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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**INTRODUCTION OF ELEARNING –
ASSESSMENT AND ITS IMPACT ON THE
FIJIAN SEAFARERS.**

By

MOHAMMED TASLIM
Fiji

A dissertation submitted to the World Maritime University in partial
Fulfilment of the requirement for the award of the degree of

MASTER OF SCIENCE
In
MARITIME AFFAIRS

(MARITIME EDUCATION & TRAINING)

2019

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 personal views and are not necessarily endorsed by the University.

(Signature): 

(Date): **24th September 2019**

Supervised by: **Dr. Johan Bolmsten**

Supervisor's affiliation:

Acknowledgments

My gratitude goes to Almighty Allah (SWT) for giving me strength in completing this research. A special appreciation to Dr. Johan Bolmsten (Principal Supervisor) who was always ready to guide me whenever I ran into trouble or had a question related to my research. Dr. Bolmsten consistently allowed this study to be my work but steered me in the right direction whenever needed. Special thanks to the HOD-Maritime Education and Training – Professor Michael Manuel and the entire MET staff and students. The experts from Fiji who were involved in providing data and information for this research project; without their passionate participation and input, this research would not have been successful.

I would also like to acknowledge the current Government of Fiji, my sponsor (AMSA) for sponsoring me and allowing me to study at the World Maritime University. Sincere appreciation to the former CEO – Fiji Maritime Academy (Captain Herath Anura) and the current CEO (Mr. Mahesa Abeynayake), the Vice-Chancellor of Fiji National University (Professor Nigel Healey), DEAN – College of Engineering, FNU (Mr. Salabogi Mavoa), Registrar – FNU (Ms. Sarita Harish), President of Tabia Masjid (Mr. Aiyub Khan), Director of AKHS (Mr. Faiyaz Khan), staff of Fiji Maritime Academy / MSAF and FNU, father-in-law and principle of Valebasoga Secondary School (Mr. Ahmed Mohammed Tauwab), families and friends in Fiji and abroad for their continuous support in making my academic journey successful.

Finally, I must express my very profound gratitude to my abbu (Haji Mohammed Bin Sukrulla) and my mum (Afroza Bi). My heartfelt appreciation to my wife (Misbah Tahenat), little princess (Mishel Mahibah), brother (Tanzim), only sister/brother in law (Mr & Mrs Hussein), my three nieces (Fatima, Zunira and Humaera), brother and sister in law (Aqueel and Rifah) and my mother in law (Ms. Sofia Farzana) for providing me with unfailing support and continuous encouragement throughout my study duration and through the process of researching and writing this thesis. This accomplishment would not have been possible without them.

Abstract

eLearning is a new training mode that implicates the third wave of internet applications with an open characteristic. It provides the possibility of new educational approaches with the potential to radically change how learners acquire knowledge. Learners can obtain knowledge through a range of learning platforms anywhere and at any time. Maritime education and training must adapt to the development of times to explore various eLearning training to enhance the training performance in the training institute. This study examines the effectiveness of using eLearning in maritime tertiary institutions. In institutions, the issue of utilizing modern information and communication technologies for teaching and learning is significant. This study unveils some views that Fijian seafarers have shared globally on the adoption and integration of eLearning technologies in education through surveys and other observations. It looks at the meaning or definitions of eLearning as given by different researchers and the role that eLearning play in maritime education and training institutions about teaching and learning processes. The advantages and disadvantages of its adoption and implementation.

The result elaborates on the advantages and disadvantages of eLearning by obtaining Fijian seafarers views and analysing the current position of maritime education and training in Fiji. Furthermore, the analysis compares the seafarer's education and training models, tools and resources of a neighbouring maritime institute, and finally evaluates if using eLearning to inaugurate Fiji's maritime education and training system will be a success.

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LIST OF ABBREVIATIONS

ICT	Information & Communication System
UOF	University of Fiji
FMA	Fiji Maritime Academy
FNU	Fiji National University
USP	University of the South Pacific
COC	Certificate of Competency
AMC	Australian Maritime College
HE	Higher Education
TVET	Technical & Vocational Education and Training
TELS	Tertiary Education Loan Scheme
LMS	Learning Management System
VLE	Virtual Learning Environment
UK	United Kingdom
CBT	Competency-Based Training
STCW	Standard of Training, Certification & Watch keeping
MET	Maritime Education & Training
METI	Maritime Education & Training Institutes
MSAF	Maritime Safety Authority of Fiji
IMO	International Maritime Organization
GMDSS	Global Maritime Distress Signalling System
GHG	Green House Gas
USB	Universal Serial Bus
DVD	Digital Versatile Disk
DWT	Dead Weight Tonne
COP	Certificate of Proficiency
COR	Certificate of Recognition
GOC	General Operators Certificate
ROC	Restricted Operators Certificate
JICA	Japan International Co-operation Agency
CIN	Colombo International Nautical and Engineering College
SMS	School of Maritime Studies

ISO	International Organization of Standardization
ECDIS	Electronic Chart & Digital Information System
TCF	Technical College of Fiji
FQF	Fiji Qualification Framework
FEMIS	Fiji Education Management Information System
FHEC	Fiji Higher Education Commission
TELS	Tertiary Education Loan Scheme
DFL	Distance & Flexible Learning
AR	Augmented Reality
VR	Virtual Reality

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Rapid development through the introduction of new technologies, has led to advancement in the education systems of all countries globally (Riaz, 2016). Tertiary sectors and universities should be able to adapt to these new technologies and advance teaching methods to cope with the fast-growing modernized world. Development of Information Communication Technologies (ICTs) is considered to be a significant factor which has increased the student-centered approach, interactive & collaborative learning, and construction of the learning environment. According to Zhao (2015), the educational strategy of introducing eLearning is an improving accomplishment that creates new learning possibilities for learners and extends interaction within local and global communities. An increase in communication, cooperation, and technology requires individuals to continuously engage in professional development. Dubey (2016) also elaborates that the development of ICT will continue to improve the education system.

A learning process supported electronically is categorized as eLearning (Abaidoo, 2014). However, this definition is further narrowed down by the author, defining that this is a learning process that is empowered by the use of digital technologies. Some researchers also define eLearning as any learning that is internet-enabled or web-based (Arkorful, 2014). One can say that eLearning is just-in-time learning developed from the learning desires of the dynamically changing world since innovative learning styles make the learners contribute significantly towards any industry (Staab, 2001).

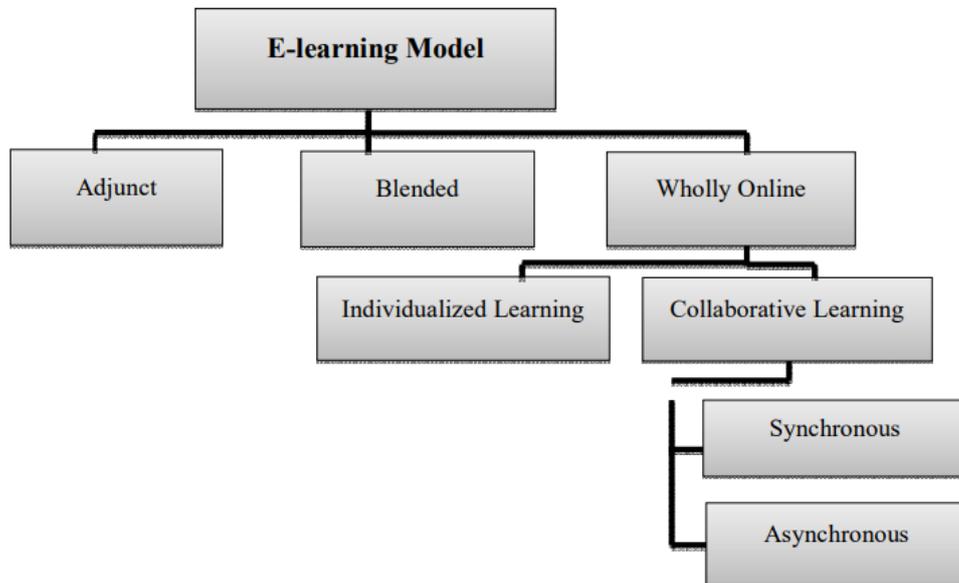


Figure 1: ELearning model in an education system
 Source: Arkorful (2014)

According to Praetorius et al. (2015), eLearning is defined as "education delivered using digital methods and devices such as computers or mobile devices that are intended to support learning." This method of learning has evolved from computer-based training. As per figure 1, eLearning can be categorized into three respective mode; adjunct, blended and fully online. "Adjunct" eLearning is the situation where eLearning is employed as an assistant in the traditional classroom providing relative freedom to the learner's, most of the teaching and learning is done in the traditional face to face method while a small proportion is focussed towards eLearning to enhance the learning method.

Blended learning aims at providing a better educational experience. This system of education incorporates online tools with various traditional teaching methods so that students can learn more efficiently. Educational institutions across the world are adapting blended learning approach. Blended learning allows students to be in charge of their education by developing an in-depth comprehension of the concepts. They can practice what they learn and also have an instructor present to explain the more difficult facets and applications of the coursework. In fully online eLearning mode, the instructions are either synchronous or asynchronous (learning material

designed for individual self-study such as recorded lectures) under collaborative learning. Other features can be incorporated to create an environment to adopt teamwork among the participants in a particular course. ELearning is, to some extent a cost-effective and flexible method of teaching /training as it can accommodate learners regardless of geographical location. Individuals can participate in courses avoiding the traveling cost associated with face-to-face learning, and at the same time, eLearning can reach many people at once. At the same time, ELearning poses a challenge as access to IT technology heavily depends on internet access and access to eLearning aids such as computers and tablets.

According to Bauk, Dlabac and Pekic (2012), through eLearning; seafarers get the opportunity to achieve a high education level even if they are on board. Seafarers are in the position to study whenever they have access to an Internet source and accessing device. Furthermore, eLearning can be suited for both slow and quick learners by reducing stress and increasing the satisfaction level. These advantages are potentially substantial when compared with the old classical educational methods. Disadvantages of eLearning include that the high initial cost involved due to the procurement of eLearning equipment's and designing of appropriate eLearning environment. In addition, providing immediate feedback to the learner is more challenging. Therefore, continuous and reliable access to technology (internet) is needed.

The need for education around the world has increased significantly due to the continuous shift towards improvement and innovation. ELearning or online mode of learning has facilitated this development by eliminating the barriers of distance and time. Several technological resources and devices such as smartphones, computers, laptops, tablet apps, digital boards, and online portals are now available to help students to enhance their competencies due to new assignments and environmental demands. However, individuals at elderly stages of life are hesitant to accept and use technological devices as a learning tool due to psychological limitations (Riaz, 2016).

1.2 Aim of the Study

This study will focus on the "Introduction of eLearning – assessment and its Impact on the Fijian Seafarers." These seafarers are still using the traditional teaching method (face to face learning). The study will also consider certain contributing factors such as technology and demography. Fiji Maritime Academy is the only Maritime Training provider in Fiji - registered under Fiji National University. The research will evaluate the impact eLearning will have on the current seafarers (for Refresher and Updating programs) and for the future seafarers for their upgrading and cadetship Training.

Fiji is a developing country and has limited available resources. It is a challenge for Fiji to provide the highest Seafarers qualification (Master Mariner and Chief Engineer COC) in the country. These challenges result in seafarers pursuing their further Management level studies in Australia, New Zealand, or the United Kingdom. The goal is to analyze and determine the impact if eLearning is introduced to these Fijian Seafarers. How will this encourage these seafarers to reach the highest level in the seafaring career with high-quality education and with a minimum cost involved in Fiji?

1.3 Objectives of the Study

The objective of this study is to investigate:

1. Fijian seafarer's opinion on the current teaching & learning method in Fiji and their views on the introduction of eLearning (Fully online or blended learning).
2. Fijian seafarers experience with different teaching tools and technologies, considering some demographic details such as gender, age, qualification level, and their professional expertise.
3. Fijian seafarers views, perception, and satisfaction towards the different teaching methods (modes) and also their preference towards the teaching methods considering the remote islands and the currently available technologies in Fiji

1.4 Research Questions

The relevant questions related to the proposed study are:

1. What is the response, impact level in the current teaching mode and the views of Fijian seafarers towards introduction of eLearning to the Seafarers of Fiji?
2. Fijian seafarers opinion on the teaching and learning system at Australian Maritime College (AMC), the nearest maritime training college for Fijian Seafarers to obtain their COC's and what influence will it have on Fijian Seafarers upon introducing eLearning (fully online or blended mode) in Fiji?
3. What tools and technology are used by AMC towards eLearning in teaching methods and how do they compare with the teaching methods and mode used in Fiji?
4. What is the preferred delivery model for learners enrolled at Fiji Maritime Academy, and what are their reasons for this preference and their views on the transition to ELearning mode?

1.5 Significance of the Study

The findings of this study will help to determine whether the introduction of eLearning by Fiji Maritime Academy will have a positive or negative impact on the seafarers. It should also develop some understanding of the current teaching methods in the Technical and Vocational Education & Training (TVET) Stream as well as the changing needs and expectations which will be useful for Fiji National University's Strategic Planning.

This study is of significant importance to the Fiji National University, considering the current competition level from other tertiary education sectors. The research will develop Maritime Education and Training in the future and also assess the competition from regional and overseas online universities considering the potential strengths and weaknesses.

1.6 Methodology

A mixed-method approach was applied for data collection and analysis as demonstrated in figure 2. The data obtained from the research questionnaire was quantitatively analyzed for better understanding. The comments made by individuals support the quantitative analysis. This analysis will generate a complete picture with a clear structure summarizing the impacts and the learning preference of the Fijian seafarers through their response to the questionnaires. The analysis from the data collected will allow the reader to better understand the preferred mode of Fijian seafarers and ascertain their primary view on the introduction of eLearning in Fiji.

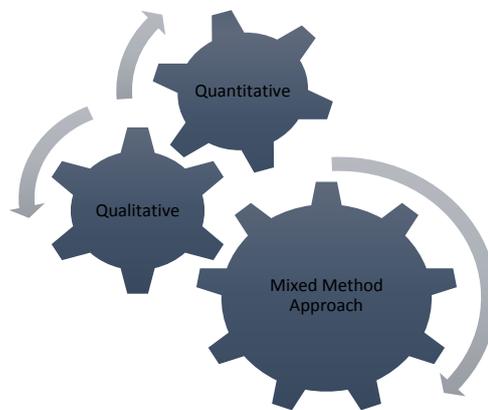


Figure 2: Approaches used for this research

The empirical research is primarily based on the "Questionnaire Interview" as a method of obtaining data and information from the targeted group of Fijian seafarers. A set of questions were prepared with respect to each research questions (sample questionnaire is available in the appendix). The researcher applied comparative measures to the teaching methods in AMC and the current teaching methods in Fiji. This research also emphasizes on the reasons for having the traditional learning model, the benefits and impacts of introducing eLearning. The majority of this research was done using surveys through the questionnaire as mentioned earlier and online resources such as journals, books, reports, and articles. These resources indicate how technology has transformed the education system in Fiji and throughout the world.

The three major universities in Fiji (The University of the South Pacific – USP, Fiji National University –FNU and the University of Fiji - UOF) have adopted the eLearning system to some extent in the higher education areas and discussions are under way to implement more advanced and latest eLearning technologies. However, there is minimal progress in the advancement in terms of eLearning in the education system towards the TVET stream, including maritime education and training in universities.

1.7 Data type and Sources of Data

The data types used in this research are primary and secondary data. Obtaining primary data was made possible through surveys, interviewing the local seafarers through questionnaires, getting data from Fiji National University, Fiji Maritime Academy and the Maritime Safety Authority of Fiji. The secondary data source was from literature, books, journals, online scientific articles, statistical data, and online news articles related to the research topic.

1.7.1 Data and information processing

Analysis of information and data was done through quantitative and qualitative analysis. The analysis was done in excel by generating graphs and charts to analyze the respondent's views and thoughts toward the research study. Various analyses were undertaken in respect of the respondents work experience, technical and academic qualification level, rank onboard, Fijian seafarers view on the efficiency level of the education system at Australian Maritime College (AMC) and compare it with Fiji Maritime Academy (FMA). Through critically studying the results from the data obtained, the impact of introducing eLearning to the seafarers of Fiji is evaluated.

1.8 Organization of Thesis

There are seven chapters in this research study:

The first chapter introduces the research topic, outlining the aim, objective, and the significance of the research study in this particular area. This chapter briefly

elaborates on the data collection strategies and methods, data analysis, and how the data is processed.

The second chapter is the literature review, where various resources, books, journals, websites, articles, and reports are investigated. As an essential part of this research, it indicates the previous studies undertaken by authors that support the ideas related to the research questions. The significant challenges that might arise during the study are also considered.

The third chapter focuses on the methods used in gathering the required data related to the research questions and the importance of using the particular data collection method over other methods. The empirical research is presented in two parts which are discussed in Chapters four and five.

The fourth chapter focuses on the overview of the country of research – Fiji Islands and more specifically the target area of the study – maritime education and training for Fijian seafarers (Fiji Maritime Academy). This chapter elaborates on the education system and the population of Fiji, also highlighting the number of Fijian seafarers with the relevant maritime qualifications. Furthermore, the Fiji Maritime Academy context is discussed outlining the issues and challenges faced by the maritime institute, the governing framework of STCW and generally the strategies for improving the education system in Fiji.

The fifth chapter presents the results of the analysis. The results obtained from the respondents are both quantitatively and qualitatively presented in this chapter through relevant charts and graphs, and a brief description of each review is provided. The result analysis focuses on the research questions of this thesis.

The sixth chapter is the discussion of the results, explaining in detail the analyzed data from chapter five. The last Chapter, seven, summarizes the whole research study by generating a suitable recommendation for Fiji Maritime Academy. In the recommendations, the researcher provides a starting base for future researchers who will be interested in focusing their research on the same aspects as this research study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter positions the research study through elaborating on how the education system is changing globally with the introduction of innovative learning tools and how the impact of these innovative tools is driving the training and education institutes towards advanced and efficient learning methods. Ruttenbur et al. (2000) elaborate that training institutes should understand technology-based learning such as eLearning to be in a better position to provide education and necessary skills to the individuals. Technology-based learning will potentially enable learners to better cope with today's economic demands. The author further elaborates that in today's fast-growing technological world, the traditional teaching method is not enough for the learners to cope with the speed of any nation's economy. Furthermore, in this chapter, a review will be done on the current learning and teaching resources, and tools. Moreover, it will also elaborate on the related issues and challenges associated with technology and its impact on maritime education and training. This chapter will further elaborate on how these available technologies can be effectively used to introduce eLearning for those seafarers who stay in the remote islands.

2.2 ELearning and Technology

ELearning is categorised in various modes such as fully online mode, distance and flexible mode, and blended mode as mentioned in Chapter 1. These modes classified under eLearning have proved to be an efficient way to deliver knowledge in an education system (Starr & Turoff, 2005). Universities and institutions which use eLearning technologies are found to be a step in advance of those which are using the traditional approach towards learning.

When looking deep into eLearning, it can be said that eLearning is a learning arrangement either inside or outside a classroom where education is delivered to the learners with the help of electronic resources such as the use of tablets, computers, and internet (Bennett, 2019). ELearning is also labelled as an efficient

way to transfer knowledge and skills to an enormous number of learners at the same times.

According to Bennett (2019), in the early days, many scholars believed that eLearning lacked the human element required in learning. Therefore, most institutions and universities did not accept the eLearning concept. However, with the continuous development of technology and the improvement in the education and learning system, eLearning is now accepted by almost all the universities to some extent. Instructors in maritime institutions have realized the significance of using technology (blended learning) as a medium to deliver knowledge to students who are far away in remote islands. Most of the seafarers are committed with important projects which do not allow them to attend the institution and go through traditional face to face learning.

Ruttenbur et al. (2000) emphasizes on the use of eLearning and describe eLearning as "the use of networked technology that will make the revolution possible". The European Commission (2001) defines eLearning as: "The usage of new technologies and the Internet to progress the quality of learning and teaching by simplifying access to facilities and services in addition to remote exchanges and collaboration." Likewise, Clark & Mayer (2003) have elaborated that eLearning is the coaching delivered via a computer through software, internet, or intranet. It comprises of materials relevant to the specific learning objective to improve the overall organizational performance. It is believed that the human brain can easily remember and relate to what is seen and heard via moving pictures or videos. It has also been found that using eLearning concepts such as visuals and other technological learning tools are also retained by the learner's brain for more extended periods as compared to those learners who go through traditional face to face learning. (Prabhu, 2018).

The introduction of computers is a prerequisite for eLearning. As time passed, smartphones, tablets, audio-visuals and many other means of delivering knowledge were introduced. In today's world, all these devices play an essential role in the learning process. Books are substituted with electronic educational resources like hard drives, USB, DVDs, and memory chips. In this 21st century, a common way to

share knowledge is through the Internet, which is available 24 hours, seven days and can be accessed at anytime from anywhere.

However, according to Baumler et al (2014), eLearning will increase the load burden on the Maritime Administrations since they will need to ensure correct strategies are applied to fulfill the required number of teaching hours and at the same time the competency level of the learners are maintained at a specific level. These maritime administrations are obliged to guarantee the quality of education according to the International Convention on the Standards of Training, Certification, and Watch-keeping (STCW).

In a Maritime Education and Training (MET) Institute, traditional teaching and learning method is equally important since MET is a specialised area which needs competency based training. Hence, an appropriate mode of learning that best suit any competency based training is blended learning. On the other hand, significance and success of technology-based learning cannot be taken lightly or overlooked entirely because of the fast emerging technological innovations are shaking the maritime industry from all angles (Brooks, 2016). It is significant for maritime sectors to make sure the competency of the human element is involved as the new technologies take over from the past. The author further explains that the rapid technological developments in the maritime industry will support and facilitate trade only if the human element involved gets the right training and education (Brooks, 2016).

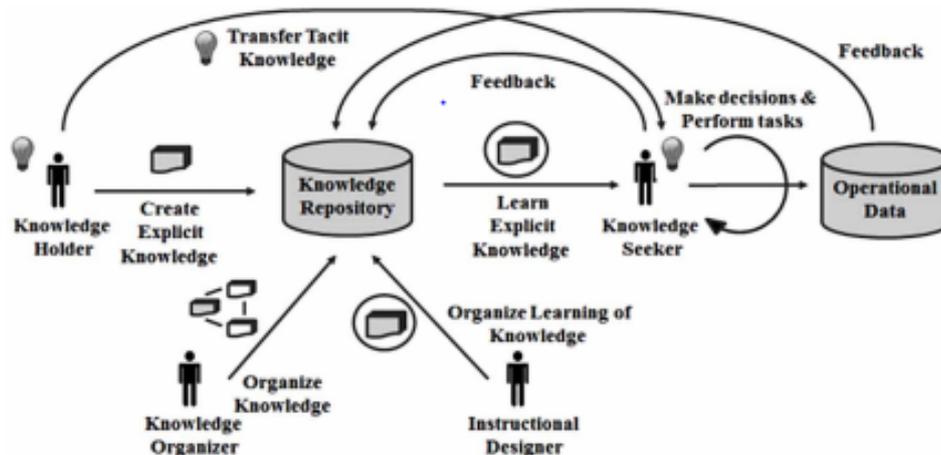


Figure 3: How the introduction of eLearning enhances knowledge management
 Source: Khamparia & Pandey (2018)

Technology is becoming a requirement in all institutions and universities. More information can be displayed, and lecturers have a diverse set of data that they can deliver to their students, thus enhancing student learning (figure 3). The use of different technologies can help instructors save their time on teaching and elaborate more on the course content. Figure 3 demonstrates that having eLearning or use of technology acts as knowledge repository from where the instructors and learners can deliver or gain knowledge. The knowledge organiser, instructional designer, and the knowledge holder (instructor) create explicit knowledge to the knowledge repository from where the learner gains the knowledge through explicit way. The competency level of the learner is determined best from the feedback received either by the employer or by the learner, in many cases; explicit knowledge through introduction of eLearning works best as compared to that of implicit knowledge (only learner and instructor interaction).

There are numerous advantages of technologies. Institutions can enhance more active learning for better student attention and realization by spending less time on lecturers, and enhancing visual stimulation. Introduction of new technologies such as interactive-media, computer networks, internet, and digital technologies will significantly enhance the influence of eLearning provision. It will allow learners to connect and communicate with instructors and with each other (Khamparia & Pandey, 2018). The advantage of introducing eLearning in modern educational institutions in comparison with traditional learning methods is that it significantly

reduces the time needed to locate information. The learners have unlimited and free access to useful learning materials online, such as databases, periodicals, journals, and other material. Other advantages of eLearning are the reduced cost of training and the increased speed to use the education packages without waiting for a training representative.

2.2.1 Blended Learning

Blended learning is an attractive knowledge delivery mode for many educators in recent years, which demonstrates the principle of student-centred as well as alternates the role of the teachers from the traditional way (Haiyan, 2016) . Blended learning is better suited for maritime education and training (MET) and is significantly applicable to motivate the students' initiatives considering the nature of seafarers training and education – Competency based (figure 4). Blended learning can be considered appropriate for the present-Day learners irrespective of their study area. These present-day learners are called “Millennial or Tech Generation” because they have grown up in the digital world. These generations possess new ways of learning like freedom and sovereignty in their learning methods. At the same time, they can do multitasking as they have access to new tools (Shanavaz, 2019).

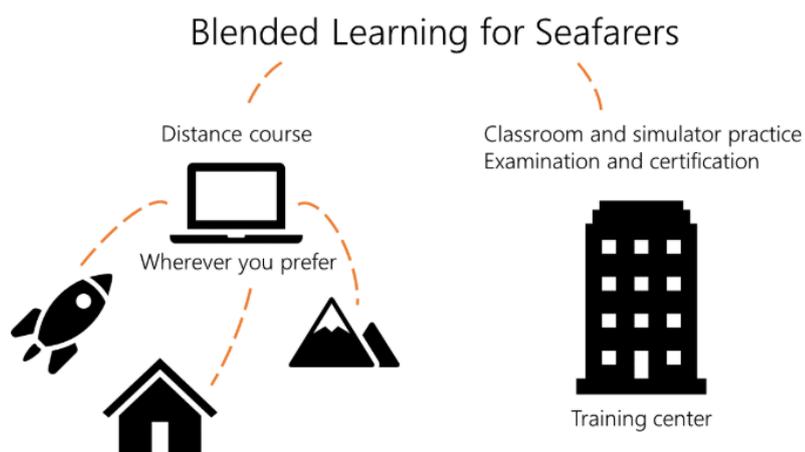


Figure 4: Why blended learning for Seafarers
Source: Haiyan (2016)

There are different types of eLearning that allow different ways of employing the technique in education. As highlighted in Chapter one, Algahtani (2011), in his evaluation of eLearning effectiveness and experience identified three distinct models of using eLearning in education, including “adjunct, blended eLearning and online”. In the blended learning as per figure 4, the delivery of a course is shared between traditional learning methods and online methods in the classroom setting; most of the theoretical part of a course is covered by the learner through online means while being away from the training centre. The practical aspect of the course is done in the training centre through use of simulators, engineering equipment’s and other practical tools and equipment’s. Therefore, blended learning is a significant mode of delivering knowledge to the learners in a METI considering the nature of seafarer training and education (competency based) (Algahtani, 2011).

2.2.2 The technological transformation of the Education system

Transformation of the education system towards technological world is as significant as the technological shift in all the maritime industry. Future seafarers will experience vessels with digitalised equipment’s and thus, will be more reliant on computerised technology. Seafarers need to have their skills broaden to encompass a degree of digital nativism since seafarers will work more remotely, with responsibility for several vessels in the fleet through remote operation.

According to a survey of over 1,000 teachers in the UK and Europe—87% of teachers/school leaders believe technology has a positive impact on educational outcomes (Heusterberg-Richards, 2019). Institutes have adapted to a wide range of learning and teaching approaches enhancing the transformation from the traditional classroom learning style to blended and online learning styles.

2.3 Nature of Seafarer Training

Seafarer training is Competency-Based Training (CBT), which focuses on the individual’s competency and skills (Lewam, 2014). The International Convention on Standards of Training, Certification, and Watch keeping for seafarers (STCW Convention) provides the international minimum standards for maritime education and training and the minimum requirements for the competences of seafarers

(Jiang, 2011). In 1995, the STCW Convention was totally amended to emphasise the minimum competence of seafarers. In 2010, the minimum competence of seafarers was clearly enhanced by the new Manila Amendments to the STCW Convention. The use of blended learning and other eLearning modes in MET is encouraged by the new amendment (Wei, 2013). Blended learning and eLearning for training of seafarers is suggested under approval in Section B-1/6 of STCW Code.

The importance of how competence is achieved, demonstrated, and assessed poses a challenge to the more traditional approaches of teaching and learning, which are still dominant in many maritime education institutions. The courses should be practical, activity-based, and student-centred so that students take greater responsibility for their learning and with assessment based on the demonstration of newly acquired skills (Lewam, 2014).

According to ECMAR (2016), in some countries, workplace learning is integrated into the national education system. This is achieved using national training packages, trained assessors in the workplace, and formal processes to recognize workplace learning when students undertake campus-based learning. This approach has caused education institutions to re-evaluate how courses are structured and assessed so that the flexibility of CBT can be maximized for students. Recognition of prior learning is a crucial point of CBT. It is predicted on the simple concept that once competency has been demonstrated and assessed that skill has been learned. In an educational sense, CBT concepts are not new. It emphasizes what the student should be able to do on completion of a learning process. Students should be assessed to demonstrate that learning has occurred, and what standard should be used to determine competence. These simple educational concepts also underpin STCW 95 however; much of the evidence to date seems to indicate that both attitudes and systems are still relatively inflexible (Lewam, 2014).

2.4 Contributing factors towards Maritime Education and Training

eLearning is gradually gaining recognition in the maritime industry, bringing it to the forefront and transforming it into an industry that is in line with the modern-day training methodologies (Safelearn, 2019). With substantial advantages as explained previously, eLearning is here to stay as it opens up education in maritime sector to a more extensive section of potential seafarers than ever before. This subtopic will elaborate on the challenges and opportunities in METI's, and how each state is dealing with the rapid technological changes that are emerging in the maritime industry.

According to Lewam (2014), it is the responsibility of the states Maritime administration to ensure the implementation of STCW 95 as amended. The maritime administrations are generally responsible for approving maritime training institutions including the teaching syllabi, staff, facilities, and equipment, as well as courses. Also, they are accountable for auditing approved institutions.

Different states maritime administration's approach their responsibilities in various ways. These approaches reflect the national needs and interpretations of STCW 95 as amended. Most METI's provide an education that includes all competencies required by STCW 95 as amended to the highest level as well as the sea service necessary for the first watch keeping certificate. In Fiji, the marine administration accepts completion of the course as the primary measure of competence but 'audits' graduates by conducting an oral assessment of each graduate before issuing a certificate of competency (MSAF, 2019). However, in other countries students who have completed their course are required to undertake additional written maritime administration examinations before a certificate of competency is issued (Lewam, 2014). The author further elaborates that in Malaysia seafarer students also take 'front end' education that includes all skills required by STCW 95 as amended to the highest level. However, having completed their sea service for the certificate of competency these students are required to undertake further courses and examinations before attempting the marine administration oral examination.

This certificate of competency preparation courses generally repeat the competencies covered in the 'front end' course as well as those they have been using at sea posing a question as to why? What has happened to the recognition of prior learning? Therefore STCW 95 as amended requires a minimum of 12 months sea service before a trainee deck officer/cadet can attempt the first watch keeping certificate of competency. The Fijian maritime administration requires a minimum of 18 months of sea service. Some countries recognize time aboard training ships and training time in simulators as counting towards sea service requirements. This reduces the actual time spent onboard an operational commercial vessel well below the STCW 95 as amended required 12 months.

Most trainees undertake some form of structured learning program while at sea. Frequently, a training record book provides evidence to suggest this is not taken as seriously as it should be. STCW 95 as amended also promotes the idea of "assessment of evidence obtained from approved in-service experience." It also suggests that "any person conducting an in-service assessment of competence of a seafarer should have received appropriate guidance in assessment methods and practice" (IMO, 2017). IMO model courses are conceptually a good idea provided they are viewed as guides upon which teachers can build to develop appropriate teaching and learning experiences. In some countries, maritime administrations have taken the view that the courses they approve must follow exactly an IMO model course. The highly prescriptive nature of model courses such as the number of hours required to achieve competence is at odds with the CBT approach espoused by STCW 95 as amended. In the past, Fiji successfully ran a GMDSS course which was about a week in duration. This was to ensure that students were able to demonstrate their competence with GMDSS. The fact is that the real issue is competency and not the course length.

2.4.1 Challenges

Various challenges keep increasing in the Maritime Industry since seaborne transport will continue to grow in the near future and beyond, primarily driven by population growth and rising prosperity (ECMAR, 2016). Population growth is increasing the demand for food, energy and water supply, which will result in an

increased need for water transport, renewable energy, and aquatic food production. Waterborne transport will remain the most cost-efficient means for the global transportation of raw materials, finished goods, fuel, food, and water. Infrastructure and links to all other transport modes will grow and adapt in response. Maritime transport, including inland waterways transport, will also become an integral part of an efficient multi-modal long-distance logistics chain.

Growth in global waterborne trade and activity will create significant new opportunities for the maritime industry thus; the connection with all other transport modes will be seamless. Smart vessels will communicate with smart ports to limit congestion and waiting time. This will indeed reduce the cost and will adapt their sailing speed to match harbour slots automatically. Society's increasing expectations about health, safety and security and the environmental impact of industry will lead to stricter regulations; this will require the Waterborne sector to improve in this area.

2.4.2 Opportunities

Societal expectations will lead to the maritime sector becoming more socially and environmentally responsible by complying with stricter regulations and even adopting voluntary standards. Concerns about climate change have led to legislation imposing limits on greenhouse gas emissions (GHG). This will require a reduction of energy consumption by waterborne transport through measures such as the use of cleaner fuels, e.g. LNG, the electrification of ships, renewable energy sources, and fuel cells. Monitoring of ship's emissions is also required with regulatory enforcement by coastal states. Climate change will lead to more extreme weather events, and polar ice melting will affect all waterborne sectors. This will require ships and offshore structures that are more robust, to operate in these more severe weather conditions.

2.5 Technical & Vocational Education and Training (TVET)

The maritime education system in Fiji is classified as Technical & Vocational Education and Training (TVET). TVET is classified as non-academic technical education and practical training that develop the skills and knowledge of students

(learners of trades or crafts) working in different sectors of industry. TVET is part of the education system that provides courses and training programmes related to employment with a view to enable the transition from Secondary Education to work for learners and to supply the labour market with competent individuals.

Introducing eLearning in the TVET will be one of the significant improvements in this TVET sector that has seen a definite shift towards a holistic policy in support of the maritime sector, enabling it to adapt and recognize the achievement of skills in all the learning and training areas (Teferra, 2018). TVET should not be taken as a competitor for the higher education stream. Instead, it should be considered within the entire education sector. Most of the higher education institutes have adapted to the technology in providing higher education while leaving the TVET institutes behind and finding them not as necessary as the higher education stream.

2.6 Factors affecting Learning Process

According to Bandura (1986), learning is a fundamental activity of information processing that authorizes the transformation of behaviours and environmental measures into symbolic representations that serve as action guides. However there are various factors that affect the learning process in specific ways; focussing on the seafarers education and training, some of the significant factors are demographic features such as gender, work, age, and work experience and education level. These factors further explain the impact it had towards the research.

2.6.1 Demographic Features

2.6.1.1 Gender

It is crucial to explore explicit gender preference towards the learning modes which has been done for this research. Gender variation reveals the learning preference considering the use of technology. A study conducted by Malcolm (2008) states that 42% of females prefer online learning methods while 58% of females choose face to face. The research also shows that 31% of males prefer online methods of learning, and the remaining 69% chose face to face modes of learning. This shows that gender plays a very significant role when it comes to learning mode preference.

2.6.1.2 Age

Age also plays a vital role. Many young generations prefer eLearning and blended learning. Some even prefer online learning, as they are well versed with modern technologies considering efficiency when technology is used in learning. On the other hand, the older generation prefers face to face learning as they assume it is the most effective way of learning and competency is maintained. Age may not be a direct influential factor in determining the preferred mode of learning. However, it plays a significant role in determining how the learners will progress with the technology creeping in.

2.6.1.3 Work Experience

Work experience is the number of years a person has worked in that profession. Professional experience contributes through one's ability and capability, technology knowledge, financial status, and maturity level. Work experience may or may not have a direct relationship with preferred mode of learning.

2.6.1.4 Education Level

Education level refers to the highest education attained by the respondents. Education level usually links with the maturity level, which is a contributing factor for learners. However, again there may be or may not be any relationship with the preferred mode of learning by the learners concerning their education level.

2.6.2 Technology Background

Technology background focuses on the available technological resources that will contribute towards the introduction of eLearning. Appropriate technology background makes a learner more confident and comfortable in the area of study as technology facilitates learners and educators to succeed in this digital world (Edge, 2019). Technology has changed the education system globally; therefore, it is essential to research and investigate the impact that technology, such as eLearning, will have on the Fijian seafarers.

2.6.3 Access to Available tools and Technologies

Available tools and technologies in the research region refer to the availability of the internet, computers, laptops, tablets, and smartphones. Variation in access to these technological backgrounds presents a challenge to the learners since effective use of the available resources and tools enhances the learning process.

2.6.4 Perception Dimension

As discussed by Moor (1997), perception dimension is the interaction, the structure and the autonomy that provides feedback from the educators and learners towards the specific delivery mode. Another theory, such as Vygotsky's zone of cognitive development also supports the definition by Moore. Interaction is considered as the most significant factor in all these three perceptions. Interaction in a face to face (traditional setting) would be different from the cooperation in the other technological based learning methods such as eLearning and blended learning (Moore, 1997). Studies conducted by Hurst, Wallace and Nixon (2013) show that individuals enthusiastically develop understanding and knowledge through interaction, opinions, and mind-engaging process.

Similarly, the autonomy and the structure of the courses offered determines whether it is suited for face to face learning or it can be offered fully online or through blended learning. At FMA, 100% of courses are offered face to face using the traditional method. Limited focus is given to the eLearning method since current instructors at FMA prefer traditional knowledge delivery style. Traditional style suits them due to their age as discussed under earlier.

2.7 Conclusion

In this 21st-century learning environment, the face of the education system has gone through a complete changeover. Use of textbooks, whiteboard, flip charts, and televisions has been substituted by more advanced tools such as Internet, computer-based learning, blended learning, and eLearning. In most of the universities and institutes globally, eLearning is introduced for distance education, distributed learning, and technology-enriched classroom teaching. Distance

education and technology-enhanced classroom learning has been embedded as online learning and is mostly used in many institutes as a blended mode of learning.

There are numerous reasons why most countries are adapting to eLearning. Some of these reasons include an increase in student- instructor and student- student interaction as well as the available learning resources. Furthermore, students are able to access the learning resources from any part of the world and communicate with the instructor at any convenient time. There is an increase in collaborative teaching and learning at the international level. Most of the resources are available online; therefore, a decrease in the rate of hard copies of books and notes being printed makes a positive contribution to our environment and planet earth. Finally, many nations view eLearning as a cost-effective approach to knowledge delivery that is more economically relevant and more learner-centered.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This Chapter describes the research methods used to collect the empirical data. It describes how data was collected, the rate of responses and the general processing of data analysis. The research model is exploratory, where the researcher focuses on the research of a particular system. The research will focus on the target group of people with respect to the research questions (Nawaz, 2012). The research aims to provide some descriptive statistics for a better understanding of the impact of the introducing of eLearning on Fijian Seafarers. The aspects of the study that required further knowledge were analyzed using a brief qualitative analysis using open-ended questions. Mixed methods were also used, whereby the research findings are generalized (quantitatively) and then the response from the individual interview is analyzed (qualitatively) so that a complete picture is generated from the analysis at the end of the study.

3.2 Research Design

The research design is considered as descriptive research that answers the questions of “how”, “why”, and “what” is associated with the particular research question. Descriptive design is used to obtain information concerning the current status of the phenomena and to find out the impact on the current situation if a new variable is introduced (Guides, 2019) . A descriptive research design is used to explain each data analysis by providing a general overview; this design is classified as a useful tool in developing a more focused study. Descriptive research design generates rich data that lead to relevant recommendations in practice.

Mixed research methods have been used for this study whereby the questions are focussed on the quantitative aspect by generating a descriptive possibility. Qualitative data is used to explore quantitative findings. This explanatory sequential design typically involves two phases: an initial quantitative phase, followed by a qualitative data collection phase, in which the qualitative phase builds directly on the results from the quantitative phase. In this way, the quantitative results are explained in more detail through the qualitative data.

The use of this research design provides general information on the impact of introducing eLearning to the Fijian seafarers. Focussing on the perception dimension, availability of technology and demographic location. Open-ended questions were also used in the questionnaire to provide some qualitative information to support the preference for the research subject. A mixed method approach produces more comprehensive knowledge and understanding of the research. It also provides more robust proof to support the conclusion and generate suitable recommendations (Guides, 2019). It may also create new knowledge and uncover hidden perceptions and relationships that a single methodological approach might not reveal.

3.3 Justification for using the desired research method

The researcher used survey questionnaire as the primary data collection source since questionnaires allowed the researcher to reach out to people and get the information needed efficiently considering the location of the research country. According to Picincu (2018), survey questionnaires are considered to be the most cost-effective research tool for several study areas as compared with other data collection methods. Use of surveys is relatively a simple way to collect data and also involves low costs. The results obtained are easy to process and can provide useful insights into the subject. Therefore, using questionnaires in research allows users to collect considerable data in a short time and allows the researcher to address a large number of collected data in a very standardized way.

A study conducted by Choudhury (2014) elaborates that the use of questionnaires puts less burden on the respondents for a fast response. The respondents can respond at their leisure, whereas interview or observation demands specific fixation of time and situation and thus puts a burden on the respondent. According to Eyisi (2016), researchers view quantitative research as a strength from one angle, while some see it as a weakness from another perspective. The advantage is that it eliminates bias with either the researcher's data collection or data analysis even when the researcher is not in direct contact with the participants. The author further argues that using the quantitative method gives the researcher full control for another possibility such as explanations and interpretations. Therefore, the

objectivity of the researcher will not be compromised. On the other hand, the use of questionnaires has some distinctive limitations as quantitative surveys give the respondent limited possibility to answer and convey knowledge and understanding.

Questionnaires guarantee anonymity to their respondents. Therefore, it gives the respondents greater confidence that they will be anonymous in giving a particular view or opinion. Thus, they feel more comfortable and free to express their views (Debois, 2018).

3.4 Data Collection

Use of technology in this modern world made the data collection efficient and inexpensive. All the completed questionnaires were received electronically through email. Access to internet and computers played an essential role in obtaining the data from the targeted group of people in Fiji. Those people to whom the questionnaires were sent were told about their confidentiality and were asked to sign the consent forms, which were sent back to the researcher together with the filled questionnaire. The response from the respondents was analysed with high confidentiality.

3.6 Response Rate

Out of 50 questionnaires sent to Fiji, only 18 people from the targeted group of seafarers responded. Nine people were not interested in attending to the questions while the remaining 23 people did not respond at all.

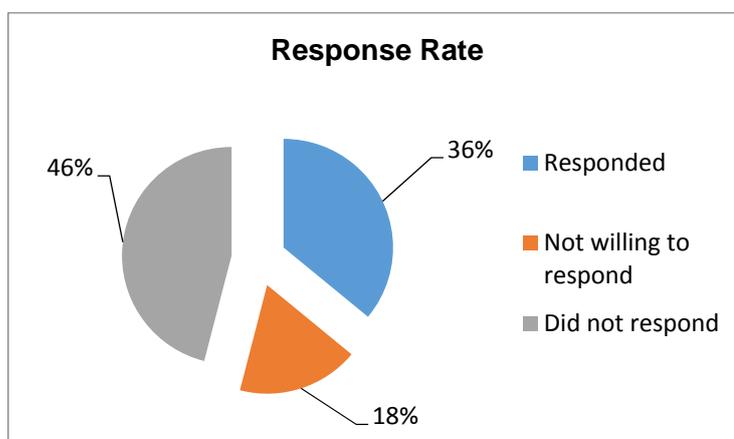


Figure 5: Analysis of the response rate

The majority of the seafarers targeted for this research studied at Fiji Maritime Academy as well as at the Australian Maritime College. Therefore, receiving data from this targeted group of seafarers significantly allowed the researcher to compare the maritime institute in Fiji with the Australian Maritime College. Most of the targeted seafarers did not respond to the survey questionnaires due to several reasons such as: they have different political views in terms of education system in Fiji; some of the respondents don't feel comfortable sharing negative comments towards the education system in both Fiji and Australia. The respondents were also from different parts of Fiji which made it easy to get the information from almost all parts of Fiji without much difficulty. It also reduced the bias as each respondent had their ideas and suggestions towards the questions. The information gathered was enough to analyse the view of Fijian seafarers considering the whole Fiji Islands.

3.7 Why Australian Maritime College

Most of the senior Fijian seafarers are AMC graduates. The reason behind is that AMC provides flexible course options, with opportunities for part-time, full-time, and online distance study (blended mode). AMC has the appropriate qualifications in various fields including seafaring that help one to reach their career goals. It also has a vibrant and culturally diverse community, providing students with an international learning experience. Due to the modern teaching and learning modes used by AMC, the graduates are highly-skilled and are in demand worldwide, with alumni spreading across over 50 countries.

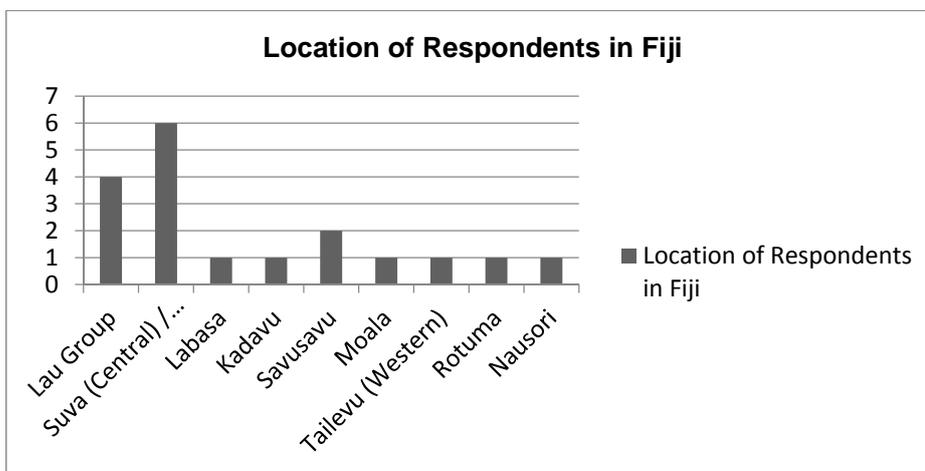


Figure 6: Graph showing number of respondents and their location in Fiji Islands



Figure 7: Map of Fiji with the yellow spots indicating the location of respondents, the respondents represented almost all parts of Fiji.

3.8 Limitations

The drawback for the results of this research was that there were only a few respondents. Eighteen people responded out of fifty questionnaires sent which makes it challenging to provide statistically significant results. Therefore, the generated results are considered to be indicative.

CHAPTER FOUR: FIJI AND FIJI MARITIME ACADEMY CONTEXT

4.1 Introduction

This chapter will focus on the target country – Fiji, specifically general impact analysis of introducing eLearning to Fijian seafarers. The three major universities (as discussed in Chapter 1) have adopted eLearning but are focussed on the higher education stream only. The Maritime education and training institutes are not yet using eLearning. Thus, it is critical to do an impact analysis and determine if Fiji Maritime Academy is in a position to adapt to eLearning, considering some of the related factors which might affect the introduction of eLearning to the Fijian seafarers.

4.2 Fiji

Fiji consists of over 300 islands, out of which only 110 islands are inhabited. Fiji is located in the South Pacific Ocean, approximately 1,300 miles northeast of New Zealand's North Island. Statistics from 2019 show that Fiji has an estimated population of 891,353, and a population density of approximately 49 people per square kilometre (worldpopulationreview, 2019). The main islands of Fiji are Vanua Levu, and Viti Levu which makes up 87% of the total population and more than 75% of Fijians live on the coasts of Viti Levu. Fiji's capital and largest city is Suva. Suva itself has a city population of approximately 87,000.

Fiji has been inhabited since the 2nd millennium BC, first by the Austronesians and then the Melanesians. Europeans first came to Fiji in the 1600s, and the British established the Colony of Fiji in 1874 but later gained independence in 1970. 54% of Fiji's population are native Fijians, 38% are Indo-Fijians, and 1% are Rotumans while the remaining 9% is made up the Chinese and other foreign nationals.

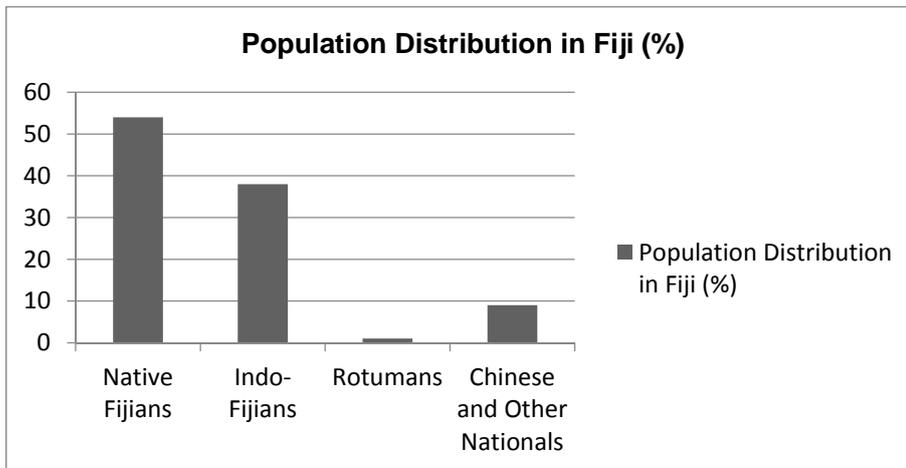


Figure 8: Graph showing the population distribution in Fiji. Source: worldpopulationreview (2019)

Further statistics show that 33% of Fiji’s population are aged between 0 and 14 years, 63% are between the ages of 15 and 64 years while the remaining 4% are aged 65 years and over (worldpopulationreview (2019)).

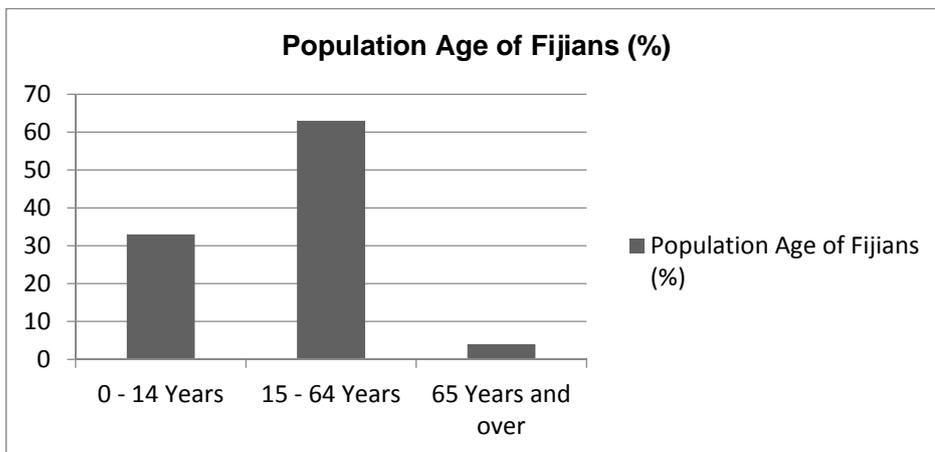


Figure 9: Graph showing the age distribution of the Fijian population. Source: countrymeters (2019)

4.2.1 Status of Fijian Seafarers

There are over 50,000 merchant ships trading internationally. The total cargo capacity of the world merchant shipping fleet is 1.75 billion deadweight tonnes (DWT) since 90% of world trade is carried by ship globally (Ellis, 2017). There are over 1.6 million seafarers worldwide, and most of the seafarers come from China,

Ukraine, Philippines, Indonesia, and the Russian Federation. Women make up just 2% of the workforce. Fiji also educates seafarers ranging from Operational level up to Management level in both Navigation and Marine Engineering. The latest statistics show that Fiji has produced more than 1000 seafarers with different levels of qualification.

For Certificate of Competency (COC) in Navigation, there are approximately 35 officers with Master Class 2, 88 officers with Master Class 3, 326 officers with Master Class 4 and 494 officers holding Master Class 5 COC.

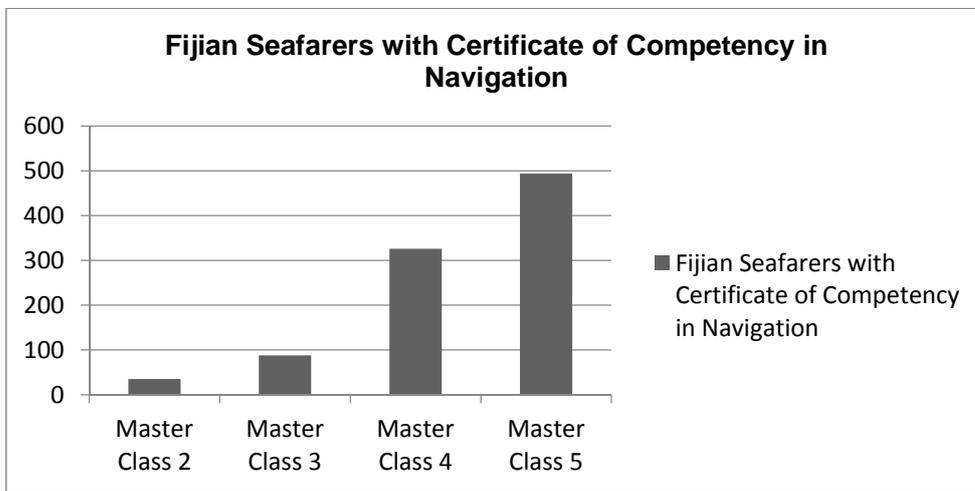


Figure 10: Graph showing the number of Fijian seafarers holding Certificate of Competency in Navigation at different levels

For Certificate of Competency (COC) in Marine Engineering, there are approximately 38 Class 2 Engineers, 1137 Class 3 Engineers, 347 Class 4 Engineers and 347 Class 5 Engineers currently in Fiji.

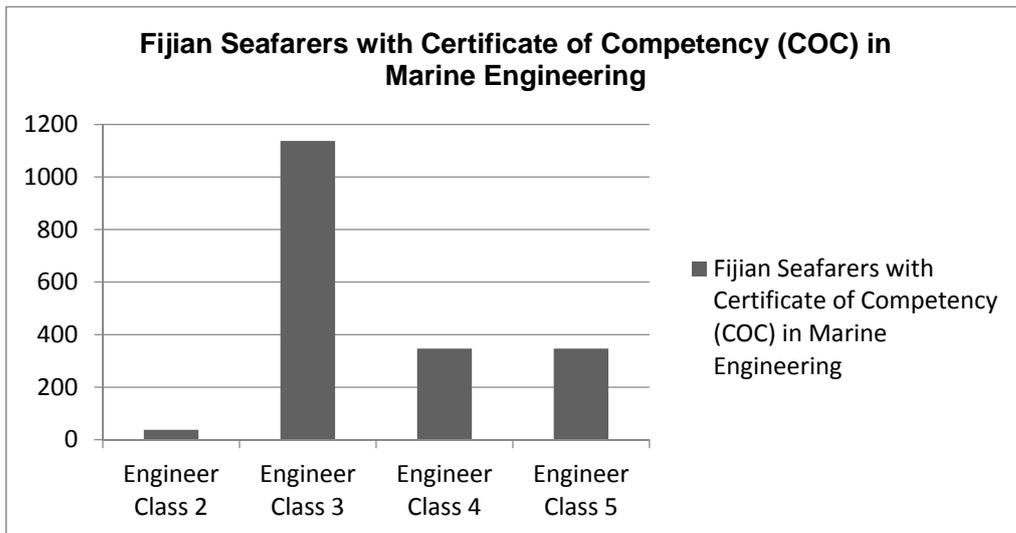


Figure 11: Graph showing the number of Fijian seafarers holding a Certificate of Competency in Marine Engineering at different levels.

For lower-level Certificate of Competency (COC), there are 321 Deck Watch keepers endorsed Class 3 Masters, 16 Deck Watch keepers (Near Coastal) and 64 regular Deck Watch Keepers. There are 400 Engineers with Engine Watch keeper, approved Class 3 Engineer license and 39 Engineers with Engine Watch keeper license in Fiji.

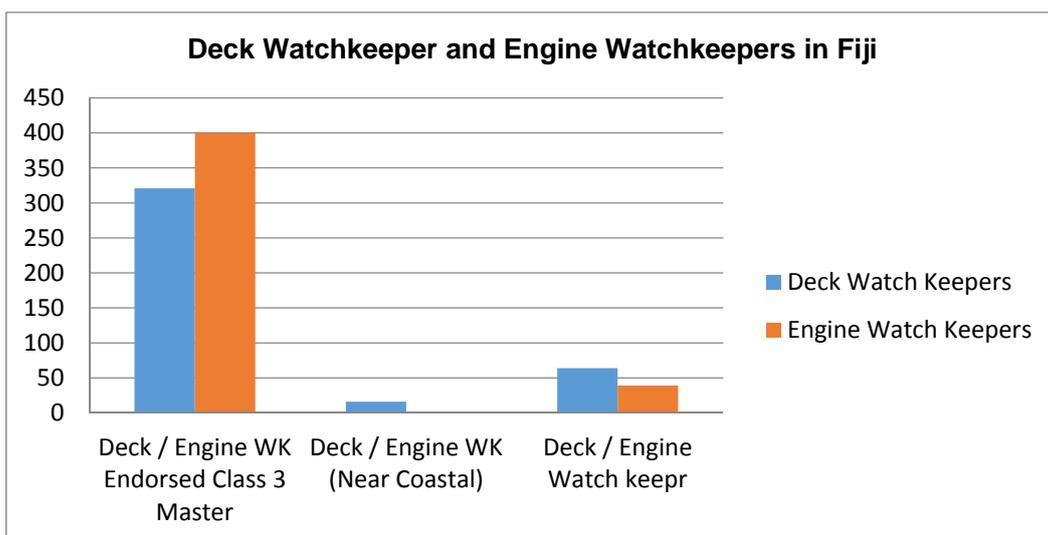


Figure 12: Graph showing the number of Fijian seafarers holding Deck Watch keeper and Engine Watch keeper COC at different levels.

Furthermore, there are some seafarers in Fiji who hold Certificate of Proficiency (COP). Statistics from the Maritime Safety Authority of Fiji show that there are 1006 Deck Watch Ratings, and 497 Engine Room Ratings; 224 Officers hold GMDSS (GOC) while 97 Officers hold GMDSS (ROC). Together with 3916 seafarers with valid safety Certificates, 59 seafarers have an authentic ships cook certificates while 226 seafarers hold Certificates of Recognition (COR).

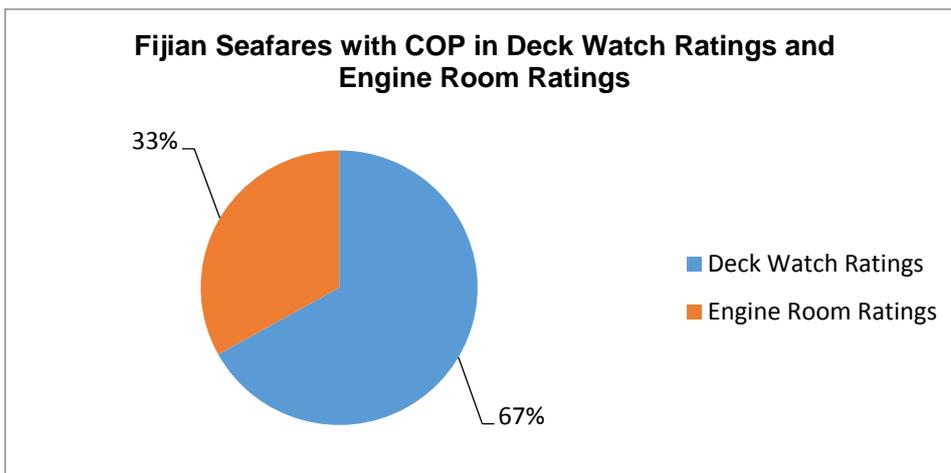


Figure 13: Pie Chart showing the % of Fijian Seafarers who hold Deck Watch Rating and Engine Room Rating COP.

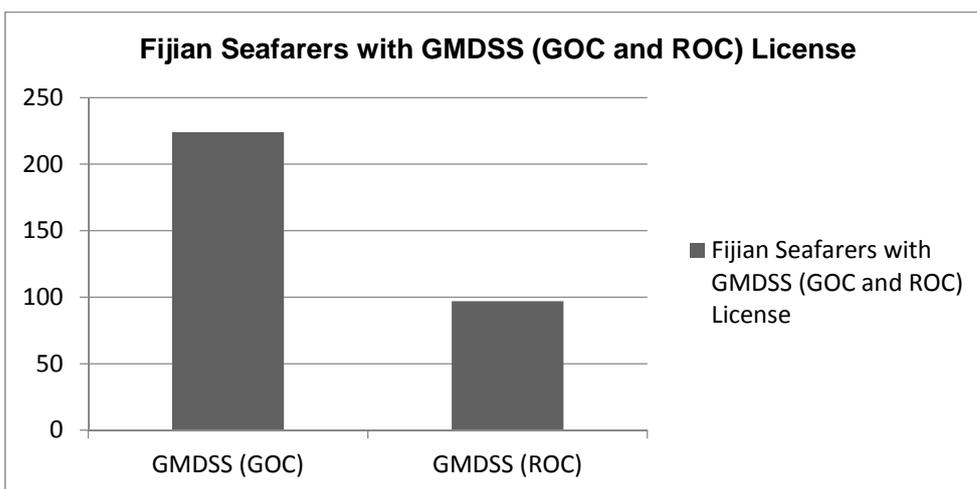


Figure 14: Graph showing the number of Fijian seafarers holding GMDSS (GOC) and GMDSS (ROC) certificates.

4.3 Fiji Maritime Academy Context

Fiji Maritime Academy is an academic unit of Fiji National University (Healy, 2019). In 1969, following considerable pressure from the shipping industry, the Government of Fiji obtained the advisory services of Mr. Peter Dudley of the United Kingdom who provided his consultancy on various aspects of maritime studies. According to FMA (2019), The Dudley Report recommended that a school of maritime studies be established in Fiji to provide a regional centre for training all grades of sea-going personnel. During the start-up phase of the Laucala Bay Campus, significant funding was provided by Australia and Japan through the Japan International Co-operation Agency (JICA). Priority was given to upgrading courses for serving deck, and engine room officers and this remains a priority today. The School consisted of three departments: Nautical Science, Marine Engineering and Shipbuilding. The proposed last phase of development was to establish a Fisheries Department to cater to Fiji's fishing industry.

The Fiji National University was established by the Fiji National University Decree 39 of 2009, the university has made a valuable contribution to workplace education in the maritime industry with over 3,000 students enrolled since 2009 (FNU-PR, 2019). Fiji Maritime Academy (FMA), which was formerly known as the School of Maritime Studies (SMS) was formally rebranded by the Colombo International Nautical and Engineering College (CINEC) and has been managed by CINEC since the 1st of January, 2014. FMA was a renowned maritime institution in its heyday. However, due to the political unrest in the country over several decades, the FMA was unable to sustain the former glory it had enjoyed since its inception (Abeynayake, 2019).

Fiji Maritime Academy is sanctioned by the International Maritime Organization (IMO) which sets out the content and required learning outcomes in line with the standard of Training, Certification & Watch keeping (STCW). All the programs offered at FMA meet the STCW standard and the Maritime Safety Authority of Fiji (MSAF) ensures that the education provided to Fijian seafarers is in compliance with the International standard set-up by IMO. FMA is Fiji's first ISO certified education and training centre for Seafarers. As of 2018, the FMA has helped over 300

seafarers comply with the STCW Manila Amendments. The Academy has also garnered interest from other nations in the region for its simulator training courses such as Electronic Chart Display, Engine, Bridge, Information System (ECDIS), Safety System (GMDSS) and Global Maritime Distress.

4.4 The education system in Fiji

Since the year 2000, Fiji has experienced substantial growth in its education system (Healy, 2018). Currently, three recognized universities in Fiji provide both higher education and vocational education:

- Fiji National University (FNU), was founded in 1885 and later established in its current form in 2010 by merging six government tertiary education providers including Fiji School of Medicine (FSM), Fiji School of Nursing (FSN), Fiji College of Agriculture (FCA), Fiji Institute of Technology (FIT), Lautoka Teachers College (LTC) and the Nasinu Teachers College (NTC). FNU has ten campuses over the two main islands, Viti Levu and Vanua Levu.
- The University of South Pacific (USP) was founded in 1968 as a regional university for the South Pacific (modelled on the University of West Indies). The University of the South Pacific has its headquarters in Fiji and smaller campuses on other Pacific Islands including Samoa, Marshall Islands, Vanuatu, Papua Niue Guinea, Solomon Islands, and the Cook Islands.
- The University of Fiji was founded in 2005 as a small, faith-based university by Arya Pratinidhi Sabha, a Hindu organization dedicated to promoting education.

In addition to the three universities, there are 66 other higher education institutions, mainly small private or faith-based tertiary colleges. Fiji National University is a 'dual-sector' university with both higher and further (technical and vocational) tertiary education. The government has no direct involvement in the governance or management of the university (Healy, 2019).

The author further elaborates that all qualifications are under the Fiji Qualifications Framework (FQF), which is adapted from the New Zealand Qualifications

Framework. The FQF has ten levels from level 1 (equivalent to year 10 of secondary school) through to degree 10 (doctorate). Once approved by FHEC, all higher education programs are recorded on the FQF which is available to schools and potential students online. All students from early childhood to higher education have a unique identification number so that their progress through the education system can be tracked in the Fiji Education Management Information System (FEMIS) which is maintained by FHEC.

4.5 Emerging issues and challenges

According to Healy (2018), fast-growing countries like Fiji tend to follow the development model inspired by Asian countries. By investing heavily in education and creating a highly-skilled labour force, Fiji has attracted significant inflows of foreign direct investment and used technology-intensive industries to drive export-led growth. The government is expanding the education system in the belief that a growing pool of well-educated workers will support the growth of indigenous industries and encourage international companies to set up new operations.

An emerging challenge is the financial sustainability of the current tertiary education and loan scheme (TELS) board. TELS estimates the payback period to be between 15 years (for a three-year degree) and 20 years (for a five-year medical degree). Given that students only start repayments once they graduate, this implies that a scheme that began in 2014 could take until at least 2039 to reach a steady-state (where repayments fully fund new loans). Another significant challenge is 'brain drain.' The education Institutes improve the quality of their programs and successfully gain international accreditations. There is a risk that graduates become increasingly mobile and migrate to Australia or New Zealand. Both neighbouring countries have high wages and skill shortages, and there is already a sizeable Fijian diaspora in their main metropolitan centres. Brain drain is inevitable but in a market-driven system where HEIs compete with each other on perceived quality, they are incentivized to offer qualifications which increase the ability of graduates to migrate.

4.6 Governing framework of STCW in Fiji Maritime Academy

Standard of Training, Certification, and Watch keeping (STCW 2010) as amended has significantly improved the quality of seafarer education and training particularly concerning the educational practices of institutions (Lewam, 2014). According to the author, there is a range of conflicts arising because of the understanding and interpretations adopted by marine administrations of individual states, and modern approaches to teaching and learning. STCW 95 correctly defines what competencies seafarers should possess, and then education institutions should be focused on how such skills and competencies are gained and assessed. Maritime administrations should be focused on ensuring that the teaching and learning system produces skilled and competent graduates. While the maritime administration can perform its function in a wide variety of ways, including approval processes audits, random testing, and oral testing. It is postulated that maritime administrations should not prescribe how competence is achieved and assessed.

Fiji Maritime Academy like all other maritime education and training provider is bound with the International maritime standards set by the governing body IMO, The regulation 1/8 of the STCW as amended, urges Maritime Administrations to set internal practices aimed at monitoring MET's. These practices must ensure the competency and certification arrangements meet the requirements of STCW. Moreover, for the administrations, it is mandatory to make the results available for an independent evaluation which is a critical step to ensure quality and accountability.

For FMA, the quality standards are as per the provisions of regulation 1/8 call for maritime administrations to provide systems to assure the quality of training and assessment, and make way for the independent evaluation as mentioned earlier. The STCW Code, section B-I/8 indicates vital aspects of a quality standards model as follows:

- Management and control functions,
- Arrangements for self-evaluation,
- Independent Evaluation Practices.

According to Section A-I/8 of the STCW Code, as the leading organizations for maritime affairs, the Maritime Administrations should set national objectives and quality standards for Fiji; this is done by the Maritime Safety Authority of Fiji. These objectives could define the level at which a country complies with the standards of STCW Convention on training. Sometimes the country might set the requirement above the STCW standards. The concept of quality mentioned in this section of the STCW Code does not state that maritime administrations should make a comparison on different courses. Instead, it calls for the fitness of the course for its intended purpose (Mukherjee, 2013).

The task of Fiji Maritime Academy and its faculty is consistent with the approach taken by STCW 95 as amended. The boundaries between marine administrations and education institutions need better definition so that educators can educate and marine administrations can focus on quality control to assure competence. Specific course content, course length, delivery techniques, and assessment techniques are not the business of maritime administrations. In simple terms, a better definition of who does what could further improve the effectiveness of STCW95. Empirical evidence points to a level of dissatisfaction by educators as they seek to move towards a more output-driven model of education. This dissatisfaction is partly caused by overly restrictive and prescriptive methods taken by maritime administrations and the relative inflexibility of the input-driven model of education still most commonly found in use today.

4.7 Improvement of the education system in Fiji (Technological Aspects)

With the recognition and support under the STCW (as amended), blended learning is considered as the globalized concept of maritime education (Hiltz & Turoff, 2005). Through eLearning, geographical boundaries in Fiji will no longer be a challenge for Maritime Education and Training (MET) institutes. Blended learning is defined in the maritime context as computer-based education that enables seafarers to learn anywhere and at any time (Figure 4). Moreover, blended learning opens a window of opportunities for the existing seafarers and young people who are looking forward to joining the industry. Compared to the traditional methods of learning, blended

learning uses the full advantage of providing learners with abundant resources of learning with a reduced learning cost.

Fiji is significantly moving towards the internationalization of maritime education and training. Seafarers from all over the world demand an alternative possibility for upgrading their knowledge and skills while being employed mostly onboard. According to a study conducted by the University of Montenegro, active seafarers consider traditional learning mode (face to face) inappropriate and beyond their daily schedule. The study also showed that seafarers strongly support eLearning (mixture of blended learning) as it eases traveling costs and allows the seafarers to self-evaluate (Bauk, Dlabac and Pekic, 2013).

4.8 Conclusion

Fiji is a fast developing country with a stable economy; the education system is significantly improving with the modern techniques and skills. The benefits of the eLearning concept in the maritime sector are phenomenal, but it is also a challenge for the maritime administrations when it comes to meeting the standards as mentioned in the STCW Convention since maritime education and training is competency based, which requires traditional modes of learning together with eLearning. This is where the roles and obligations of Maritime Administration's come in to ensure the maritime training and education provided in their jurisdictions is consistent with STCW.

CHAPTER FIVE: RESULTS

5.1 Introduction

In this chapter, the research results are presented with reference to the aim of the study – “Introduction of eLearning – assessment and its Impact on the Fijian Seafarers.” The relevant research questions views the opinion of Fijian seafarers towards the efficiency of the current teaching mode of seafarers in Fiji, and the impact of introducing eLearning in Fiji, and compare the learning and teaching mode of Australian Maritime College and Fiji Maritime Academy. The tools and resources used at AMC and how efficient and effective approach will it be, if eLearning is introduced in Fiji for the Fijian seafarers. These parts were defined in Chapter 3, which presented the methodology used in the study. Quantitative analysis of data received from the respondents is analysed in this chapter with a brief explanation after each investigation. The results in this chapter are not statistically significant due to the indicative nature of the results from the survey.

5.2 Data Analysis

5.2.1 Work Experience

From the data collected, 89% of the respondents had more than ten years of working experience. Five percent of the respondents had work experience between 5 and 10 years while the remaining 6% had work experience of less than five years in the maritime sector.

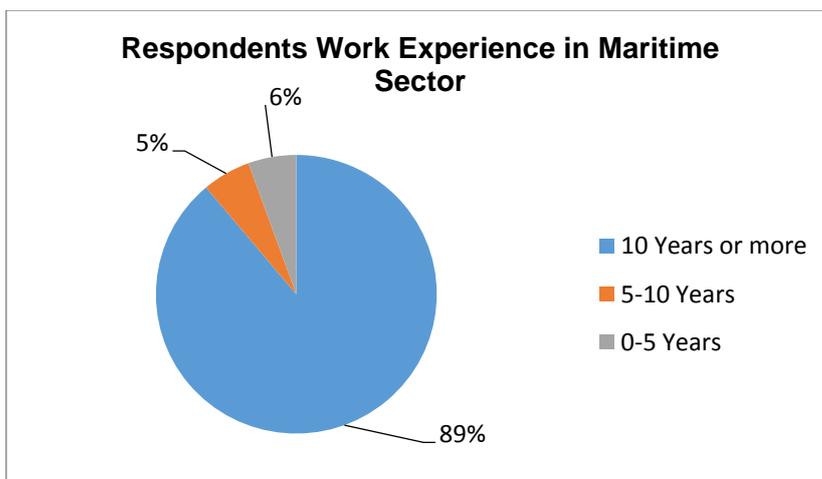


Figure 15: The work experience of respondents (Fijian Seafarers)

5.2.2 Rank On-Board

Considering the respondents rank on board - out of 18 respondents, 33% were Masters; 33% were chief officers and chief engineers; 11% were 2nd engineer/officer; 6% were 3rd engineers, while the remaining 17% were ordinary officers.

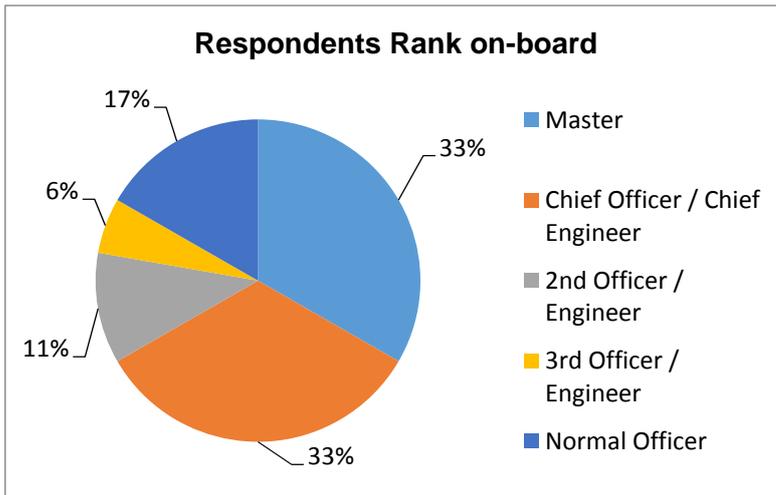


Figure 16: Rank on-board of the respondents (Fijian Seafarers)

5.2.3 COC Level

Looking at the respondent's certificate of competency (COC), out of 18 respondents, 39% were Class 1 Master Mariner / Chief Engineers; 28% were Class 2 Master / Engineers; 17% were Class 3 watch keepers, 5% were 3rd Engineers, while the remaining 11% were ordinary officers.

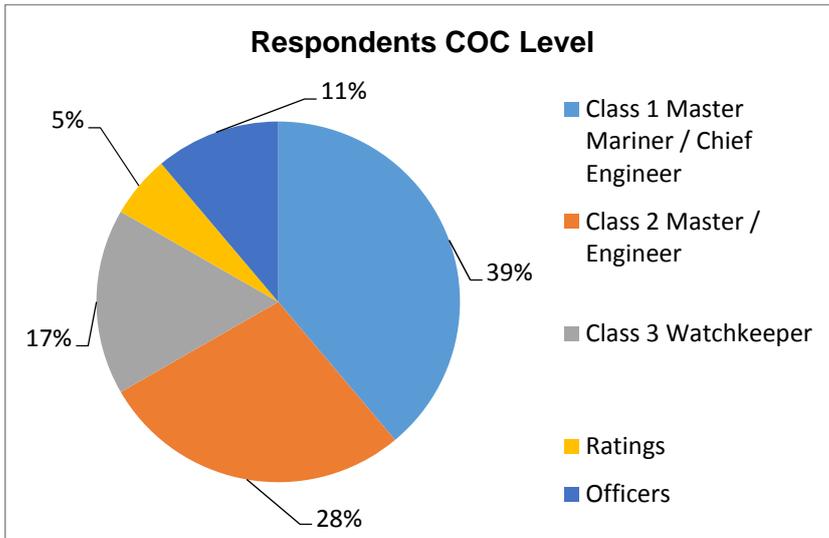


Figure 17: Respondents Certificate of Competency (COC) level

5.2.4 Academic Qualification

From the 18 respondents, 6% have Master's Degrees, 27% have Bachelor's Degrees, 60% have Advanced Diplomas and the remaining 7% have Diplomas

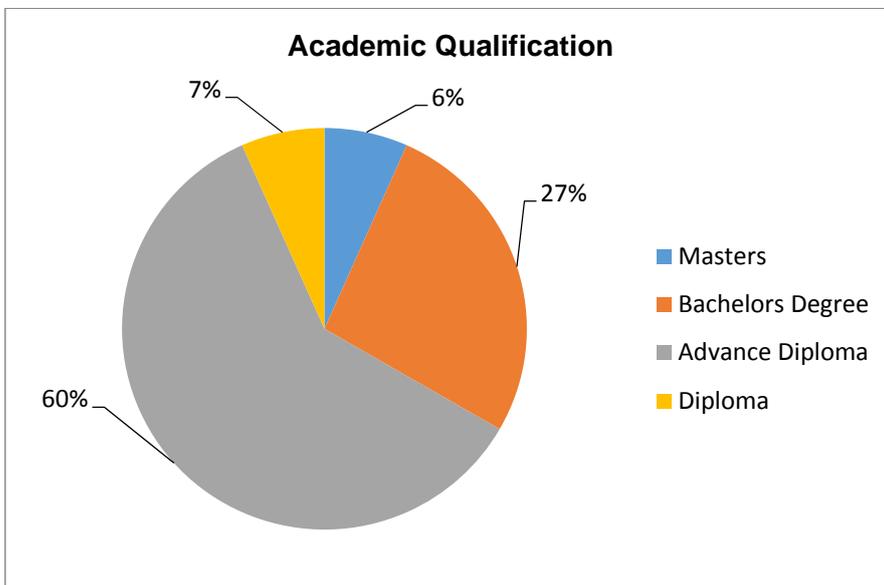


Figure 18: Academic qualification of the respondents (Fijian Seafarers)

5.3 Data Analysis for the Research Questions

Four research areas were targeted to do this research study. The research questions were designed considering the education system in Fiji, and the seafarer's education and training with respect to technological aspects. Moreover, a comparative analysis was made with the Australian Maritime College. All the data collected were analysed quantitatively. In addition, open-ended questions made it easier for the researcher to generate appropriate reasons as to why the respondent answered a particular research question in the way that they did, outlining and supporting the basis for each research question.

5.3.1 Research Question 1:

What is the response, impact level in the current teaching mode and the views of Fijian seafarers towards introduction of eLearning to the Seafarers of Fiji?

5.3.1.1 Relevance of this question to the research

Fiji is a developing country with rapid developments and fast adaptation to modern technologies. The available universities in Fiji as stated in Chapter 4 focus more on higher education as compared to TVET. Higher education in the Fijian universities has adapted to the eLearning mode while TVET (Maritime education and training) is still using the same traditional method of teaching and learning. Therefore, this question has been raised to determine at what level the current teaching model stands. It measures the impact level so that recommendations can be generated to determine if the Introduction of eLearning applies to Fijian seafarers at this stage.

Ten individuals agreed that the current teaching model in Fiji (Face to Face) is good. Five responded that it is excellent, and the remaining three considered the current teaching model in Fiji to be average.

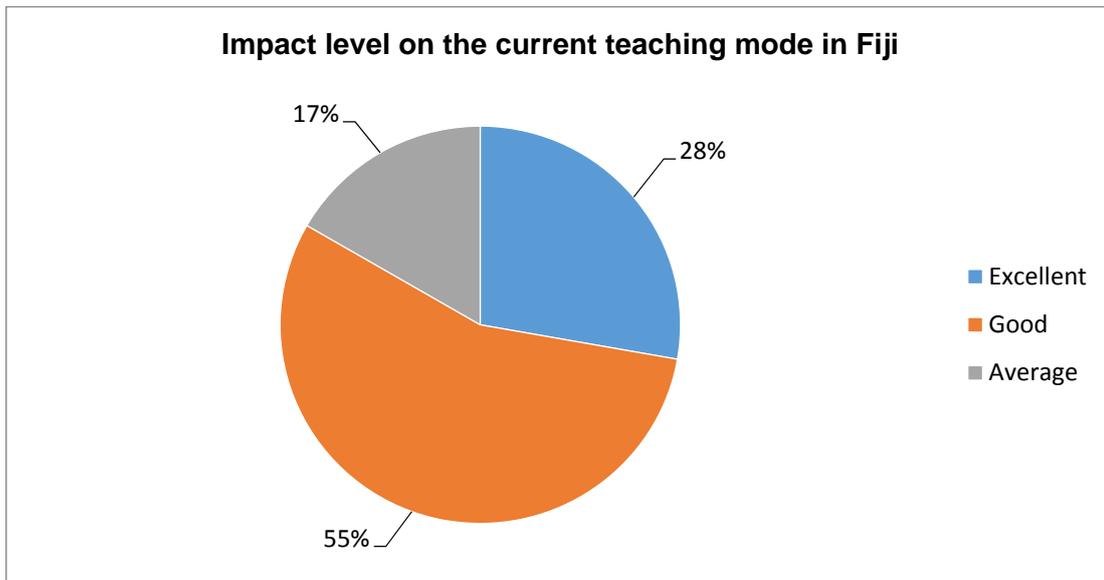


Figure 19: Pie chart showing the percentage (%) of respondents who consider how the current teaching mode of Fijian seafarers in Fiji is.

The result indicates that 55% of the respondents consider the current teaching mode for Fijian seafarers in Fiji as good; 28% think it is excellent, and the remaining 17% believe it is an average method of teaching. From the respondents' feedback, none of them showed any negative perception toward the current teaching mode.

The majority of the respondents rated the current teaching mode (face to face) as good and excellent. They provided the reason that maritime education is a specialized area and for a seafarer to be competent, understanding the theory and having practical knowledge is essential. A few respondents also elaborated that seafarers need to attend practical sessions for simulator training, fire fighting training, engineering workshops and practice with engineering tools. Therefore, the respondents consider the current maritime education and training mode in Fiji to be good (55%) and excellent (28%).

Those respondents who strongly agree that the current teaching and learning mode is excellent are generally above 50 years with more than 10 years of work experience; these respondents supported their argument by stating that seafarers should be gauged on their attitude, attendance and learning performance such as use of GMDSS equipment, simulators, and fire fighting equipment. Moreover, they

should build confidence by approaching senior officers in the classroom. Therefore, according to these senior seafarers, face to face (traditional learning) is best suited for Fijian seafarers. Those respondents who rated the mode of teaching as average and good are generally the younger generation with 10 years or less work experience. They argued that improvement in the teaching system is critical and blended learning should be the latest factor to be considered by Fiji Maritime Academy. They believe that blended learning will reduce the teacher and student interaction, giving the lecturers more time to prepare and upgrade their knowledge and skills. ELearning (mixture of face to face and online mode) will prevent the Fijian seafarers from signing off the ship to attend classes, whereby the seafarers lose their income the ship operations is also affected.

5.3.2 Research Question 2:

Efficiency of teaching and learning system at AMC (Australian Maritime College), the nearest maritime training college for Fijian Seafarers to obtain their COC's and what influence will it have on Fijian Seafarers upon Introduction of eLearning (fully online or blended mode) in Fiji?

5.3.2.1 Relevance of this question towards this research

Fiji offers seafarer education and training to the Diploma level, which is equivalent to Class 3 master/engineer who serves on local vessels as senior officers. However, those Fijian seafarers who wish to obtain their higher certificate of competency (managerial level – Class 2 and Class 1 Navigation & Engineering) are primarily absorbed by Australian Maritime College (AMC) – 90% of the Fijian Seafarers are trained at AMC while the remaining 10% receive their higher COC from New Zealand or United Kingdom.

For the Fijian seafarers, Australian Maritime College is the most preferred choice as it is near Fiji. The chance of getting an scholarship to study in Australia is high compared to other countries. Most of the Fijian seafarers get the opportunity to work on Australian owned vessels and foreign ships after obtaining their COC from AMSA. Therefore, this question is focussed at AMC to compare its teaching style and how efficient it is in terms of knowledge delivery and tools and resources used.

From the data collected, nine respondents strongly support that the eLearning is highly efficient at Australian Maritime College. The result indicates that 50% of the respondents strongly agree that eLearning at AMC is an excellent teaching mode in terms of efficiency; 5% considered the efficiency as good and 6% responded that it was satisfactory. The remaining 39% of the respondents did not answer.

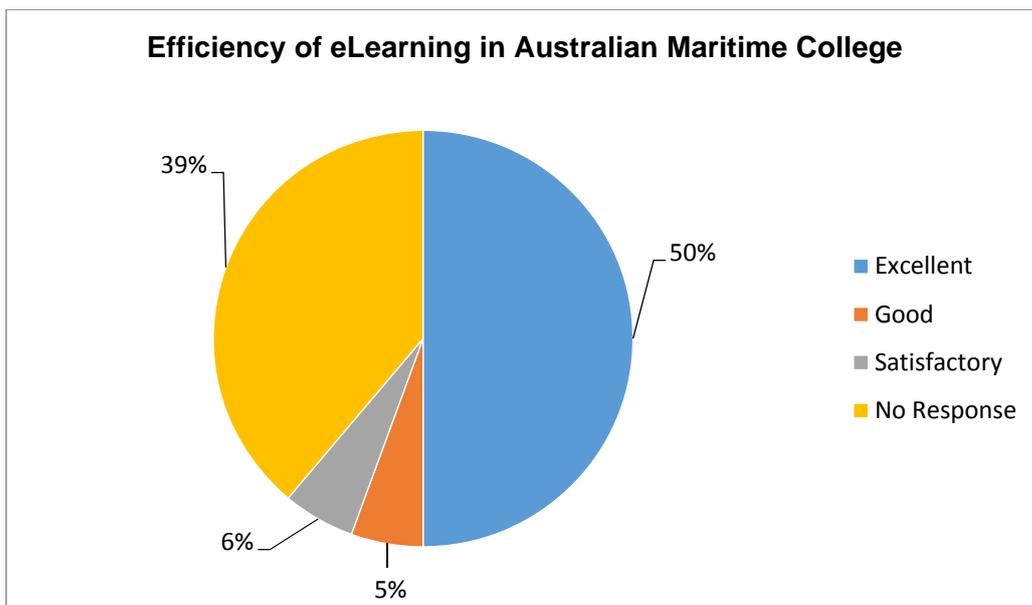


Figure 20: Pie Chart showing the efficiency of eLearning at Australian Maritime College.

From the 11 respondents, 9 rated the efficiency level of eLearning at AMC as excellent. The reason as per the respondents is that AMC is developed. Since there are several maritime education and training institutes in Australia and neighbouring countries, the competition is high. Therefore, AMC makes sure that it is up to date with the technology and provides the highest level of education to the seafarers as compared to that of Fiji Maritime Academy. FMA has no competition at all since it is the only maritime training institute in Fiji. Respondents also elaborated that Fiji can have decisive influence if eLearning is introduced for the Fijian seafarers considering the technology level in Fiji and the literacy level of Fijians.

The majority of the respondents strongly agreed that the teaching and learning method (eLearning) and other technological resources used at Australian Maritime

College are highly efficient and because of the efficiency level, most Fijian seafarers opt to complete their further studies at AMC. Due to the nature of seafarers education and training (competency based), AMC is more into blended learning where the theory is delivered online and practical's are done in the universities in the presence of the instructors who assess the competency level of the learners. The result (Figure 19) also indicates that AMC is well advanced and highly equipped with the modern teaching tools and resources that make the teaching and learning environment more effective and efficient. Few respondents did not agree on the efficiency level (Figure 20) of AMC. This is because, during their time of study at AMC, eLearning had not been introduced.

5.3.3 Research Question 3:

What tools and technology are used by AMC in teaching methods and how do they compare with the teaching methods and mode used in Fiji?

5.3.3.1 Relevance of this question to this research

Australian Maritime College is one of the preferred institutes for the Fijian Seafarers. AMC is far advanced in term of both technology and teaching style, by offering full-time and part-time courses. AMC has advanced marine simulation and various eLearning labs to properly train the learners in their respective study areas. For the continuing seafarers, AMC has introduced blended learning so that most of the course work is done online while the learners are required to spend the required time on the equipment's and machines to gauge their competency before they are graduated. This research question was raised to determine the success behind AMC being an advanced education and training provider to seafarers. What are the tools and resources used by AMC that make it better than the remaining maritime institutes and how does it compare with Fiji Maritime Academy? Finally, FMA can be further developed by analysing the education system and tools used by AMC.

From a scale of 1 to 5 (1 being the least effective and 5 being the most effective), nine respondents strongly agree that the tools and technologies used by AMC such as use of eLearning, flexible learning, blended learning, use of AR/VR and simulations are highly effective with a rating of 5. 4 Respondents rated the teaching

method of AMC to be 4, and 2 respondents ranked it 3. An average of 14 respondents rated the teaching method, tools, and technologies used at AMC as above average. One respondent rated the teaching method at AMC as one, while three did not rate it at all.

The study indicates that 50% of the respondents strongly agree that the teaching method, tools, and resources used at AMC are highly effective. Seventeen percent rated it 4 and 11% rated the teaching method as 3, while 5% rated it 1 (least effective). From the 18 respondents, 17% did not respond to this question.

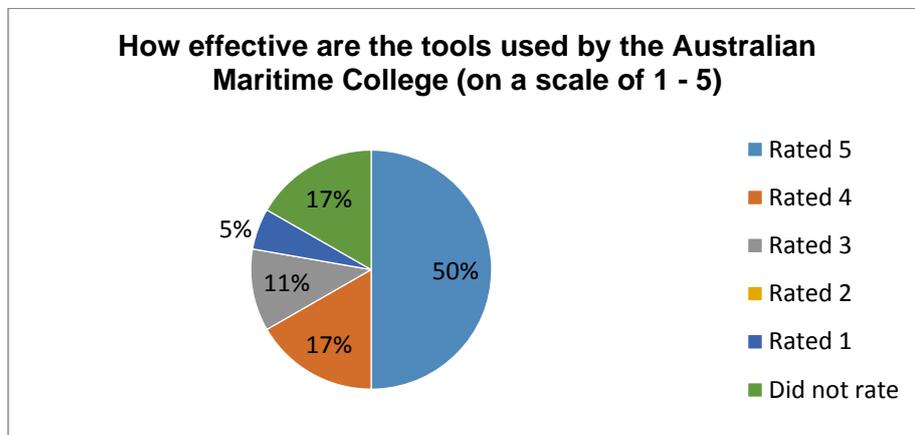


Figure 21: Statistical analysis showing the effectiveness of the teaching method at AMC in percentage.

From the view of the respondents, AMC is well established in terms of technology and teaching tools. Therefore, the teaching method is very effective and has a positive impact on the students compared to Fiji Maritime Academy, which is still in the developing phase in terms of technology. Adapting to the technological aspects and latest teaching measures as used at AMC will be a positive approach for Fiji Maritime Academy which will benefit the Fijian seafarers in a very significant way.

Figure 21 shows that 50% of the Fijians are satisfied with the teaching style of AMC. They prefer Fiji Maritime Academy to adopt the same mode of knowledge delivery (blended learning) to the Fijian seafarers in Fiji. Few respondents did not rate the tools and resources used at AMC as appropriate since they are used to traditional

styles of teaching and learning. Therefore, it is difficult for these respondents to adapt to modern teaching and learning styles.

From the result obtained, the study indicates that AMC is far ahead in terms of technology and advanced teaching styles when compared with Fiji Maritime Academy. Adapting to eLearning and various other online resources and tools will be an excellent asset for Fijian seafarers. They will be able to attain their high-level COC efficiently and at the same time will attract international students to come and study in Fiji.

5.3.4 Research Question 4:

What is the preferred delivery mode for learners enrolled at Fiji Maritime Academy, and what are their reasons for this preference and their views on the transition to ELearning mode?

5.3.4.1 Relevance of this question to this research

This is the most important and the core question which is directed to the respondents to generate a clear picture of the preferred learning mode of Fijian Seafarers. This is from the teaching perspective as well as from the learning perspective. Another significant aspect of this question is that it analyses why majority respondents prefer a particular learning mode and what are the factors driving them to that specific mode. Fiji is technologically equipped with modern teaching and learning methods, but still traditional learning and teaching methods are being used for the Fijian seafarers. This poses a challenging situation as to why the academy has not introduced eLearning to its Fijian seafarers.

From the data collected, the majority of the respondents (12) preferred blended learning which involves both eLearning and Face to Face learning. Seven respondents preferred Distance & Flexible Learning (DFL) mode. Five individuals still prefer the traditional learning and teaching style (Face to Face), while only four respondents agreed that Fiji Maritime Academy should be fully online and to be technologically based.

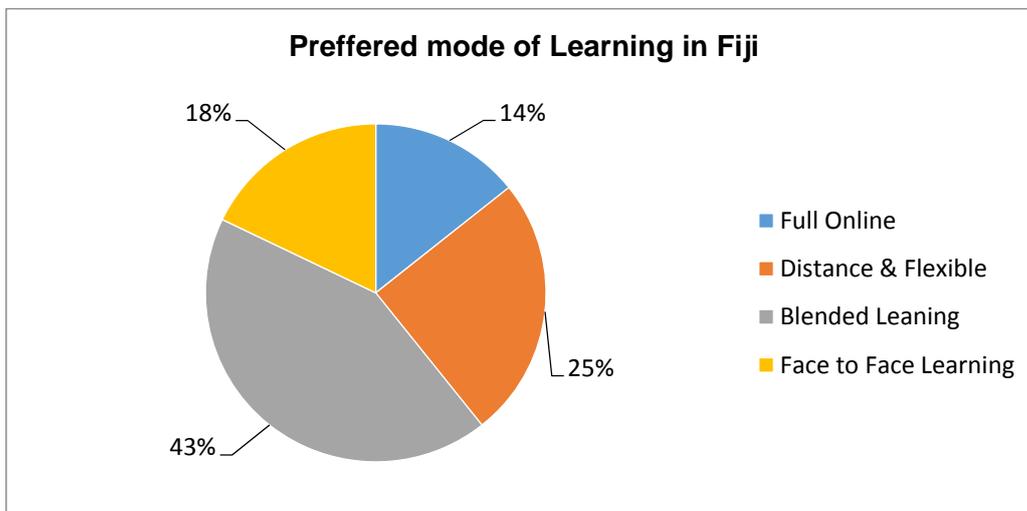


Figure 22: Analysis of the preferred learning mode in Fiji by the respondents.

The study indicates that 43% of the respondents prefer blended learning (eLearning and face to face learning); 25% prefer DFL mode, 18% still prefer face to face (traditional learning mode) and the remaining 14% agree that Fiji Maritime Academy's teaching and learning mode should be entirely online.

There were few respondents who chose more than one preferred learning and teaching mode. From the 18 respondents, one respondent preferred both face to face and online, face to face / blended and DFL mode, face to face and DFL mode together with fully online and DFL mode while 2 respondents preferred blended / DFL and blended / DFL and Online mode for the Fijian Seafarers.

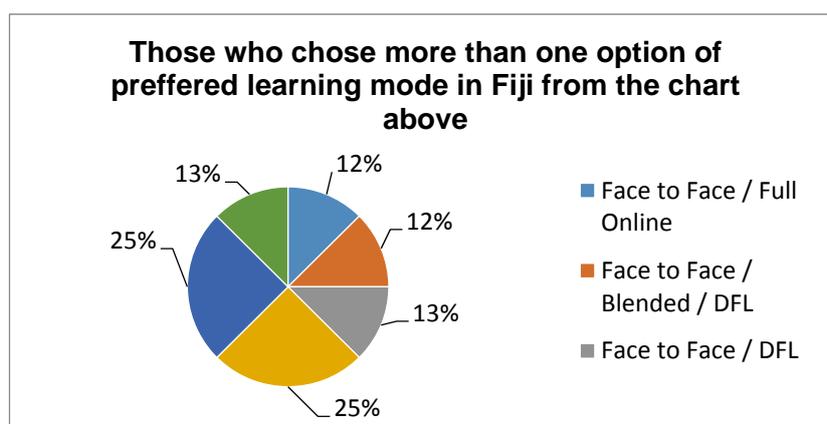


Figure 23: Analysis of respondents view on more than one kind of teaching and learning mode for Fijian seafarers.

Therefore, this indicates that 25% of the respondents prefer blended and DFL mode for Fijian seafarers and the same percentage of respondents prefer blended / DFL and full online mode of learning and teaching. Twelve percent prefer face to face / full online and face to face / blended and DFL mode while the remaining 13% prefer face to face / DFL and DFL with fully online teaching and learning mode.

Focussing on the second part of the research question on the views of the respondents toward the transition to eLearning mode in Fiji, the majority of the respondents strongly agree that this is a very efficient and effective approach with a total response of 13 out of 18 respondents. Three respondents believe that the strategy is good, but they still prefer face to face learning. One respondent indicated that the transition to eLearning was not the right approach and one respondent did not respond at all.

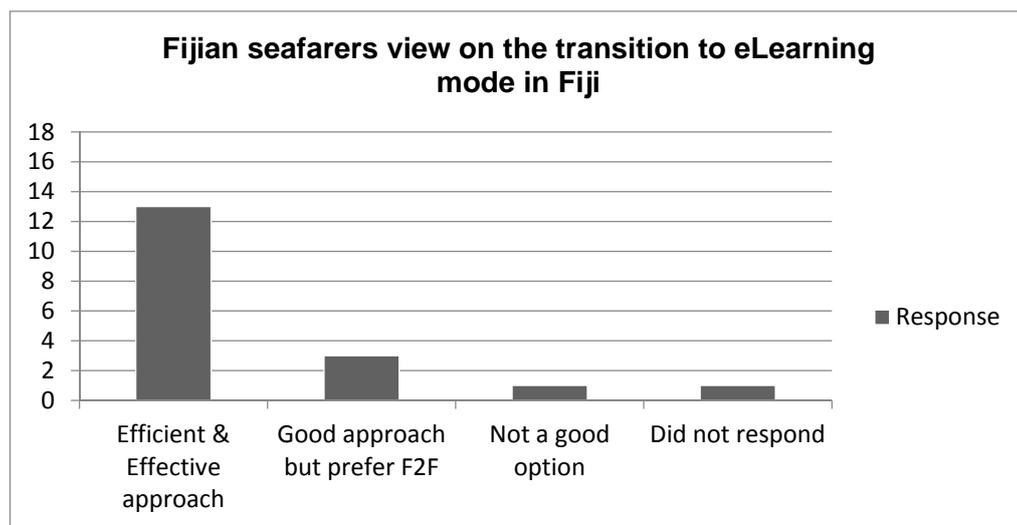


Figure 24: View of the Fijian seafarers (respondents) on the transition to eLearning mode in Fiji.

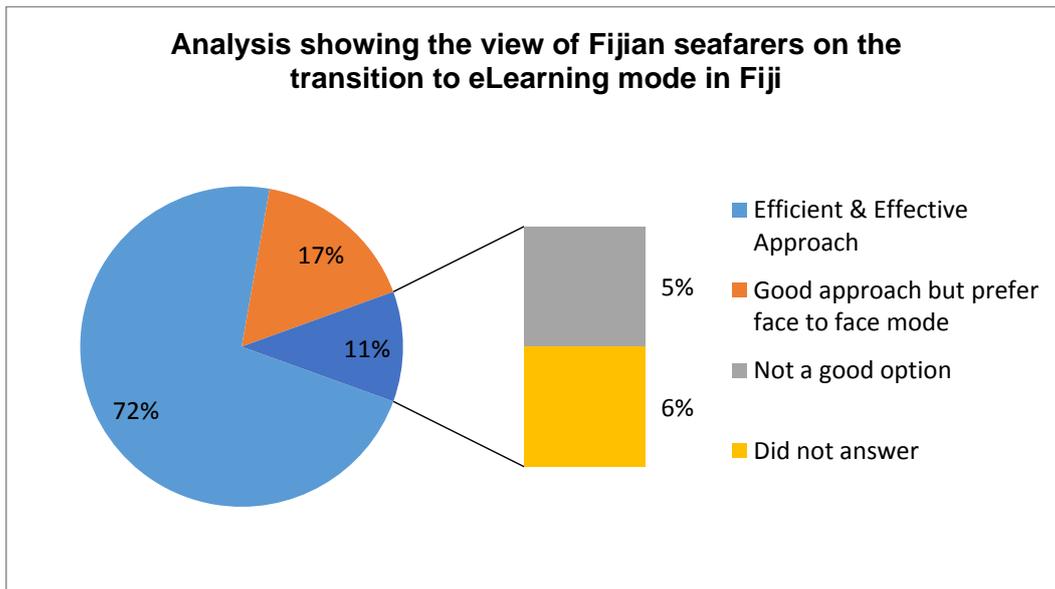


Figure 25: Statistical analysis showing the percentage of respondents view on the transition to eLearning mode in Fiji.

Out of 18 respondents, 72% strongly agreed that introducing eLearning (blended mode) to the Fijian seafarers is a very efficient and effective approach while 17% agreed that this is a good approach, but they still prefer to use the traditional face to face when it comes to learning and teaching for Fijian seafarers. One respondent (5%) of the total did not agree and considered that introducing eLearning to the Fijian seafarers is not a good approach while the remaining respondent did not answer at all.

Fijians prefer blended learning (eLearning as well as face to face) as their preferred teaching and learning mode. Figure 22 shows that the majority of the respondents agree with blended learning. Second preference is given to DFL mode which contributes towards eLearning. The fewest number of respondents agreed that the seafarer's education system should be fully online. However, few respondents preferred more than one type of learning style (Figure 23). This indicates that Fijians are ready to adapt to the eLearning system while they still consider the traditional learning system as an essential aspect of knowledge delivery.

5.4 Conclusion

The use of charts converts the raw data in percentage for the reader to easily understand the analysis. In this chapter the researcher ensures that specific questions answered by the respondents were correctly analysed, considering the demographic factors and the related research questions. It is obvious that Fijians are satisfied with the current teaching mode in Fiji. However, they are ready to accept the new concepts of teaching and learning that are used by AMC to enhance the quality of education and training of the Fijian seafarers. Seafaring requires competency based training; therefore, the preferred mode agreed by the respondents is blended learning. This approach is well adopted in AMC as most of the theory is offered online while the practical sessions are done face to face (blended learning approach). The nature of maritime education and training is such that it limits the institutes to adapt to blended learning rather than being fully online.

CHAPTER SIX: DISCUSSION

6.1 Introduction

This chapter reflects on the main findings of the research in terms of its contributions to the study's key issues and the research questions. The latter three chapters are very important phases of the contribution to knowledge because they are an original combination in methodological approach, and so they shall be the focus of attention in this chapter. The first part of this chapter discusses the initial part of Chapter five (result analysis), and extends for consideration in further detail. This chapter also presents how the research progressed and what was learnt from the research by drawing additional lessons from the literature. It then reflects on the main findings of the research by revisiting the original research questions and considering how the research has developed understanding in these areas.

6.2 Result Discussion

From the data analysis in Chapter 5, the study shows that the respondents were from various parts of the Fiji Islands (Figure 6) which accounts for almost 95% of the total area. Fijians have access to technology; therefore, it is not an issue for Fijian seafarers as the government is doing its best to make sure every Fijian has access to internet including the remote islands of Fiji. Blended learning is the preferable mode of learning for most of the Fijian seafarers from the respondents' view (Figure 21) including online learning / Blended Learning and DFL mode (Figure 22). Fiji Maritime Academy is in the position to introduce eLearning (Blended mode) to its Fijian seafarers considering the recommendations from the seafarers and change in the technological level globally.

6.2.1 Demographic

Considering the work experience and the position on-board (Figures 14 and 15), 89% of the respondents were experienced seafarers with more than 10 years of work experience in the maritime sector including sailing and onshore experience with the maritime institutes and government agencies. The majority were ship captains (33%) and chief officers / chief engineers (33%). These respondents are

graduates from AMC and are alumni thus they were in the right position to compare the teaching methods in AMC and in Fiji. Five percent of the respondents had the relevant maritime related experience of 5 – 10 years. These were mostly 2nd officer/engineers, captains, chief engineers (11%) and 3rd engineers on local ships within the capacity range. The remaining 6% had less than five years of work experience and worked as ordinary officers during their employment on-board. Thirty-nine percent of the respondents were Master Mariners and Chief Engineers (Figure 15) holding Class 1 Certificate of Competencies (COC). These respondents have served onboard foreign vessels and have engaged themselves with the Fiji Maritime Academy in training the young seafarers. Twenty-eight percent of the respondents were chief officers and engineers with Class 2 Certificate of Competency – serving onboard foreign and local vessels as captains, chief mates, and chief engineers. The remaining respondents (11%) were ordinary officers and were in the process of upgrading their COC level.

Focussing on the Academic qualifications of the respondents (Figure 17), 6% hold a Master's degree and these are mostly the Master Mariners and Chief Engineers. Twenty-seven percent of the respondents have a bachelor's degree in either marine engineering or nautical science. The largest proportions, 60%, have advanced diplomas as this is what was being issued to the students who studied at Fiji Maritime Academy in the early years. Seven percent of the respondents have a regular diploma in nautical science or marine engineering. In Fiji, most of the seafarer's prefer to have their COC and give less value to the Academic qualifications. The Maritime Safety Authority of Fiji (MSAF) requires students to complete the necessary sea time and technical knowledge endorsed by the Maritime Academy. Academic qualifications such as a Degree or Diploma are an advantage but not a requisite for the Fijian seafarers to sail.

6.2.2 Research process and overview

Figure 26 shows the research process and overview as discussed in Chapter 3. With reference to the current status of Fiji Maritime Academy focusing on the teaching mode and a comparison with AMC, and investigation was carried out to understand the efficiency of the teaching and learning system at AMC through the opinion of Fijian seafarers who studied at AMC. This overview also highlights the

method used with respect to each research questions and how the results were obtained. It also details the outcome of the research – to introduce blended learning and the reason for introducing blended learning.

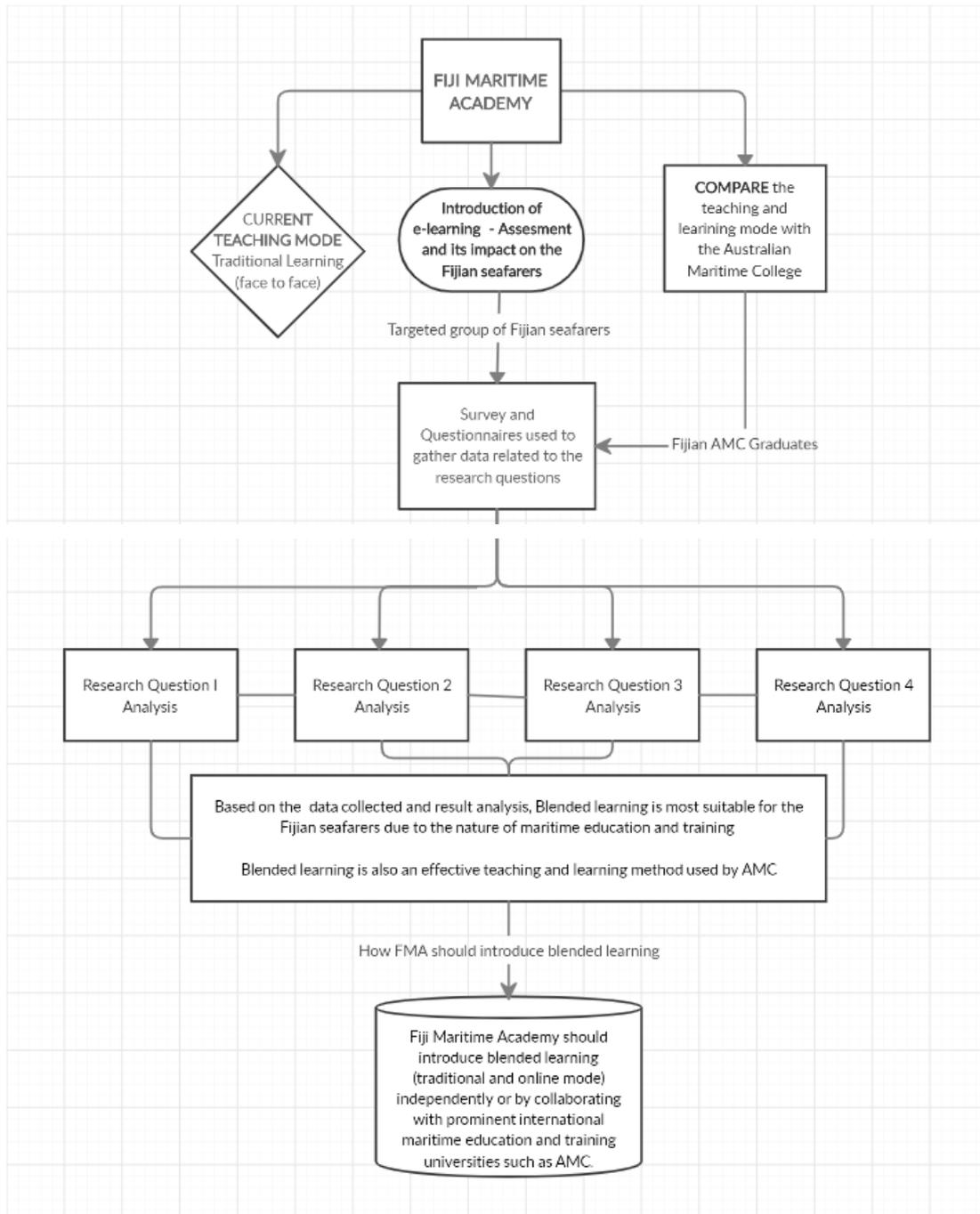


Figure 26: Research process and overview.

6.3 Impact level in the current teaching mode and the impact of introducing eLearning to the Fijian seafarers

From the data analysis, 100% of the respondents rated the current teaching mode (face to face) learning as average and above (Figure 18). This shows that the respondents are satisfied with the present teaching method. However, from the 100% response, the majority responded that the teaching mode in Fiji is “good” which indicates that the teaching method and style need improvement.

Current Teaching Mode	Reason (in favour)	Reason (against)
Face to Face	<ol style="list-style-type: none"> 1. Lively classroom and interaction environment 2. Active interaction between instructors and learners 3. Suited learning style for Fijians 4. Students are gauged and disciplined for their attitude and academic performance 	<ol style="list-style-type: none"> 1. Compulsory to be in the classroom (attendance required) 2. Clashes with the work schedule sometimes 3. Time commuted

Table 1: Reasons from the respondents towards the current teaching mode in Fiji.

The respondents prefer eLearning to be introduced (to some extent, blended learning, and flexible learning) in Fiji while continuing with the traditional mode. This is to ensure that the seafarers trained in Fiji are highly competent and are internationally qualified to work on-board international vessels.

Seafarer’s education and training is competency based; therefore 100% online training is not a significant move when it comes to introducing eLearning. This is the reason why the respondents prefer traditional learning mode. This is also supported in Chapter 2.3, where Lewam (2014) highlights that seafarer training is competency based training which requires face to face interaction with the instructors to develop skills and knowledge required on-board. Jiang (2011) also elaborates on the CBT

for seafarers as stated in the STCW and highlights that eLearning and Distance learning are suggested under approval in section B-1/6 of the STCW Code. Considering the nature of education and training, it can be summarized that while the respondents are satisfied with the current teaching and learning mode in Fiji (Traditional mode), they still suggest improvement and, therefore, agree that blended learning will be a possible solution to enhance education and training for the Fijian seafarers.

6.3 The efficiency of eLearning in Australian Maritime College (AMC) and the influence it has on Fijian Seafarers if eLearning is introduced in Fiji

Australian Maritime College is more into eLearning but they ensure that the seafarers attain the right knowledge and skills when it comes to seafarer education and training. The efficiency level at AMC is high (Figure 19 and Figure 20) since the college is more into blended learning to reach out to the seafarers and at the same time ensures that they have hands on experience. AMC has been using eLearning tools and techniques to deliver required knowledge to the learners while they still use traditional face to face mode to ensure competency is maintained at all level.

The respondents strongly agree that the teaching and learning method (concept of eLearning) and other technological resources used at AMC are highly efficient and because of the efficiency level, most Fijian seafarers opt to complete their further studies at AMC. AMC is more into blended learning where the theory is delivered online and practicals are done in the universities in the presence of the instructors who assess the competency level of the learners. This is because of the nature of seafarer education and training (competency based). The result (Figure 19) also indicates that AMC is well advanced and is highly equipped with modern teaching tools and resources that make the teaching and learning environment more effective and efficient.

With the introduction of eLearning in Fiji, most of the seafarers in Fiji who have Class 3 Master / Engineer level COC will be able to pursue their further education to obtain their Chief Engineer and Master Mariner COC's. These seafarers have enough sea time which makes them eligible to upgrade their COC. However, due to

financial constraints they are not able to pursue their further education in Australia. According to the respondents' opinions (Figure 23), introducing eLearning in Fiji will be a significant achievement for the Fijian seafarers and Fiji as a whole.

6.4 Tools and technology used by AMC for teaching and comparing it with the teaching methods and mode used in Fiji.

The result (Figure 20) indicates that most of the Fijians are highly impressed with the tools and resources used at AMC, including the teaching style and course delivery mode. ELearning is one of the most effective tools used for knowledge delivery supplemented by advanced use of technologies such as VR, AR, Simulators and robotic aids. AMC focuses on blended learning by introducing online resources such as eBooks and learning management software to reach the learners who are on-board ships and are not able to attend face to face classes.

From the view of the respondents, AMC is well established in terms of technology and teaching tools. Therefore, the teaching method is very effective and has a positive impact on the students compared to Fiji Maritime Academy which is still in the developing phase in terms of technology. Adapting to the technological aspects and latest teaching measures as used at AMC will be a positive approach for Fiji Maritime Academy which will benefit the Fijian seafarers in a very significant way.

Figure 20 shows that 50% of the Fijians are satisfied with the teaching style of AMC. They prefer Fiji Maritime Academy to adopt the same mode of knowledge delivery (blended learning) to the Fijian seafarers in Fiji. A few respondents did not rate the tools and resources used at AMC as appropriate since they are used to traditional style of teaching and learning. Therefore, it is difficult for these respondents to adapt to modern teaching and learning styles.

6.5 Preferred delivery mode for learners enrolled at Fiji Maritime Academy, their reasons for this preference and their views on the transition to ELearning mode

Figure 23 and Figure 24 illustrates that most of the Fijians prefer face to face / fully online learning system together with blended / DFL mode while the rest still consider face to face with the eLearning. Some of the significant arguments concerning the preference of Fijian seafarers are as follows:

- Blended learning or fully online option seems to be the preference of those who are young seafarers with less work experience on-board. The respondents with a diploma, degree, and masters qualification preferred eLearning focussed on blended learning over face to face. This could be ascribed to the need to develop professionally being felt more amongst these academic level groups.
- The respondents with work experience on-board a vessel between 5-10 years preferred blended learning over fully online mode and face to face — a few respondents were opposed to blended learning and eLearning due to their age and last learning period.

Fijians are eager for the transition to eLearning. Figure 24 of the analysis proves that most of the Fijians view this transition as an effective and efficient approach with more than 50% actively supporting the introduction of eLearning (blended mode) in Fiji for the Fijian seafarers. These respondents strongly supported their opinions stating that:

- It will be a significant move for those seafarers who are working on-board and need to upgrade their knowledge and skills without interrupting the operations. This will also boom the Fijian economy in the long term.
- It will reduce the traveling, accommodation and related cost for those seafarers living in remote islands away from Fiji Maritime Academy. The seafarers will be able to access the same knowledge through eLearning.
- Introduction of eLearning (blended mode) will boost the young Fijian generation to become seafarers since the younger generations are more into

technology and prefer less time sitting in a classroom. Therefore, the introduction of eLearning will be an active marketing tool for Fiji Maritime Academy.

- The Fijian government is promoting “go green” initiatives; thus introducing eLearning (blended mode) to Fijian seafarers will significantly contribute towards the environment by eliminating paper usage since 98% of the resources used will be online.
- Most of the maritime institutes globally are already using blended learning. Universities in Fiji are also using eLearning (depending on the nature of knowledge delivery). Therefore, introducing eLearning is significantly important so that the Fijian seafarers are not left behind when it comes to technology and education.

The remaining respondents considered the transition to be a practical approach, but they still prefer face to face learning. These few respondents defended their choice stating that:

- Most Fijian seafarers are from remote islands, and technology is not up to an adequate level to introduce eLearning. However, if the technology is readily available, introducing eLearning should not be an issue to consider.
- Since Fiji is a developing country, people are not highly educated. Therefore, the introduction of eLearning will build their academic careers while there will be no significant improvement in the individual's attitude. It is important to groom a seafarer together with the theoretical knowledge so that the seafarer is competent in terms of knowledge, skills, philosophy, and human resources.

The positive response by the Fijian seafarers towards the introduction of eLearning outnumbered those who did not agree with the idea due to the reasons mentioned. Therefore, this study indicates that Fijians and Fiji as a country are ready to introduce eLearning (blended mode) in the same manner as Australian Maritime College and offer the highest level of maritime education to its Fijian seafarers and boost the Fijian Maritime Industry.

6.6 Implications

The discussion concerning the Fijian seafarers work experience, education level, rank on-board, satisfaction level on current teaching & learning mode and the preferred option has its implications on Fiji Maritime Academy and Fiji National University as a whole. This can be a suitable guide for future researchers who are concerned about developing the maritime sector and seafarers of Fiji.

The current problems in Fiji's maritime education and training institute are that the institution only pays attention to assessment examination. Exam-oriented education is more understandable; therefore, professional teaching transformation and innovation is slow. There is much less competitiveness in the international seafarer market. ELearning as a new teaching model embodies a modern educational philosophy. It utilizes the latest technologies to provide low-cost and high-quality teaching resources.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1 Conclusion

Fiji Maritime Academy has a critical influence on the development of the maritime industry in Fiji. Internationalization of maritime education and training is a significant concern which takes account both the teaching tools and resources and the introduction of innovative international teaching concepts, including eLearning and modern technological equipment such as AR, VR, and simulators. As an innovative learning model, eLearning has significant benefits of abundant learning resources. ELearning provides a perfect learning platform for learners by having a flexible learning phase and independent choice of learning methods. It is also a well-organized and appropriate learning model for today's generation. The application of ELearning (blended learning mode) in maritime education and training will eliminate the challenges faced by Fijian seafarers and will create more suitable environments for the enhancement of maritime education and training in Fiji.

Great importance is focussed on the proficiency and competency of the seafarers in the STCW Convention 78 as amended. The introduction and development of eLearning for the Fijian seafarers will be significant incentives toward improving the educational process at the MET institutions in terms of recommendations which are generally given in the introduction.

Also, the national legislation has to be modernized in the sphere of quality education in terms of recognition and proper interpretation and implementation of the STCW Convention requirements and in terms of faster deployment of virtual learning as a supplement to the traditional education and training of the seafarers. Within this context we should not lose the sight of the fact that STCW Convention itself calls for a proper education as the foundation of successful training and acquiring competences. In order to confirm this observation the quotations from the STCW Manila Amendments, Chapter II, Section B-II / 1, Paragraph 14 are given: "Scope of knowledge is implicit in the concept of competence".

Furthermore, the current STCW Code amendments strongly recommend - the introduction of modern training methodology including distance learning and web-based learning in seafarers' knowledge acquisition and upgrading.

From the research conducted, it is clear that the Fiji Maritime sector, including the METI's will experience a positive impact if eLearning (blended mode) is introduced for Fijian seafarers. Almost every Fijian has access to the internet which will make the introduction process easier. The current government is providing significant assistance and is very much concerned about the Fijian education system. Most of the universities in Fiji offering higher education have already adopted the eLearning system; therefore, adapting to eLearning for Fiji Maritime Academy will not be a challenge as the foundation is already in place.

7.2 Recommendations

It is recommended that Fiji Maritime Academy should inaugurate an eLearning platform (blended learning) independently or by collaborating with prominent international maritime education and training universities such as AMC to transfer the Fijian people's outstanding culture and Fiji's excellence in maritime education and training resources globally. There is a need for greater investment in seafarer education and training in terms of technology enhancement and teaching mode.

Additionally, networking is very important through exchanges of instructors and students for the sake of mutual enrichment of knowledge with the developed maritime institutes such as Australian Maritime College and also through launch and implementation of joint projects. All of this is to be done to the extent that is feasible and before it becomes too late. Also, it is necessary to establish a connection with the maritime industry, e.g. shipping companies interested in providing practical training onboard ships.

This research study further indicates the seafarers' opinions if eLearning is introduced at Fiji Maritime Academy. The Impact from the survey is positive which ensures that the introduction of eLearning (blended mode) for Fijian seafarers will be a great asset and a positive approach in the Fijian education system, especially for the seafarers. Fiji Maritime Academy is recommended to create awareness of

the introduction of eLearning and adapt to this new innovative approach. Blended learning is the technique of combining learning modes – in this case online learning and face-to-face learning since having blended learning mode, the outcomes are better than for either face-to-face or eLearning alone. This makes intuitive sense because each technique has strengths the other one cannot offer. Therefore combining them yields better results.

References

- Abaidoo, N. (2014). The role of e-learning, the advantages and disadvantages of its adoption in higher education. *International Journal of Education and Research*.
- Abeynayake, M. (2019, June 14). CINEC Consultancy to Fiji Maritime Academy. (M. Taslim, Interviewer)
- ADAM, F. & HEALY, M. (2000). *A practical guide to postgraduate research in the business area*. United Kingdom.
- Aditya Khamparia & Babita Pandey. (2017). *Impact of Interactive Multimedia in E-Learning Technologies: Role of Multimedia in E-Learning*. Mumbai.
- Algahtani, A. (2011). *Evaluating the Effectiveness of the E-learning Experience in Some Universities in Saudi Arabia from Male Students' Perceptions*. Durham: Durham University.
- Arkorful, V. (2014). The Role of e-Learning in higher education. *International Journal of Education and Research*.
- Bandura, A. (1986). *Social foundations of thought & action: A social cognitive theory*. New Jersey: Prentice Hall.
- Bennett. (2019). *The Economic Times*. Retrieved 07 18, 2019, from E-Learning: <https://economictimes.indiatimes.com/definition/e-Learning>
- Berth Hurst, Randall Wallace, Sarah B. Nixon. (2013, October 04th). The Impact of Social Interaction on Student. *Reading Horizons*.
- Brooks, B. (2016). *Journal of Navigation*. Retrieved August 09, 2019, from Technological Innovation in the Maritime Industry: the case of remote pilotage and enhanced navigational assistance.: <https://ro.uow.edu.au/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1886&context=buspapers>
- Chang, S.-C. (2007). *A study on relationship among leadership, organizational culture, the operation of learning organization and employees' job satisfaction*. United Kingdom: Emerald Publishing Limited.
- Chen, X. B. (2017). The application of E-learning in maritime education and training in China. *TransNav: International Journal on Marine Navigation and Safety of Sea Transportation*, 4.
- Choudhury, A. (2014, May 02nd). Questionnaire Method of Data Collection : Advantages and Disadvantages. *Your Article Library*.
- Clark. R and Mayer. R. (2003). *E-learning and the science of instruction: proven guidelines for consumers and designers of multimedia learning*". USA: John Wiley & Sons.
- Commission, E. (2001). *Designing tomorrows education*. Retrieved July 10, 2019, from The eLearning Action Plan: Designing tomorrow's education [Online].Communication

from the Commission to the council and the European Parliament.:
<http://europa.eu.int/eur-lex/en/com/cne/2001/com20010172en01.pdf>.

- D.Sc. Sanja Bauk, M. T. (2012). *Implementing e-learning modes to the students and seafarers education*. Montenegro: IMSC.
- Daniel, E. (2016). The Usefulness of Qualitative and Quantitative Approaches and Methods in Researching Problem-Solving Ability in Science Education Curriculum. *Journal of Education and Practice*.
- Debois, S. (2018, March 08). *10 Advantages and Disadvantages of Questionnaires* . Retrieved July 27, 2019, from Survey Anyplace: <https://surveyanyplace.com/questionnaire-pros-and-cons/>
- Dubey, A. D. (2016). ICT in Education: Evaluating the Concerns of the In-Service Students of Fiji National University. *International Journal of Information and Communication Technology Education*.
- ECMAR. (2016). *MARITIME TECHNOLOGY CHALLENGES 2030, New Technologies and Opportunities*. Belgium: The European Council for Maritime Applied R&D.
- Edge, G. (2019). *Global Insights*. Retrieved July 24, 2019, from Technology Background: <https://globoledge.msu.edu/industries/technology/background>
- Ellis, P. (2017, June 19). *CLEAR SEAS CENTRE FOR RESPONSIBLE MARINE SHIPPING*. Retrieved August 08, 2019, from Clear Seas: <https://clearseas.org/en/blog/why-seafarers-matter/>
- FMA. (2019). *Fiji National University*. Retrieved July 18, 2019, from FNU Web: www.fnu.ac.fj/maritime
- FNU-PR. (2019). *Fiji National University*. Retrieved July 20, 2019, from FNU Web: www.fnu.ac.fj
- Gesa Praetoriusa, Aditi Katariaa, Erik Styhr Petersena. (2015). Increased awareness for maritime human factors through e-learning in crew centered design. *Elsevier*.
- Guides, R. (2019, July 25). *General References and Research Help*. Retrieved July 27, 2019, from University of Southern California: <https://libguides.usc.edu/writingguide>
- Haiyan, Y. (2016). Blended Learning Will Be Applicable in Maritime Education and Training. *Journal of Shipping and Ocean Engineering*, 31-34.
- Healy, N. (2019, August 07). Fiji National University Newsletter. Suva, Central, Fiji.
- Heusterberg-Richards, A. (2019, January 23rd). *The IB Community Blog*. Retrieved July 17th , 2019, from How technology is transforming education: <https://blogs.ibo.org/blog/2019/01/23/how-technology-is-transforming-education/>
- Hiltz, S., & Turoff, M. (2005). Education goes digital: The evolution of online learning and the revolution in higher education. *COMMUNICATIONS OF THE ACM*, 48(10), 6,7.

- Hiltz, Starr Roxanne & Murray Turoff. (2005). EDUCATION GOES DIGITAL. In S. R. Hiltz, *The Evolution of Online Learning and the Revolution in Higher Education*. New Jersey: New Jersey Institute of Technology.
- IMO. (2017). *Annex 5: Draft Revised IMO Model Course 1.30 on Onboard Assessment*. London: International Maritime Organization.
- Jiang, Y. (2011). The implications of distance learning in competency based maritime education & training. *International journal of learning, teaching and educational research*.
- Lewam, B. (2014, 06 29). Seafarer Training - Does the System Defeat Competence? *IAMU*.
- Malcolm Campbell, Will Gibson, Andy Hall, David Richards, Peter Callery. (2008). Online vs. face-to-face discussion in a web-based research methods course for postgraduate nursing students: A quasi-experimental study. *International Journal of Nursing Studies*.
- Moore, M. G. (1997). Theory of transactional distance. In M. G. Moore, *Transactional Distance* (pp. 22 - 38). Routledge.
- Morrison, K. (2018, October 30). *CMS Vs. LMS: Key Differences Between Course Management Systems And Learning Management Systems*. Retrieved July 10, 2019, from eLearning Industry: <https://elearningindustry.com/cms-vs-lms-key-differences-course-management-systems-learning-management-systems>
- MSAF. (2019, June 26). *Maritime Safety Authority of Fiji*. Retrieved July 14, 2019, from MSAF: www.msaf.com.fj
- Mukherjee, P. K. (2013). *Maritime governance*. In *Farthing on international shipping* (Vol. 1). Berlin: World Maritime University.
- Nawaz, A. (2012). Implications of the Shifting Paradigms in eLearning for Developing countries like Pakistan. *Global Journal of Management and Business Research*.
- Nigel, H. M. (2018). Higher Education Systems and Institutions, Fiji. *Encyclopedia of international higher education systems and institutions*, Springer.
- Pei Zhao, S. S. (2015). The pedagogical functions of arts and cultural-heritage education with ICT's in Museums. *International Journal of Instructional Technology and Distance Learning*.
- Picincu, A. (2018, October 29). *The Advantages of Using a Questionnaire*. Retrieved July 27, 2019, from Biz Fluent: <https://bizfluent.com/info-8206848-advantages-using-questionnaire.html>
- Pinner, R. S. (2011). *Taxonomy for online learning environment*. Sophia University.
- Prabhu, M. (2018, April 04). Benefits and Effects of E-Learning. *Language in India* www.languageinindia.com ISSN 1930-2940 Vol. 18.
- Raphaël Baumler, Aykut I. Ölçer, Anne Pazaver, Takeshi Nakazawa, Michael Baldauf, Daniel Moon, Clive Cole. (2014). Train-the-Trainer Course on Energy Efficient Operation of Ships. *American Journal of Climate Change*, 404 - 412.

- Review, W. P. (2019, September 24th). *World Population Review*. Retrieved September 24, 2019, from World Population review by country: <http://worldpopulationreview.com/>
- Riaz, D. A. (2016). *ACCEPTANCE OF TABLET APPS FOR E-LEARNING BY SENIOR USERS: A Test of Unified Theory of Acceptance and Use of Technology*. Lahore: The Bridge Grammar School.
- RUTTENBUR, B. SPICKLER, G. and LURI, S. (2000). *E-learning the Engine of the Knowledge Age*. Retrieved July 2019, from Morgan Keegan & company: <http://intemettime.com/itimegroup/morgankeegan.pdf>.
- Safelearn. (2019, July 11). *Safelearn*. Retrieved September 19, 2019, from Infographic: The Key Benefits Of e-Learning For The Maritime Industry: <https://www.safelearn.com/resources/benefits-of-elearning/>
- Sanja Bauk, M. K. (2013). A CASE STUDY ON INTRODUCING E-LEARNING INTO SEAFARERS' EDUCATION. *JOURNAL OF INFORMATION TECHNOLOGY AND APPLICATIONS*, 1, 4.
- Shabani. (2010). Instructional Implications and Teachers' Professional Development. *ERIC*.
- Shadi Aljawarneh, Zahraa Muhsin, Ayman Nsour . (2010). E-learning Tools and Technologies in Education: A Perspective. *semantic scholar*.
- Shanavaz. (2019, January 4). *eLearning Industry*. Retrieved July 11, 2019, from 8 Reasons Why Moodle Is Still Awesome: <https://elearningindustry.com/why-moodle-still-awesome-8-reasons>
- Shane. (2019). *World Population Review*. United States: 340 S Lemon Ave. Walnut, CA 91789.
- Staab, S. (2001). *eLearning based on the semantic web*. Germany: Institute AIFB - University of Karlsruhe and Ontoprise GmbH.
- Teferra, D. (2018, March 30th). *University World News*. Retrieved July 17th , 2019, from TVET – The new stepbrother to higher education?: <https://www.universityworldnews.com/post.php?story=20180330062631851>
- Wei, R. (2013). Views from maritime education and training on the full implementation of 2010 STCW ammendments. *Journal of Shipping and Ocean Engineering*.

Appendices

Survey Questionnaire

Background Information:

Preferred Name: _____ (Optional)

Which part of Fiji are you from: _____

Work experience in Maritime field:

0-5 years 5-10 years ≥ 10 years

Rank on-board: _____

COC Level: _____

Overall Highest Qualification: _____

Currently Employed by: _____

Position: _____

1. Fiji Maritime Academy, being the only maritime training provider in Fiji is predominantly using the face to face method of teaching. How would you rate this mode of teaching?

Unsatisfactory Satisfactory Average Good Excellent

2. Please explain your reason and highlight some impact that the current teaching method (face to face) has on the Fijian Seafarers who attended FMA?

3. For the impacts highlighted in Question 2, what measures do you think can be used to help solve these impacts?

Introduction of Blended Learning

Using DFL Mode (Distance & Flexible Learning)

Online Learning

Other

options:

4. In your view, do you think ELearning such as blended learning, DFL mode, flexible learning and online courses should be introduced to our current Seafarers to revalidate their COC or do refresher courses subject to any amendments in the STCW?

(Please tick one)

Yes No

Reason:

5. Which is the critical area which FMA and Fiji as a whole should consider when it comes to introducing ELearning to the Fijian Seafarers? (Please tick)

- Cadetship - Navigation Cadetship - Marine Engineering
 Refresher Course
 Pre- Sea Course Basic & Advance SOLAS Course
 All STCW approved courses

Additional Suggestion related to Question 5:

6. Do you agree that Fiji has the required resources and technology to support ELearning to the Fijian Seafarers considering that Seafaring falls under TVET and is a special skilled area as compared to that of Higher Education side?

Yes No

Reason:

7. How efficient is the eLearning in AMC (Australian Maritime College) or any other institution or university from where you have obtained your highest COC apart from FMA?

Unsatisfactory Satisfactory Average Good Excellent

8. What influence it will have on Fijian Seafarers if ELearning is introduced in Fiji for their benefit?

9. Are the tools and technology used by AMC or other universities from where you have obtained your COC towards teaching method effective? (rate your answer between 1-5, 1 being the poor and 5 being the excellent)

Rating: _____

Reason:

10. What are some of the tools and technology used by AMC or other universities from where you have obtained your COC towards teaching method?

11. How can you compare it with the teaching methods and mode used in Fiji?

Unsatisfactory Satisfactory Average Good Excellent

Reason:

12. What is your preferred mode of learning and what are the reasons for this preference?

- Face to face learning Blended Learning
 Distance & Flexible Learning Full Online Learning

13. What is your view on the transition to ELearning mode in Fiji?

- Not a good option to introduce now
 Good approach but prefer face to face learning
 Efficient and effective approach

Please support your answer above:

Any Additional Suggestion or Comments towards this Research:

Thank you for taking out your valuable time to complete this questionnaire.