cons, how to optimize its usage, recommendations for safety and comparison between METIs who use training ships as compared to those who do not. The first open-ended question is “How would a training ship contribute to the opportunities for maritime education and training?”
The majority of the responses to this question included the provision of practical hands-on training, the employability of graduates, and the completion of the training cycle. One respondent who has had the opportunity to be trained on the training ship shared the following opinion:

“I am a beneficiary. I was on board a training ship managed by my shipping company. I gained relevant knowledge and exposure which bridged the gap between the theory gained back in school and the on-field practice. This has made me better in a way which makes me feel confident when I am speaking on a topic relevant to the field. Therefore, training ships would contribute immensely to the rate of employment by providing readily available future officers who would not be required to sail as cadets”.

When asked about what challenges they foresee with the introduction of a training ship in the Regional Maritime University, the most common answer was financial constraints. These financial constraints stem from the capital costs that come with the acquisition of a training ship in the first place as well as the maintenance costs, fuel or bunker costs and operational costs. The next common answer was the absence of a good training ship program which consequently led to incompetence of the trainees and mismanagement on the part of the instructors and training ship supervisors. Despite these challenges and many more, one respondent is of the view that the overall benefits of training ship acquisition will outweigh the costs and recommends the Regional Maritime University make a concerted effort to acquire one.

With regards to how the Regional Maritime University can optimize the utilization of a training ship after they acquire one, the respondents shared a variety of recommendations ranging from government and industrial collaboration to private sector involvement. Two respondents with over 10 years of experience in the maritime industry recommended a dual-purpose training ship model where the ship can be used for trading in addition to training. In the view of one, “The ship should be able to take advantage of the feeder market or any less challenging shipping market. This will help raise revenue to keep the project
The second person shared the same sentiments but with a different choice of words. In his opinion,

“It could also be scheduled for short turnaround commercial activities to generate revenue for the university and to provide a real training atmosphere for the students”.

4.4 Qualitative data from semi-structured interview

The researcher employed a semi-structured interview in an attempt to answer research questions 2 and 3 which are:

2. What will be the advantages and disadvantages of a training ship acquisition in the Regional Maritime University?

3. How can the Regional Maritime University optimize the benefits and mitigate the drawbacks of training ship acquisition?

In all, 7 semi-structured interviews were done with the help of two interview guides—one for countries that use or purport to use training ships in their METIs and the other for countries that do not use training ships in their METIs. The researcher interviewed 2 participants from Japan (a developed country that uses a training ship, 2 from the Philippines (a developing country that uses a training ship), 1 from the Netherlands (a developed country that does not use a T.S) and 2 from Ghana (a developing country that does not use a training ship). The responses given in the interviews are discussed in sections 4.4.1 and 4.4.2 below.

4.4.1 Advantages of Training Ship Acquisition in RMU

When asked about the advantages offered by training ships, respondent A who is a deck senior lecturer from the Regional Maritime University alluded to the fact that training ships do offer numerous advantages. He also gave an instance in the past when he had the opportunity to do his cadetship training after going through several application processes with shipping lines. He shared his opinion on the advantages of training ships as follows:
“One key benefit is to help in the completion of the essential part of the student’s training after school. Unless you want to veer into academia, there is no way you can get your certificate of competency if you don’t get the mandatory 12 months of sea time on board the ship. The difficulty is that, in Ghana, we don’t have a training ship so the cadet finishes school and he’s at the mercy of the shipowners. What happens is that most of the shipowners always want a ready-made officer but if we have a training ship, then we could draw up a roster that says that by the time one batch is done, they would have finished their training and another batch is going in. Also, there is that pride that you were trained on a vessel which belongs to the institution and the crew is going to make you feel at home because, unlike other multinational foreign vessels, you might end up being the only African making socialization difficult” (Respondent A, deck senior faculty, Ghana).

From the literature reviewed on the advantages offered by training ships presented in chapter two, it was noted that training ships offer real practical training experience to the cadets. Respondent G who is a training ship engine instructor from the Philippines also confirmed the same point and shared more opinions on the advantages of a training ship from the Philippino perspective after many years of experience as a training ship instructor. He shared his thoughts as follows:

“I think the advantage is to provide a realistic experience such as vibration, noise, temperature, humidity, smell, seasickness, and something like that. It also helps the students to develop interpersonal skills because once they are onboard the training vessel, they have to live in one room with eight other persons or sometimes six persons. The last one is to help offer time-consuming work training. For example, in the case of the simulator training, if you want to open a valve and then you just click a button, the valve automatically opens, but on board the training vessel, they have to open and close the big valves by themselves, and it takes time” (Respondent G, engine faculty, Philippines).
In the Regional Maritime University, Bernhard Schulte Shipmanagement (BSM), which is the only active recruiting company on campus takes the selected applicants through a series of training sessions at an early stage even before they go on board. The training which is guided by experienced instructors and lecturers reflects in their high performance when they go onboard their assigned vessels. Should the Regional Maritime University acquire a training ship, every student will undergo the guided training program right after completion under the supervision of qualified instructors and lecturers. Respondent C who is an engineering senior lecturer from the Regional Maritime University concurred with the researcher’s views and shared his opinion as follows:

“Training ships have more benefits than the other forms of training. The first point is that it gives us what we call guided training. That is what a lot of METIs in third-world countries are missing. Sea training is not to be provided by people on merchant ships since they are not tasked with that. They wouldn't know how to properly guide students in terms of the STCW, which talks about knowledge, understanding, and proficiency. For the merchant ships, their focus is on making money and not training so the ability to guide the person through the training becomes a challenge. But if you have a training ship, there is a program that you are following so before the person leaves the vessel, he's gone through that program and you are sure that every component or every system on board has been experienced by that person” (Respondent C, engine senior faculty, Ghana).

Additionally, the training ship unlike merchant ships has a structured program in safe and controlled surroundings under the supervision of the training ship instructors. This was the case with the Philippino training ship which the researcher got the opportunity to visit during an educational trip to one of their METIs. In the case of merchant ships, the main goal of the officers is to meet timelines from one port to the other to maximize profit which consequently hampers cadet training. A similar opinion was shared by Respondent E who has a lot of experience when it comes to training ships. Respondent
E who is a training ship deck instructor from Japan shared his opinion on the advantages of a training ship as follows:

“The training ship can provide a structured and tailor-made training program for the students. It can also be utilized to give flexibility to the academic program at institutions. For instance, if MET institutions have a training ship, then they can send the students on the ship anytime. In my research, of course, I’m also asking the people what the benefits of a training ship are, and most of the people say the same thing. The majority of the people who send the students on commercial ships say they are struggling with the scheduling of the academic program. Also on the training ship, the training environment is very controlled and safe since the training is well monitored by the training instructors. The final point is its large capacity as it can accommodate many students at the same time” (Respondent E, deck faculty, Japan).

4.4.2 Disadvantages of training ship acquisition in RMU
From the semi-structured interviews, a few disadvantages were deduced and captioned as follows: Human resource, financial or capital intensive, non-ocean-going, difficult to retrofit, lack cargo handling training, lack the commercial shipping business environment, and a high instructor-to-trainee ratio. Of these disadvantages, the financial cost, human resources and the lack of commercial aspects of shipping were the most shared views. When asked about the disadvantages offered by training ships, respondent B who is a training ship engine instructor from Japan shared the following opinion:

“I think the big part is the finance— the fuel cost, labour cost, and maintenance cost. This is a big issue. In our case, nowadays, fuel cost is increasing, that’s why we have reduced the time or distance of the voyages. We can only provide close or short-distance voyages. Another disadvantage is that it’s difficult to introduce the newest sophisticated technology making it difficult to retrofit” (Respondent B, engine faculty, Japan).
The acquisition of ships is a huge capital investment faced by shipowners globally. Bank loans, which are the commonest methods of ship financing are what most shipowners resort to in addition to their start-up capital. To address the issue of financial cost involved in the acquisition of ships, the Regional Maritime University in consultation with the Government of Ghana can resort to debt financing in the form of a bank loan from any of the big banks in the world or the World Bank. Respondent C who is an engineering senior lecturer from the Regional Maritime University shared a similar opinion on the disadvantages of training ships as follows:

“The key challenge is financial. I don’t see any bank that RMU will go to and be willing to offer a loan for a training ship which will not generate money for them to pay back unless it’s a loan or a sort of gift from another institution to RMU. For the human resource, Ghana has the professionals to run a successful training ship but having a proper running or operational arrangement, like that on the commercial vessels will be the challenge. That is one of the reasons that caused the demise of Black Star Line (Ghana’s first national shipping line) and that may be the two key challenges in my view” (Respondent C, engine senior faculty, Ghana).

On the part of respondent F, governmental and private sector support is key to addressing some of the financial costs regarding the acquisition of training ships. He indicated that in the case of the Philippines, the METIs are supported immensely by the government and other private sector stakeholders which helps to relieve them of some financial burden they would have to face. Respondent F who is a training ship deck instructor from the Philippines shed more light on the disadvantages associated with the acquisition of a training ship as follows:
“One is the cost associated with the acquisition, maintenance, and the learning. You know, once you acquire the training ship, it's not the end of the funding. I think the cost is the biggest part of the training ship. To solve this issue, maybe you need governmental support and maybe support from the shipping industry. Otherwise, one single institution cannot afford that training ship alone. Another issue is human resources because nowadays, many institutions struggle with qualified and competent instructors and educators. Also, on the training ship, there are no commercial activities so somehow, students lack that aspect” (Respondent F, deck faculty, Philippines).

4.4.3 How to optimize the benefits and mitigate the drawbacks of training ship acquisition in RMU
Several contributions were shared by the interviewees concerning how a training ship could be optimized to make the best use of it. Some of these points include the following: industry collaboration, standardized curriculum integration, provision of cargo handling training, discouraging political interference and increasing governmental support, encouraging private-sector investments and many more. When asked about the developments that can be made to optimize the utilization of a training ship in the Regional Maritime University should they acquire one, respondent A who is a deck senior lecturer from the Regional Maritime University shared the following opinion:

“I think we should come into some kind of collaboration with the ports because running a ship is very expensive and the school cannot do it alone. The ports (Tema and Takoradi) could decide to give us a berth so that any time the vessel is approaching them, it can come alongside for some days, take food, and stores, and then probably go on anchorage all for free. Going forward, we might have to create some kind of partnerships with industries such that they can decide that, okay, since we have this ticket, we can decide to buy paint for the maintenance of the ship. It's in our interest because you will produce the
human capital for us to work with, so why not? I also see that we might have our present syllabus reviewed. Because we don’t have a training ship, it looks a little bit skewed towards only academic work where you just do theory but once the training ship is there, then we would have to tweak it by probably using the Korean model where certain subjects are put in to prepare the candidates in going on board” (Respondent A, deck senior faculty, Ghana).

Merchant or commercial ships are notable for cargo handling, heavy bunker costs due to their commercial activities and a place where the cadet could do their 12-month mandatory seat time. Respondent F who is a training ship engine instructor from the Philippines shared his opinion on optimization factors as follows:

“I think there are three main points in my view. First, it should be able to provide cargo handling training so that the cadets can learn about the commercial aspects of shipping. Also, there is a need to consider alternative forms of fuel, such as ammonia, hydrogen or LNG help cut down the cost of bunker and at the same time help reduce global warming. Finally, the sea time should be reduced with the help of the training ship by globally adopting a formula that equates a certain number of months on the training ship to the STCW sea time. Some countries like Turkey and the USA are already applying this rule. In some universities in the USA for example, they count two months of onboard training as equal to six months of merchant ship onboard training” (Respondent F, deck faculty, Philippines).

In most countries that use training ships in their METIs, the government tends to interfere in one way or the other. Excessive interference could lead to politicization which could consequently disrupt the training program. This challenge was opined by the respondents from both Japan and the Philippines. Respondent C who is an engineering senior lecturer from the Regional Maritime University also shared a similar sentiment from the Ghanaian perspective as follows:
"As in the politicization of everything in Ghana, the government should reduce the political influence or interference in the running of the vessel. Rather, there should be immense governmental support. If possible, the paying of crew, fuelling of the vessel, and paying of charges should be taken care of by the government because it will be serving a national need. Also, private sector involvement would be key and will help sustain the running of the training ship where private enterprises and companies who are benefiting from the training RMU is providing as well as those players in the maritime industry can get committed or there can be arrangements where they can commit some amount annually to support the running of the vessel. Also, a ship management service which is devoid of the administration of the school should be in place to manage it professionally so it will not be out of place" (Respondent C, engine senior faculty, Ghana).

The training ship in itself does not guarantee an effective learning outcome but a good training program and well-experienced training instructors are what make the training effective. Also, the training ship when used in conjunction with merchant ship training allows for the cadets to learn the commercial aspect of shipping. Respondent E who is a training ship deck instructor from Japan shared the same opinion as follows:

"There should be a good training programme, qualified instructors on board and a good plan to put the students on the training ship. As I mentioned, there is no commercial activity with the training ship so there is financial pressure and the students have a different perspective of the operation of the ships. To have effective training, there should be a combination of a training ship and commercial ship training. There are many model cases like that in the US, South Korea, Japanese case, and some other countries like Poland where the METIs have training ships, but they also allow learning on the merchant ship” (Respondent E, deck faculty, Japan).
4.5 Summary of chapter

This chapter analyzed and presented the findings from the data gathered from the semi-structured interviews and survey responses. By using thematic and statistical analysis for both the qualitative and quantitative data from the interviews and surveys, the researcher inferred that the acquisition of training ships by METIs is a step in the right direction as the perceived advantages outweigh the perceived disadvantages and are further enhanced by optimization factors.
CHAPTER FIVE
DISCUSSION OF FINDINGS

5.1 Introduction
This chapter comprises the discussion segment of the paper based on the empirical findings of the study. It synthesizes the thematic analysis as well as the findings from both surveys and semi-structured interviews. A discussion on the form of training based on national context is examined comparatively based on the methodology adopted in chapter three by selecting specific METIs for the analysis and generalizing it to the nation. A SWOT analysis in each context is also done to augment the comparative analysis. How the three research questions were answered in this study by the researcher is also captured in this chapter.

5.2 Comparative analysis of the form of training based on National context

5.2.1 A developed country that uses a training ship in its METIs (Japan-JMETS)
A few METIs exist in Japan with the Japanese agency for Maritime Education and Training for Seafarers (JMETS) being a popular centre of excellence for maritime education and training. The institution can boast of 5 different training ships all of which are government-owned. These are shared by all the METIs, including 1 maritime university, 5 maritime colleges, and 3 technical schools. The aim of JMETS as an institution is to promote the steady upbringing of excellent seafarers for the safety and stabilization of maritime transportation. Additionally, it aims to contribute to the development of the world maritime industries by cooperating and coordinating with international organizations in maritime affairs and foreign training institutions for seafarers. In the case of the university, the students do 3 years of theoretical and conceptual studies in the classroom and 1 year of practical onboard training on the training ship.

- Learning outcomes: Apart from the fact that training ships offer both knowledge and skill-based learning, they also facilitate teamwork and problem-based skills. More often than not, the cadets are put into groups and given specific tasks to accomplish as a group. By virtue of this and by constant
groupings, the cadets develop interpersonal skills such as teamwork, leadership and communication skills.

- Costs: As discussed in chapter two of this paper, the costs of operating training ships are high with virtually no return on investments if it is solely used for training and no other commercial business such as chartering or hiring and short-sea shipping. Like all vessels, the cost component of training ships comprises the capital cost involved in acquiring the ship and other fixed costs. Additionally, there are components of operating and voyage costs should the vessel be put into use. The total cost involved in operating the 5 training ships of JMETS illustrated in Figure 4 of this paper is shown in the pie chart below.

**Figure 11**

*Total Cost for 5 Training Ships in a Fiscal Year*

![Pie chart showing the distribution of costs.](image)

- Educational costs: $6,570,000 (12%)
- Operating costs: $2,200,000 (4%)
- Labour costs: $12,700,000 (22%)
- Other costs: $35,700,000 (62%)

Source: Emi (2007)
### Table 6

**SWOT Analysis of Japan- JMETS**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strong maritime tradition and expertise in shipbuilding</td>
<td>1. High costs associated with maintaining and operating training ships</td>
<td>1. Collaboration with other countries to conduct joint training programs and knowledge exchange</td>
<td>1. Rising competition from other countries offering similar or alternative training solutions</td>
</tr>
<tr>
<td>2. Well-established training infrastructure for MET</td>
<td>2. High capacity of trainees impedes effective training and learning</td>
<td>2. Potential for revenue generation through offering services to other countries</td>
<td>2. Economic downturns affecting funding and investment in MET</td>
</tr>
<tr>
<td>3. Access to advanced technology and resources for ship training</td>
<td>3. Over-reliance on the training ship may put pressure may cause mechanical problems</td>
<td>3. Integration of emerging technologies to enhance training effectiveness</td>
<td>3. Adverse weather conditions and natural disasters impacting the availability and safety of training ships</td>
</tr>
<tr>
<td>4. Experienced and skilled maritime professionals</td>
<td>4. Requires continuous investment to upgrade and modernize training facilities</td>
<td>4. Expansion of maritime training programs to meet the global demand for skilled seafarers</td>
<td>4. Evolving regulatory requirements that may necessitate changes to training ship operations</td>
</tr>
</tbody>
</table>
5.2.2 A developing country that uses a training ship in its METIs (The Philippines-MAAP)

There are over 85 accredited METIs throughout the Philippines making the country a dominant force when it comes to maritime education and training across the Asian region and the world in totality. One very renowned maritime education and training institution in the Philippines is the Maritime Academy of Asia and the Pacific. The school can boast of two training ships MV Kapitan Gregorio OCA and MV Kapitan Felix OCA. According to Baylon et al. (2020) in 2020, DNV-GL granted accreditation to MAAP as the first institution in the area for ISO 21001:2018 Management systems for educational organizations. Similar learning outcomes and costs associated with training ships in the Japanese context exist for those in the Philippines.

• Learning outcomes: In addition to providing knowledge- and skill-based learning, the training ships also promote teamwork and problem-solving abilities. The cadets are frequently divided into groups and given objectives to complete collectively. The cadets gain interpersonal skills including teamwork, leadership, and communication skills through these frequent groupings. These are related to the three domains of learning as posited by Bloom's Taxonomy which comprises the cognitive (knowledge-based), affective (attitudes) and psychomotor (skill-based) domains.

• Costs: As reiterated earlier, operating training ships has significant operating
expenses and offers little return on investment if they are just utilized for training purposes and not for other commercial activities like chartering, hiring, or short-sea shipping. Like all ships, the training ships have a capital cost associated with purchasing them as well as other fixed expenditures. Since the vessels are used, there are additional elements of running and voyage expenditures which the institution cannot forego.

Table 7

<table>
<thead>
<tr>
<th>SWOT Analysis of the Philippines-MAAP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
</tr>
<tr>
<td>1. Large pool of potential seafarers due to a significant maritime workforce</td>
</tr>
<tr>
<td>2. Cost advantage in terms of operating a training ship compared to more developed countries</td>
</tr>
<tr>
<td>3. Strategic geographical location for maritime training and transit routes</td>
</tr>
</tbody>
</table>
### 5.2.3 A developed country that does not use a training ship but simulators (The Netherlands-Maritime Institute Willem Barentsz)

The use of simulators in maritime education and training is prioritized heavily in the Netherlands. The Maritime Institute Willem Barentsz comprises a maritime university which is the centre of excellence in maritime training and simulation in the Netherlands. With simulation-based training, the students can use many cutting-edge simulator facilities to augment the theoretical and conceptual knowledge they acquire from lecture-based learning. All Dutch maritime cadets have access to a full mission simulator training centre that includes the national maritime simulation training facilities, a seagoing training and survey vessel that is owned by the centre.

- **Learning Outcomes:** According to Emi (2007), the learning outcomes associated with the use of simulation-based training can be categorized into:

<table>
<thead>
<tr>
<th>4. Government support and initiatives to strengthen the MET sector</th>
<th>4. Limited exposure to diverse maritime environments and international standards</th>
<th>4. Meeting the global demand for skilled seafarers by producing competent graduates</th>
<th>4. Vulnerability to natural disasters and weather conditions affecting training ship operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Cultural affinity toward seafaring careers provides a steady supply of trainees</td>
<td>5. Too many competing maritime institutions in the same country for a common place</td>
<td>5. Strengthening ties with the international shipping industry to improve job opportunities for graduates</td>
<td>5. Over-reliance on the maritime sector for economic development thereby neglecting other areas</td>
</tr>
</tbody>
</table>

**Source:** Author

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70
skill-based learning outcomes and knowledge-based learning outcomes. The acquisition of basic declarative knowledge and other lower-level cognitive learning outcomes generally happen before training. Prior to task-specific simulator training, building a knowledge base helps to prevent overloading trainees' cognitive abilities for problem-solving. Simulator training thus produces results that are both knowledge-based (since task-specific comprehension is required for training) and skill-based (because technical abilities are required for task performance). Instructors also rely upon scaffolding, debriefing, and meta-reflections to promote effective learning in current simulator-based MET.

- Costs: Simulator-based training is also a potent and economical alternative that enables teachers to design a variety of reproducible scenarios that they would otherwise not be able to train owing to the ethical, financial, and safety drawbacks associated with real-world training activities. According to Tuoriniemi and Schott-Baer (2008), freestanding simulation centres have annual maintenance expenditures of at least $15,000 and start-up costs ranging from $200,000 to $1.6 million.

Table 8
SWOT Analysis of the Netherlands-Maritime Institute Willem Barentsz

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advanced simulation technologies for realistic and immersive training</td>
<td>1. Limited exposure to real-life conditions and challenges faced on physical ships</td>
<td>1. Exporting simulator-based training expertise to other countries</td>
<td>1. Perceived lower authenticity and value of simulators compared to physical training ships</td>
</tr>
<tr>
<td>2. Flexibility in conducting training</td>
<td>2. Potential lack of practical skills</td>
<td>2. Collaboration with academic</td>
<td>2. Competition from other</td>
</tr>
</tbody>
</table>

71
<table>
<thead>
<tr>
<th>Programs and adjusting to different scenarios</th>
<th>and experience among trainees</th>
<th>Institutions to offer comprehensive maritime education</th>
<th>Countries offering advanced simulator-based training</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Cost efficiency compared to maintaining physical training ships</td>
<td>3. Possible resistance from traditional maritime education institutions and stakeholders</td>
<td>3. Integration of emerging technologies to enhance simulator capabilities</td>
<td>3. Potential resistance to change within traditional maritime education systems and cultures</td>
</tr>
<tr>
<td>4. Comprehensive coverage of various maritime environments and vessel types</td>
<td>4. Need for continuous investment in simulator technology upgrade and maintenance</td>
<td>4. Reducing environmental impact by minimizing the reliance on physical training ship operations</td>
<td>4. Rapid technological advancements requiring regular updates and investments</td>
</tr>
<tr>
<td>5. Availability of highly skilled trainers and instructors</td>
<td>5. Difficulty in replicating all aspects of shipboard operations and emergencies</td>
<td>5. Capacity to replicate and train for specific scenarios that may be limited or risky in real-life</td>
<td>5. Dependence on external factors such as power supply and maintenance for uninterrupted simulator operations</td>
</tr>
</tbody>
</table>

**Source:** Author
5.2.4 A developing country that does not use a training ship in its METI but intends to do so (Ghana-RMU)

The Regional Maritime University (RMU) in Ghana is a leading maritime education and training institution in West Africa. However, the university does not own or operate a training ship. Instead, the RMU uses simulators in its training programs, with even a few simulator facilities available for student use. The university previously had partnerships with four shipping companies to provide students with practical experience on board commercial vessels. These were Bernhard Schulte Shipmanagement (BSM), Celebrity Cruises, Swire Pacific International, and the Pacific International Lines (PIL). Currently, only BSM still holds an agreement in the form of a MoU to recruit and train RMU graduates as cadets whereas only a handful of the students specifically the ladies get the opportunity to be recruited by Celebrity Cruises as and when they are recommended. Drawing from the case of Japan and the Philippines, if a training ship is acquired by the school, this will remove the hurdle of not getting a ship to be trained on by most students who have to go out there and fight their fate. A SWOT analysis of the case of RMU who does not own a training ship is also shown below.

Table 9

<table>
<thead>
<tr>
<th><strong>Strengths</strong></th>
<th><strong>Weaknesses</strong></th>
<th><strong>Opportunities</strong></th>
<th><strong>Threats</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Experienced and skilled maritime professionals</td>
<td>1. Limited resources and infrastructure to build and maintain a training ship</td>
<td>1. Attracting international partnerships and collaborations to support the establishment of a training ship</td>
<td>1. Limited financial resources and potential competition for funding from other sectors</td>
</tr>
<tr>
<td>2. High-quality training programs</td>
<td>2. Lack of expertise and</td>
<td>2. Developing comprehensive</td>
<td>2. Complex logistics and</td>
</tr>
<tr>
<td>that comply with international standards</td>
<td>experience in operating and managing a training ship</td>
<td>maritime training programs tailored to global industry requirements</td>
<td>infrastructure challenges for establishing and operating a training ship</td>
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<tr>
<td>------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3. Strategic location for maritime trade and transit in the West African region</td>
<td>3. Insufficient availability of advanced technologies and training equipment</td>
<td>3. Enhancing employment prospects for local seafarers and contributing to economic growth</td>
<td>3. Potential brain drain as skilled seafarers seek opportunities in more advanced maritime nations</td>
</tr>
<tr>
<td>4. Commitment and support for developing MET. Eg. Fund raising by RMU as part of its 65th anniversary</td>
<td>4. Potential difficulty in attracting skilled trainers and instructors</td>
<td>4. Strengthening cooperation within the West African region for joint training initiatives</td>
<td>4. Need for continuous monitoring and compliance with international regulatory standards</td>
</tr>
<tr>
<td>5. Cultural affinity toward seafaring careers and a history of coastal activities</td>
<td>5. Need for establishing robust regulatory frameworks for maritime education</td>
<td>5. Integration of technology-enabled remote learning and virtual simulators to supplement a training ship program</td>
<td>5. High level of graduate joblessness or difficulty in finding training vessels for cadetship</td>
</tr>
</tbody>
</table>

**Source:** Author
5.3 How have the research questions been answered?

5.3.1 How will the acquisition of a training ship contribute to the educational quality of the Regional Maritime University?

According to Sustainable Development Goal 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030, education is crucial to the contribution of the sustainable development of our world today. The goal of every student who enrolls in the institution is to get employed by a shipping line after completing a degree in either nautical science or marine engineering. As inferred from the findings of the study, the educational quality of the Regional Maritime University is dependent on three factors: increased employability prospects, enhanced reputation and improved enrolment.

The employability prospects of graduates from the Regional Maritime University will be significantly increased should the school acquire a training ship. Due to the minimum number of shipping lines that the school has an MoU or partnership with, the average student after completing a programme will have to personally go out to the job market to find employment and the chances of getting recruited on such ships are very slim. This consequently leads to frustration after years of joblessness and the student is then pressured to find other sources of employment thus accepting anything which comes their way. In other jurisdictions such as the Philippines and Japan where training ships are used for maritime education and training, the institutions enter into a form of agreement with the shipping lines such that when the students complete their studies, they are guaranteed a place of employment on board the vessel. Moreover, the ship owners are encouraged to sponsor the students because they are assured the students have grasped the rudiments of onboard training and will not have to spend money in recruiting and training them as cadets. Therefore, if the Regional Maritime University makes a concerted effort to acquire a training ship, the challenge of unemployability will be minimized.

Another point worthy of mention is that the acquisition of a training ship by the Regional Maritime University will enhance the reputation of the University. The
university's reputation is mediated by the relationship between social contributions, the environment, research and development, student guidance, university heritage, university trustworthiness, and student fulfilment. Therefore, building their reputation is crucial if they want to satisfy students' expectations and get a competitive edge in the competitive educational business. When the level of training is extremely high, the confidence and overall performance of cadets will also be improved which will leave a good reputation for the institution and attract more maritime employees.

Lastly, acquiring a training ship by the Regional Maritime University will improve student enrolment at the university as a consequence of its enhanced reputation as discussed earlier. Maritime education and training across the African region is somewhat minimal as the number of maritime universities is woefully inadequate even though there is a significant number of maritime high schools and colleges or maritime training centres. The Regional Maritime University of Ghana and the Arab Academy for Science, Technology and Maritime Transport of Egypt currently stand as the only accredited and fully-fledged maritime universities on the continent. The Arab Academy for Science, Technology and Maritime Transport of Egypt has a training ship *AIDA IV* which was donated by the Japanese government in 1992 and has made the institution the centre of excellence for maritime education and training across the North and East African subregion. This form of merely monopolistic advantage offers a strategic opportunity to the Regional Maritime University to also enrol all students across the West and Central African region who have plans of becoming seafarers or working in the maritime sector. Thus, the acquisition of a training ship will thereby shoot up student enrolment from other parts of West and Central Africa which could even increase the membership status of the university as it currently resides with the republics of Cameroon, The Gambia, Ghana, Liberia and Sierra Leone.
5.3.2 What will be the advantages and disadvantages of a training ship acquisition in the Regional Maritime University?

As elaborated in the previous section of this chapter, a training ship in the Regional Maritime University would contribute to the educational quality of the university by increasing the employment prospects of graduates on seagoing vessels which will go a long way in enhancing the reputation of the university and thereby improving student enrolment. Additionally, the acquisition of a training ship by the Regional Maritime University will benefit the institution in so many ways despite a few disadvantages. First, it will allow students to complete the STCW requirement of 12 months of sea time for cadetship training when it is used in conjunction with training on board a commercial ship. This way, graduates from the Regional Maritime University can be assured of proper cadetship training right after school under the supervision of training instructors from the institution. Furthermore, the running of a well-structured program in conjunction with qualified and experienced instructors will provide real practical training to RMU graduates. This way, every theoretical knowledge that is internalized by the students is put into practice thereby promoting experiential learning which will consequently promote competency on the job. Moreover, the acquisition of a training ship by the Regional Maritime University will help provide real practical training to over 100 students at the same time, unlike merchant vessels where only a few cadets get the opportunity to be trained. This allows for the development of interpersonal skills through socialization as the students will tend to learn from one another.

Despite all these advantages posed by training ships, a few disadvantages are encountered in their acquisition. First, it is capital-intensive to acquire and run a training ship effectively. The Regional Maritime University alone cannot purchase a training ship as the capital cost is alarming and in the millions of dollars. At best, the institution can resort to debt financing in the form of a bank loan in addition to its capital to afford it. Additionally, the operational costs (fuel and crew costs) and maintenance costs are extremely high even though it does not go on long ocean voyages. As a result of the training ship’s inability to go on long ocean voyages, it
lacks the commercial aspect of shipping so students do not get to have a feel of how commercial vessels operate. Also, because training ships lack the cargo-carrying capacity that merchant ships do, the students do not get to have experience in cargo handling training. Last but not least, the instructor-to-trainee ratio is high because of the huge number of cadets which tends to affect the quality of training.

5.3.3 How can the Regional Maritime University optimize the benefits and mitigate the drawbacks of training ship acquisition?

To make the best use of a training ship at the Regional Maritime University, certain actions need to be taken to mitigate its acquisition's drawbacks. To begin with, the various governments that have a stake in the university should provide the financial assistance the Regional Maritime University needs to run a successful training ship. They could budget a certain amount of money to take care of some of the operational and maintenance costs to ensure that the running of the vessel is sustainable. Notwithstanding the governmental support, political interference should be completely discouraged. Additionally, the training ship should be combined with merchant ship training so that the cadets can know the commercial aspect of the shipping business and also be exposed to cargo handling training which is a disadvantage of training ships. Also, there should be a strong collaboration with other industry players such as the ports that can help to also provide a berth to the vessel in case it approaches the port. Moreover, private-sector involvement should be encouraged. This way, the vessel could be hired out to private individuals when it's free for short-sea shipping activities which can help garner funds for the running of the vessel. To prevent corruption and win investor confidence, the training ship should be outsourced to a professional and competent ship management company such as Bernhard Schulte Shipmanagement which already has an MoU with the university. Last but not least, a dual model of training and trading should be adopted so that the training ship does not only offer training to the cadets but could also be used for trading or short-sea shipping. As a result, the Regional Maritime University can gather extra money from the trading activities which could help to cut down some of the daily operational costs of the vessel.
5.4 Summary of Chapter

This chapter discussed the findings from the previous chapter of the paper. The major indicators of the educational quality at the Regional Maritime University were identified after the analysis and discussed in addition to the advantages, disadvantages and optimization measures with the use of training ships. A comparative and SWOT analysis of the use of training ships from the perspectives of selected countries was presented to draw inspiration to the need for RMU to look into a training ship acquisition. The next chapter concludes the study and makes recommendations for future research.
CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion
This research serves as a blueprint for Maritime Education and Training Institutions (METIs) across the world to make strides to improve the standard of maritime education and training through the acquisition and use of training ships in their institutions. Training ships offer real practical training as compared to the other forms of training prescribed by the STCW Convention. It provides familiarization training to cadets so that they get familiar with the onboard equipment when they finally work on merchant ships. By dint of this practical benefits offered by training ships, cadets turn out to perform very well which subsequently translates into honing their skills. In conclusion, although training ships have their attended disadvantages such as high operating and maintenance costs, the benefits they offer to METIs outweigh these drawbacks and RMU should make a concerted effort to achieve one.

6.2 Recommendations
To acquire a training ship, METIs should develop a comprehensive financial plan which includes a detailed cost-benefit analysis, long-term funding strategies and potential revenue streams to ensure sustainability. Secondly, there is the need to enhance stakeholder collaboration by establishing strong partnerships between METIs, industry stakeholders and government agencies to facilitate the acquisition of training ships. This could include exploring opportunities for partnerships in ship financing, shared utilization of training ships and collaboration on training programs. Thirdly, there is the need for the Regional Maritime University to prioritize capacity building by investing in building the necessary infrastructure, facilities and human resources to support the acquisition and operation of a purported training ship for the institution. This includes hiring experienced maritime faculty or training instructors, providing the needed training resources and maintaining state-of-the-art facilities for practical training. Another point worthy of mention is the development and implementation of effective maintenance procedures in order to increase its life span and ensure continuous operation. To achieve this, regular inspections, adherence to
international safety standards and proactive measures should be undertaken to reduce operational downtime and associated costs. In order to enhance the effectiveness of training and broaden access to training opportunities, it will be useful to explore alternative training approaches through the evaluation of the feasibility of integrating new technologies such as simulators and virtual training platforms into the curriculum. Last but not least, there is the need to strengthen international collaborations by fostering partnerships with reputable international maritime institutions. This will facilitate knowledge exchange, student exchange programs, joint research projects and shared utilization of training ships leading to greater efficiencies and enhanced learning outcomes.

6.4 Limitations and future research

Two main methodological limitations were observed at the end of the study. First, the sampling error created limits the generalizability of the findings and conclusions to the Regional Maritime University or a small subset of institutions. Secondly, the researcher’s preconceived notions and perspectives on training ships influenced the analysis and conclusions drawn thereby leading to subjectivity bias. A theoretical limitation that can be linked to this study is the complexity of variables related to the acquisition of training ships such as financial considerations, curriculum design, stakeholder engagement, and industry collaboration. Capturing such complexity within a single dissertation may be challenging, potentially leading to limitations in comprehensive theoretical frameworks.

Future research should look into a cost-benefit analysis for a training ship and why it should be prioritized over the other methods of training. Also, an investigation of the link between the availability of training ships and employability within the maritime sector could be done to explore the correlation between training ship experience and job prospects, as well as the overall contribution to reducing the skill gap in the industry.
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Appendices
Appendix A

Dear Participant,

Thank you for agreeing to participate in this research survey, which is carried out in connection with a Dissertation which will be written by the interviewer, in partial fulfilment of the requirements for the degree of Master of Science in Maritime Affairs at the World Maritime University in Malmo, Sweden.

The topic of the Dissertation is “Analysis of the pros and cons of the acquisition of training ships by METIs: A Case Study of the Regional Maritime University”.

The information provided by you in this interview will be used for research purposes and the results will form part of a dissertation, which will later be published online in WMU’s digital repository (maritime commons) subject to final approval of the University and made available to the public. Your personal information will not be published. You may withdraw from the research at any time, and your personal data will be immediately deleted.

Anonymised research data will be archived on a secure virtual drive linked to a World Maritime University email address. All the data will be deleted as soon as the degree is awarded.

Your participation in the interview is highly appreciated.

Student's name Frimpong Jeremiah Yaw
Specialization Maritime Education and Training
Email address w1011464@wmu.se

***

I consent to my personal data, as outlined above, being used for this study. I understand that all personal data relating to participants is held and processed in the strictest confidence, and will be deleted at the end of the researcher’s enrolment.

Name: ..............................................................................................................

Signature: ...........................................................................................................

Date: ...............................................................................................................
1. **Introduction:**
   a. Please introduce yourself and your role at the [Name of METI/Organization].
   b. How long have you been involved in maritime education and training?
   c. Can you describe the role of Maritime Education and Training Institutions (METIs) in shaping maritime professionals?

2. **Acquisition of Training Ships:**
   a. Can you provide insights into the process of acquiring training ships by METIs and how [Name of METI] acquired its training ship?
   b. What were/are the main motivations behind the decision to acquire training ships?

3. **Pros of Acquiring Training Ships:**
   a. From your experience, what are/will be the positive outcomes of having a training ship at [Name of METI]?
   b. How do/will training ships contribute to improving the practical skills of the students?
4. **Cons of Acquiring Training Ships:**
   
a. What are the drawbacks or challenges associated with the acquisition of training ships and how can they be addressed?

b. How can these challenges affect the overall training experience for the students?

5. **Impact on Students and Teaching and Learning Approaches:**
   
a. How is/will the training ship being/be integrated into the curriculum at [Name of METI]?

b. Are there any specific teaching and learning strategies that have been particularly effective in utilizing training ships as a learning resource?

c. List any impact of training ships on the educational quality of METIs.

6. **Comparison with other Training Methods:**
   
a. In your opinion, how does the use of training ships compare to other methods of training such as simulator or merchant ship training?

b. Are there specific areas where training ships excel over the other training methods? If yes, what are they?

7. **Industry Collaboration:**
   
a. How does/will the presence of training ships facilitate stronger partnerships/collaboration with the maritime industry?

b. How do/will these partnerships/collaborations benefit both the students and the [Name of METI] itself?

8. **Future Development:** In your opinion, what are the potential future developments that can be made to optimize the utilization of training ships at METIs?
9. **Other:** Is there any additional information or insights you would like to add or share regarding the acquisition of training ships and its impact on maritime education?
Appendix C

SEMI-STRUCTURED INTERVIEW GUIDE
(COUNTRIES THAT DO NOT USE TRAINING SHIPS IN THEIR METIs)

1. Introduction:
   d. Please introduce yourself and your role at the [Name of METI/Organization].
   e. How long have you been involved in maritime education and training?
   f. Can you describe the role of Maritime Education and Training Institutions (METIs) in shaping maritime professionals?

2. Current Training Methods:
   a. Could you describe the primary training methods used at [Name of METI], such as simulator-based training or merchant training?
   b. What are the key reasons for choosing these training methods over the acquisition of a training ship?

3. Advantages of Current Training Methods:
   c. From your perspective, what are the main advantages of simulator/merchant ship training over training ships?
   d. How do these methods effectively prepare students for real-world maritime challenges?

4. Disadvantages of not having a Training Ship:
c. In your opinion, what are the potential drawbacks or limitations of not having a training ship at [Name of METI]?
d. How do/will training ships contribute to improving the practical skills of the students?

5. **Comparison with the Training Ship Method:**
   c. In your opinion, how does the effectiveness of your current training methods compare with those used in METIs with training ships?
d. Are there any specific areas where having a training ship might offer significant advantages? If yes, what are they?

6. **Industry Collaboration:**
   c. How does your METI collaborate with the maritime industry to ensure practical exposure for students without a training ship?
d. How do/will these partnerships/collaborations benefit both the students and the [Name of METI] itself?

7. **Future Considerations:** Are there any plans or discussions within [Name of METI] regarding the potential acquisition of a training ship in the future? If yes, how do you envisage integrating the training ship if such plans materialize?

8. **Other:** Is there any additional information or insights you would like to add or share regarding the acquisition of training ships and its impact on maritime education or regarding your current training methods at [Name of METI]?
Dear participants,

Thank you in advance for your participation in this survey. My name is Jeremiah Yaw Frimpong from Ghana and currently a student of the World Maritime University in Sweden pursuing a Master's Degree in Maritime Affairs with a specialization in Maritime Education and Training. The purpose of this survey is to gather data for my dissertation titled "Analysis of the pros and cons of the acquisition of training ships by METIs: A Case Study of the Regional Maritime University". The reason I would like your participation in this survey is so that I can better understand your opinion on the topic of training ships which will provide valuable insights and findings that can impact maritime education and training. Your honesty and openness is important. If you agree to participate, this online survey will take about 25-30 minutes to complete. There are NO right or wrong answers. Do not worry about spelling, grammar or typos. Please check the radio button under ‘CONSENT’ to confirm that you agree to participate and understand that this survey is completely anonymous.

**PRIVACY STATEMENT**: All data collected in this survey will be kept strictly confidential and used solely for research purposes. Your responses will be aggregated and anonymized, and no personally identifiable information will be disclosed. The data will be stored securely and will only be accessible to the researcher.

NB: In case of any ambiguity, you can please contact the researcher via the email addresses below: w1011464@wmu.se jeremiah.frimpong123@gmail.com
CONSENT
By continuing with this survey, you are indicating your consent to participate. Please be assured that your participation is entirely voluntary, and you can withdraw at any time without any consequences.

- I agree to participate and understand that this survey is completely anonymous.
- I choose not to participate and will immediately alert another colleague or other members.

SECTION A: Respondent Information

1. What is your role at the Regional Maritime University (RMU) or any other Maritime Education and Training Institution (METI)?
   a. Academic staff
   b. Administrative staff
   c. Student
   d. Other (Please specify) __________

2. What is your highest level of education?
   a. Undergraduate
   b. Diploma
   c. Bachelor’s degree
   d. Master’s degree
   e. Doctorate degree
   f. Postdoctoral

3. What is your gender?
   a. Male
   b. Female
   c. Other

4. How old are you?
   a. Under 25
   b. 25-34
5. How many years of experience do you have in the maritime industry?

   a. Less than 1 year
   b. At least 1 year and at most 3 years
   c. At least 4 years and at most 6 years
   d. At least 7 years and at most 9 years
   e. 10 years or more

   SECTION B: Implications of Introducing a Training Ship in METIs

6. Do you believe introducing a training ship would provide practical experience to students?

   a. Strongly Agree
   b. Agree
   c. Neutral
   d. Disagree
   e. Strongly Disagree
   f. I don’t know

7. How would a training ship contribute to the opportunities for maritime education and training?

   

8. What challenges do you foresee with introducing training ships in METIs?
9. Can you rate the overall impact of introducing a training ship on the quality of maritime education and training?
   a. Extremely positive
   b. Somewhat positive
   c. Neutral
   d. Somewhat negative
   e. Extremely negative
   f. I don’t know

SECTION C: Pros and Cons of the Acquisition of a Training Ship at RMU

10. Do you think the acquisition of a training ship at RMU is necessary for maritime education and training?
   a. Yes
   b. No
   c. Unsure

11. What are the potential benefits of acquiring a training ship at RMU?

12. What are the potential drawbacks or challenges of acquiring a training ship at RMU?

13. How do you think the acquisition of a training ship would impact the reputation of RMU?
14. Do you believe the cost of acquiring and maintaining a training ship is justifiable given the potential benefits?

a. Yes
b. No
c. Unsure

SECTION D: Optimizing the Use of a Training Ship at RMU

15. How can RMU make the best use of a training ship for its maritime education and training programs?

16. What curriculum changes do you believe are necessary to effectively integrate the use of a training ship into maritime education and training?

17. Do you believe RMU has the necessary infrastructure to support the use of a training ship?

a. Yes
b. No
c. Unsure
18. How important is faculty training in the optimal use of a training ship for maritime education and training?

a. Not at all important
b. Slightly important
c. Moderately important
d. Very important
e. Extremely important
f. I don’t know

19. What are your recommendations for ensuring safety in the use of a training ship?

SECTION E: Impact of Training Ships on Educational Quality at RMU

How strongly do you agree or disagree with the following statements about training ships?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. Acquiring training ships by METIs enhances the practical training experience for students</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>21. The acquisition of training ships by METIs positively impacts students' understanding of maritime operations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>22. Training ships provided by METIs boost students' confidence in their future maritime careers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>23. The presence of training ships improves the overall student enrolment in maritime education and training</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
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<tr>
<td>24. The acquisition of training ships by ☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>☐</td>
</tr>
</tbody>
</table>
METIs contributes to the university's reputation in the maritime industry

25. The availability of training ships enhances students' hands-on skills development

26. METIs' investment in training ships ensures a good balance between theoretical and practical learning experiences

27. Students have sufficient access to training ship resources (facilities, equipment, etc.) for effective learning

28. The acquisition of training ships offers students exposure to other professionals in the maritime industry

29. METIs' partnership in providing training ships positively influences students' employability prospects after graduation

30. Do you think other METIs should also consider acquiring a training ship?
   a. Yes
   b. No
   c. Unsure

31. Please provide any other comments or suggestions you may have regarding the acquisition of a training ship at RMU or other METIs.
SECTION F: Comparing METIs

32. How does the quality of education at METIs with training ships compare to those without?
   a. Much higher
   b. Somewhat higher
   c. About the same
   d. Somewhat lower
   e. Much lower
   f. I don’t know

33. How does the hands-on training at METIs with training ships compare to those without?
   a. Much better
   b. Somewhat better
   c. About the same
   d. Somewhat worse
   e. Much worse
   f. I don’t know

34. In your opinion, what is the impact of having a training ship on the overall student experience at METIs?

35. Do you think the costs associated with maintaining a training ship outweigh the benefits at METIs?
   a. Yes
   b. No
   c. Unsure

36. How does the global reputation of METIs with training ships compare to those without?
   a. Much better
b. Somewhat better
c. About the same
d. Somewhat worse
e. Much worse
f. I don’t know

37. How would the introduction of a training ship affect job opportunities for graduates from METIs?

38. Do you believe that a training ship contributes significantly to the overall skills development of students at METIs?

a. Yes
b. No
c. Unsure

39. What benefits do METIs with training ships have over those without?

40. Any other comments, observation, or insights you would like to share about the role of training ships in METIs?
## Appendix E

### Item-Total Statistics for Reliability tests

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Description</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Acquiring training ships by METIs enhances the practical training experience for students</td>
<td>39.65</td>
<td>37.209</td>
<td>.743</td>
<td>.916</td>
</tr>
<tr>
<td>2.</td>
<td>The acquisition of training ships by METIs positively impacts students' understanding of maritime operations</td>
<td>39.60</td>
<td>39.262</td>
<td>.611</td>
<td>.923</td>
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<tr>
<td>3.</td>
<td>Training ships provided by METIs boost students' confidence in their future maritime careers</td>
<td>39.75</td>
<td>37.517</td>
<td>.622</td>
<td>.923</td>
</tr>
<tr>
<td>4.</td>
<td>The presence of training ships improves the overall student enrolment in maritime education and training</td>
<td>39.28</td>
<td>43.002</td>
<td>.385</td>
<td>.931</td>
</tr>
<tr>
<td>5.</td>
<td>The acquisition of training ships by METIs contributes to the university's reputation in the maritime industry</td>
<td>39.68</td>
<td>35.813</td>
<td>.827</td>
<td>.911</td>
</tr>
<tr>
<td>6.</td>
<td>The availability of training ships enhances students' hands-on skills development</td>
<td>39.56</td>
<td>37.381</td>
<td>.742</td>
<td>.916</td>
</tr>
<tr>
<td>7.</td>
<td>METIs' investment in training ships ensures a good balance between theoretical and practical learning experiences</td>
<td>39.62</td>
<td>35.888</td>
<td>.835</td>
<td>.910</td>
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<tr>
<td><strong>8. Students have sufficient access to training ship resources (facilities, equipment, etc.) for effective learning</strong></td>
<td>39.74</td>
<td>35.790</td>
<td>.818</td>
<td>.911</td>
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<tr>
<td><strong>9. The acquisition of training ships offers students valuable networking opportunities in the maritime industry</strong></td>
<td>39.66</td>
<td>37.639</td>
<td>.725</td>
<td>.917</td>
<td></td>
</tr>
<tr>
<td><strong>10. METIs' partnership in providing training ships positively influences students' employability prospects after graduation</strong></td>
<td>39.71</td>
<td>35.621</td>
<td>.786</td>
<td>.913</td>
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Appendix F

Tests of Normality

<table>
<thead>
<tr>
<th>Description</th>
<th>Kolmogorov-Smirnova Statistic</th>
<th>df</th>
<th>Sig.</th>
<th>Shapiro-Wilk Statistic</th>
<th>df</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>1. Acquiring training ships by METIs enhances the practical training experience for students</td>
<td>.336</td>
<td>144</td>
<td>&lt;.001</td>
<td>.699</td>
<td>144</td>
<td>&lt;.001</td>
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<tr>
<td>2. The acquisition of training ships by METIs positively impacts students' understanding of maritime operations</td>
<td>.344</td>
<td>144</td>
<td>&lt;.001</td>
<td>.717</td>
<td>144</td>
<td>&lt;.001</td>
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<tr>
<td>3. Training ships provided by METIs boost students' confidence in their future maritime careers</td>
<td>.332</td>
<td>144</td>
<td>&lt;.001</td>
<td>.739</td>
<td>144</td>
<td>&lt;.001</td>
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<tr>
<td>4. The presence of training ships improves the overall student enrolment in maritime education and training</td>
<td>.472</td>
<td>144</td>
<td>&lt;.001</td>
<td>.531</td>
<td>144</td>
<td>&lt;.001</td>
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<tr>
<td>5. The acquisition of training ships by METIs contributes to the university's reputation in the maritime industry</td>
<td>.334</td>
<td>144</td>
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<td>.695</td>
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<tr>
<td>6. The availability of training ships enhances students' hands-on skills development</td>
<td>.365</td>
<td>144</td>
<td>&lt;.001</td>
<td>.656</td>
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7. METIs' investment in training ships ensures a good balance between theoretical and practical learning experiences

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8. Students have sufficient access to training ship resources (facilities, equipment, etc.) for effective learning

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9. The acquisition of training ships offers students valuable networking opportunities in the maritime industry

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10. METIs' partnership in providing training ships positively influences students' employability prospects after graduation

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<th>a. Lilliefors Significance Correction</th>
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### Appendix G

**Hypothesis Test Summary by Role (Kruskal-Wallis Test)**

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test</th>
<th>Sig.&lt;sup&gt;a,b&lt;/sup&gt;</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  The distribution of ‘Acquiring training ships by METIs enhances the practical training experience for students’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.017</td>
<td>Reject the null hypothesis.</td>
</tr>
<tr>
<td>2  The distribution of ‘The acquisition of training ships by METIs positively impacts students' understanding of maritime operations’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.035</td>
<td>Reject the null hypothesis.</td>
</tr>
<tr>
<td>3  The distribution of ‘Training ships provided by METIs boost students' confidence in their future maritime careers’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.026</td>
<td>Reject the null hypothesis.</td>
</tr>
<tr>
<td>4  The distribution of ‘The presence of training ships improves the overall student enrolment in maritime education and training’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.810</td>
<td>Retain the null hypothesis.</td>
</tr>
<tr>
<td>5  The distribution of ‘The acquisition of training ships by METIs contributes to the university's reputation in the maritime industry’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.815</td>
<td>Retain the null hypothesis.</td>
</tr>
<tr>
<td>6  The distribution of ‘The availability of training ships enhances students' hands-on skills development’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.007</td>
<td>Reject the null hypothesis.</td>
</tr>
<tr>
<td></td>
<td>The distribution of ‘METIs' investment in training ships ensures a good balance between theoretical and practical learning experiences’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.002</td>
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<tr>
<td>7</td>
<td>The distribution of ‘Students have sufficient access to training ship resources (facilities, equipment, etc.) for effective learning’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>8</td>
<td>The distribution of ‘The acquisition of training ships offers students valuable networking opportunities in the maritime industry’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>9</td>
<td>The distribution of ‘METIs' partnership in providing training ships positively influences students' employability prospects after graduation’ is the same across categories of Roles.</td>
<td>Independent-Samples Kruskal-Wallis Test</td>
<td>.819</td>
</tr>
</tbody>
</table>

a. The significance level is 0.050
b. Asymptotic significance is displayed.