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Cadets' Awareness, Attitude, and Performance of Onboard Training in Maritime Institutions: Bases for Enhancement Program

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Abstract
This descriptive-correlational research aimed at finding out the level of cadets' awareness, attitude, and performance, as well as the relationship of onboard training in maritime institutions. The respondents of the study were the 276 randomly selected cadets who completed their 12 or 36 months of onboard training locally or internationally. Convenience sampling was employed in selecting the respondents coming from the maritime schools in Zamboanga Peninsula. Two adopted questionnaires were used: the cadets' awareness checklist from Annex H of VCMM No. 1, series of 2022, cadets' attitude by Barlis *et al*. (2015) [5]. The cadets' performance was obtained from their respective Onboard Training Office (OBTO) of the selected maritime institutions. Mean, standard deviation, Mann-Whitney U, Kruskal-Wallis H test, and Spearman rho set at .05 level of significance were the statistical tools used. Findings revealed that cadets are very aware, have a positive attitude towards onboard training, and have very good performance in onboard training. Significant differences were found in awareness, attitude, and performance based on department, years of sea service, and type of vessel, but not by route. A significant relationship exists between awareness and attitude, but not between awareness, attitude, and performance. The study concludes that maritime cadets in the Zamboanga Peninsula thoroughly understood all the necessary instructions for onboard training (OBT). However, their awareness of the role of designated training officers in monitoring their TRB progress got the lowest mean score. They also show a favorable attitude towards onboard training. Cadets' performance in onboard training is rated very good overall, meeting minimum competency with an above-average score. Departmental differences significantly influence cadets' awareness and attitudes towards onboard training, and performance varies significantly by years of sea service, department, and vessel type. A significant relationship exists between cadets' awareness and their attitudes, but not between awareness and performance, nor between attitudes and performance. The lack of a significant relationship between awareness and attitude to performance highlights the need for onboard training programs to focus on practical skills and competencies. The descriptive and inferential statistical results were used as the basis for the development of the enhancement program. While awareness and positive attitudes are important, they should be complemented with rigorous practical training, assessments, and performance feedback to ensure that cadets can translate their knowledge and attitudes into effective performance. Stakeholders such as school administrators, MHEIs, Maritime Industry Authority, shipping companies, cadets, onboard training officers, and future researchers and scholars may use the developed program to enhance the cadets' awareness, attitude, and performance in the onboard training program.

Keywords: Cadets, Awareness, Attitudes, Performance of Onboard Training

1. Introduction to the Study

Chapter One covers five (5) parts: (1) Background and Theoretical Framework of the Study; (2) Statement of the Problem and Hypotheses; (3) Significance of the Study; (4) Definition of Terms; and (5) Scope and Limitation of the Study.

Part One, Background and Conceptual Framework of the Study, delineates and discusses the rationale for selecting the problem and the study's theoretical framework.

Part Two, Statement of the Problem and the Hypotheses, presents the investigation's purpose and advances the hypotheses tested for significance.

Part Three, Significance of the Study, cites the benefits that could be derived from the study results.
Part Four, Definition of Terms, defines the essential terms used in the study.
Part Five, Scope and Limitation of the Study, specifies the study's scope and coverage.

Background and Theoretical Framework of the Study

Shipping underpins over 90% of world trade, thus making the professionalism and the high level of competence of seafarers the keys to the sustainable development of the shipping industry. The education and training of seafarers, which frame Human Element performance, play a unique and important role in harmonizing the process of sustainability (International Maritime Organization, 1997).
The Baltic and International Maritime Council/ International Chamber of Supply Manpower report (2021) predicts that there will be a need for an additional 89,510 officers by 2026 to operate the world merchant fleet. The Seafarer Workforce report warns of a shortfall in officers by 2026. To address the future demand for seafarers, it is crucial for the industry to actively promote careers at sea and strengthen maritime education and training globally.
A report also from the European Maritime Safety Agency (EMSA) Annual Overview of Marine Casualties and Incidents 2023, conducted in safety navigations, reported that from 2014 to 2022, 59.1% of accident events involved human action and 50.1% of the contributing factors were related to human behavior (European Maritime Safety Agency, 2023) [17].
Thus, the future sustainability of the shipping industry is overwhelmingly dependent on the availability of an adequate pool of capable and effective manpower. Taking this into consideration, the cadets must be trained comprehensively on board to acquire the necessary knowledge, understanding, and proficiency to handle critical and emergency shipboard operations with courage and confidence (IAMU, 2020) [27]. Onboard Training (OBT) of the cadets is a vital linking phase between shore-based training and certification of competency. The quality of a prospective officer is predominantly dependent upon the quality of OBT they receive. During their time at sea, cadets are supposed to build the real-world skills needed to become ship officers by working through the practical tasks in their Training Record Books (TRB) (IAMU, 2016 [26]; IMO 2011).
Unfortunately, there are significant weaknesses in the present Onboard Training (OBT) system. One of the critical problems was reported in the 2021 EMSA Final Inspection Report, which revealed many inconsistencies and unverified data in the logbooks. As a result, there are many concerns that the cadets have not mastered the necessary skills but just made records in their books. What makes the situation even worse is that the students have to wait for months to get access to a ship. According to the International Association of Maritime Universities (IAMU, 2021) such frustrating waiting period has forced some of the desperate students to find ways out of the situation by filling their record books without any practical experience.
This lack of practice will be conflicting with the behavioral aspects that are necessary for efficient sailing. According to Ochavillo (2016) [47] the mindset of the cadet and the attitude during their time at sea are the factors that will determine their future performance on the ship. Seafaring in today's world needs more than just technical abilities other skills like managerial abilities, psychological endurance, adaptability and motivation are required (Setiawan *et al*., 2021) [59]. Thus, examining the awareness of the cadets regarding their role of training and their attitude becomes necessary in order to change the OBT. Improving these programs will result not only in the sustainability of the seafaring industry through highly qualified officers but also updating the policies related to seafaring education and training programs.
To explore the reasons behind such choices, this research paper adopts the framework of Self Awareness theory proposed by Duval and Wicklund (1972) [15]. According to it, the essence of self-awareness can be presented rather straightforwardly when individuals look at themselves, they make an attempt to compare their present actions to certain personal and professional standards. The discrepancy leads to the experience of negative feelings in case one realizes that his or her behavior does not comply with some internal criteria. Thus to solve this issue, individuals can choose one of two directions either adjust their actions to fit the criteria or switch off the perception of all those criteria and become indifferent to them. Using this psychological approach to maritime education, this study aims to explore the role of self-awareness in shaping the strategies of TRB management by cadets.
For this research, the importance of the above mentioned theory in the seafarer's attitude and performance on board ship cannot be understated. The theory plays a direct role in shaping the seafarer's attitude toward safety and teamwork. This research is supported by another theory called the self-efficacy theory, which states that attitudes influence actions. Together, these theories imply that cadet awareness and attitude toward training are significant to performance. Thus, ensuring cadets' awareness, having positive attitudes, and highly performing cadets towards onboard training play a crucial part in producing competent marine officers and maintaining industry competitiveness.
Fig 1 illustrates the paradigm of this research in graphical form.

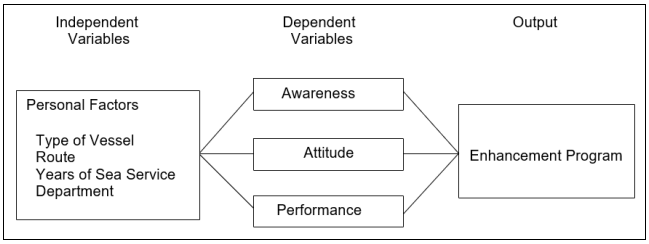

Fig 1: Paradigm of the Study

Statement of the Problem and the Hypotheses

The purpose of this study is to determine the cadets' awareness, attitude, and performance of onboard training in maritime institutions as bases for a training enhancement program.
Specifically, this study sought answers to the following questions:
1. What is the level of cadets' awareness towards onboard training when taken as an entire group and when classified according to type of vessel, route, years of sea service, and department?
2. What is the cadets' attitude towards onboard training when taken as an entire group and when classified according

to type of vessel, route, years of sea service, and department?
3. What is the level of cadets' performance of the onboard training when taken as an entire group and when classified according to type of vessel, route, years of sea service, and department?
4. Are there significant differences in the cadets' awareness when classified according to type of vessel, route, years of sea service, and department?
5. Are there significant differences in the cadets' attitude when classified according to type of vessel, route, years of sea service, and department?
6. Are there significant differences in the cadets' performance on the onboard training when classified according to type of vessel, route, years of sea service, and department?
7. Are there significant relationships among the cadets' awareness, attitude, and performance in the onboard training?
8. What enhancement program would be formulated to improve cadets' awareness, attitude, and performance in the onboard training?

Based on the preceding problems, the following hypotheses were advanced:

1. There are no significant differences in the cadets' awareness towards onboard training when classified according to type of vessel, route, years of sea service, and department.
2. There are no significant differences in the cadets' attitude towards onboard training when classified according to type of vessel, route, years of sea service, and department.
3. There are no significant differences in the cadets' performance of the onboard training when classified according to type of vessel, route, years of sea service, and department.
4. There are no significant relationships among cadets' awareness, attitude, and performance in the onboard training.

Definition of Terms

To facilitate uniformity and clarity of understanding the different terms used in this study, the researcher defined the following terms conceptually and operationally:

Awareness: It refers to "the state or ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns," and it is indicated as the level of consciousness (Gafoor, 2012) [22].

In this study, "awareness" refers to cadets' consciousness towards onboard training categorized as "Very aware", "Aware", "Moderate", "Unaware", and "Very unaware".

Attitude: It is the way in which a person views and evaluates something, a predisposition or a tendency to respond positively or negatively toward a certain idea, object, person, or situation (Sánchez *et al*., 2016) [56].

In this study, "attitude" refers to the cadets' feelings towards onboard training, categorized as "positive" or "negative".

Performance: It refers to the extent to which maritime personnel achieve safe, efficient, and compliant operational outcomes through the effective execution of their duties and adherence to organizational and regulatory standards (Putra *et al*., 2026).

In this study, "performance" refers to the level of the cadets' accomplishment during onboard training described as "Excellent", "Very Good", "Good", "Satisfactory", and "Pass".

Onboard Training (OBT): It is refers to the seagoing service requirement for BSMT or BS MarE students to qualify for graduation and to be accepted by the Maritime Administration to take the assessment of competence required for certification as Officer In Charge of a Navigational Watch on seagoing ships of 500 gross tonnage or more under Regulation II/1 and as Officer In Charge of an Engineering Watch in a manned engine-room or As the designated duty engineer in a periodically unmanned engine room on seagoing vessels powered by main propulsion machinery of 750 kW or more, in accordance with Regulation III/1 of the STCW Convention, 1978, as amended (Annex B, JCMMC No. 1, Series of 2019, June 10, 2019).

In this study, it refers to the part of the requirements in the marine engineering course to complete their Bachelor's degree.

Cadet: It refers to a student of MHEI who is required to undergo training on-board registered international ships or domestic ships to fulfill a maritime academic course (MARINA Circular-SC-No. 2022-01, February 28, 2022).

In this study, the same definition was used.

Maritime Higher Education Institution (MHEI): It refers to a higher education institution granted authority to operate BSMT and/or BS MarE program by the CHED (MARINA Circular-SC-No. 2022-01, 2022).

In this study, it refers to a Philippine institution offering a marine engineering course.

Onboard Training Supervisor: It refers to a person designated by the MHEI to direct and coordinate the facilitation of the cadets and monitor the progress of the shipboard training program (MARINA Circular-SC-No. 2022-01, 2022).

In this study, the same definition was utilized.

Shipboard Training Officer: It refers to all qualified officers who are members of the crew or part of the manning complement of the ship responsible to supervise and monitor the performance of cadet during the period of the OBT and ensure that each receives systematic practical training and experience in the tasks, duties and responsibilities of a ship officer, and ensure that the training record book (TRB) is properly maintained (MARINA Circular-SC-No. 2022-01, 2022).

In this study, the term refers to the person in charge of the cadets' OBT performance.

Significance of the Study

The findings of this study may prove important in the following contexts:

Maritime Industry Authority (MARINA)

The results may serve as baseline information regarding cadets' level of awareness, attitude, and performance towards onboard training. This information could serve the Maritime Industry Authority to develop policies/guidelines aimed at enhancing the implementation of cadets' onboard training and to address the identified weaknesses of this study.

The Maritime Higher Education Institutions (MHEIs)

The results of this study will give information on the current status regarding cadets' level of awareness, attitude, and performance towards onboard training and provide them

with information on what particular areas cadets need to be fully aware of, positive attitudes that need to be instilled, and improve cadets' onboard training performance. With this information, the Onboard Training Supervisor can take precautionary actions and activities to improve the cadets' level of awareness, attitude, and performance towards onboard training. Whether aboard domestic or international shipping vessels.

The School Administrators

The results of the study will enable the administration to do its share by providing additional resources, particularly human resources, to the onboard training office so that the onboard training officer will have enough time to conduct a thorough orientation, monitoring, and other activities that can help improve the cadets' level of awareness, attitude, and performance towards onboard training.

Onboard Training Office

The results of the study may provide information about the cadets' awareness, attitude, and performance on board. This will serve as a basis for what is supposed to be done in order that a positive attitude must be maintained and excellent performance can be attained to meet the needs of the maritime industry.

Cadets

They may benefit from the results of this study because they would be made aware of the necessary competences stipulated in the training record book (TRB), positive attitude, and outstanding performance of onboard training, as we continue to prepare cadets to become competent marine officers onboard seagoing vessels. Knowing the result of this study, they may be prepared to become a competent marine officer.

Future Researchers and Scholars

The results of the study may provide useful concepts and information about the cadets' awareness, attitude, and performance in onboard training. Furthermore, it may serve as a reference for future researchers who wish to replicate this study, which may deal with variables not included in the present study.

Scope and Limitation of the Study

This descriptive-correlational study aimed at determining the level of cadets' awareness, attitude, and performance of onboard training in the three maritime institutions for the academic year 2020-2022 as a basis for an enhancement program.

This study was conducted in April 2023. The respondents were two hundred seventy-six (276), conveniently, the three (3) selected cadets who completed the onboard training from selected maritime institutions in Zamboanga Peninsula, fully recognized maritime institutions by CHED and MARINA as of 2023.

Data were gathered for the cadets' awareness, attitude, and performance of onboard training. For the level of cadets' awareness, an adopted questionnaire from Annex H of VCMM No. 1, series of 2022, was used. The said instrument underwent a pilot testing of 30 graduating maritime cadets and was duly validated by a jury composed of five members. For the cadets' attitude, a questionnaire checklist was adopted from the study of Barlis *et al*. (2015) [5]. Further, for the cadets' performance of onboard training, the item was taken from the secondary data, which is the overall grade result from the cadets' assessment, composed of oral, written, and practical, which was provided by the onboard training office (OBTO) of the respective maritime institutions.

The development of the enhanced program was based on the three lowest means of the descriptive results.

2. Review of Related Literature

Chapter Two presents a review of literature related to the present investigation. It contains discussions on the following topics: (1) Understanding Onboard Training Program in Maritime Education, (2) Enhancing Cadets Performance Through Onboard Training, (3) Role of Mentorship and Supervision in Onboard Training, (4) Foreign and Local Studies Regarding Onboard Training, and (5) Summary.

Understanding the Onboard Training Program in Maritime Education

Maritime Industry Authority (MARINA) became the single Maritime Administration in the Philippines responsible for the implementation and enforcement of the 1978 International Convention on Standards of Training, Certification and Watch Keeping for Seafarers, as amended under R.A. 10635. CHED and MARINA, through the STCW office, oversee the development and implementation of maritime education and training (CHED & MARINA, 2019).

The OBT requirement for the BSMT program shall be complied with by undergoing and completing not less than twelve (12) months of seagoing service, which shall include the performance of bridge watchkeeping duties for not less than six (6) months under the supervision of the Master or a qualified deck officer. Following a structured program of training onboard a seagoing ship of five hundred (500) gross tonnage or more, documented in the approved Training Record Book (TRB) and Daily Journal of Watchkeeping Duties by the requirements of the STCW Convention 1978, as amended; or not less than thirsty six (36) months of seagoing service onboard a seagoing ship of 500 gross tonnage or more engaged in domestic or international voyages, either as Ratings Forming Part of a Navigational Watch, or Able Seafarer Deck, or other relevant capacity in the Deck Department, which shall include the performance of bridge watchkeeping duties for not less than six months under the supervision of the Master or a qualified deck officer (JCMMC-1, Annex B-PSG-OBT, 2019).

The OBT requirement for the BS MarE program shall be complied with by undergoing and completing a combined workshop skills training and an approved seagoing of not less than twelve (12) months as part of an approved training program, which shall include the performance of engine-room watchkeeping duties for a period of not less than six months under the supervision of the Chief Engineer or a qualified engineer officer, following a structured program of training onboard a seagoing ship of 750-kW propulsion power or more, documented in the approved Training Record Book (TRB) and Daily Journal of Watchkeeping Duties in accordance with the requirements of the STCW Convention 1978, as amended or a combined workshop skills training and an approved seagoing service of not less than thirsty-six (36) months of which not less than thirty

(30) months shall be seagoing service in the engine department onboard a seagoing ship powered by main propulsion machinery of 750-kW propulsion power or more engaged in domestic or international votages, in a position either as Ratings Forming Part of an Engineering Watch in a Manned Engine-room or Able Seafarer Engine, or other relevant capacity in the Engine Department, which shall include the performance of engine-room watchkeeping duties for a period of not less than six (6) months under the supervision of the Chief Engineer or a qualified engineer officer (JCMMC-1, Annex B-PSG-OBT, 2019).

After completing the twelve (12) months OBT, the cadet shall report to the Onboard Training Office of the MHEI concerned for debriefing, validation of TRB, approval of the twelve months OBT, and assessment purposes. The following documents must be submitted for evaluation: a) Accomplished Training Record Book (TRB) showing that all identified sea projects and at least 70% of the identified operational tasks were completed during onboard training; b) Onboard Training Guide (OTG) as proof of having performed the tasks during onboard training; c) Certificate of Sea Service signed by the Master supported by Seafarers Record Book (SRS); d) Notarized Certificates of Sea Service issued by the shipping/manning company; e)Accomplished Daily Journal of Watchkeeping Duties; f) Seafarer's Record Boor (Seaman's Book); and g) Passport with immigration stamp of departure and arrival for oceangoing service. For OBT in domestic seagoing service, there shall be at least one per month for a total of twelve (12) months duration of the following documents signed by the Master: a) Certified True Copy of the Masters' Declaration of Safe Departure (MDSD); and b) Crew list with ship's stamp and PCG Clearance stamp with signature (JCMMC-1-S, Annex B-PSG-OBT, 2019).

In case the BSMT and BS MarE cadets were not able to undergo the twelve (12) months structured OBT, but completed at least thirty-six (36) months of seagoing service, the following documents must be submitted to the Onboard Training Office for the validation: a) Certificate of Seagoing Service duly signed by the Master or Chief Engineer; b) Accomplished Daily Journal of Watchkeeping Duties showing performance of watchkeeping duties and tasks; c) Seafarer's Record Book (SRB or Seaman's Book); d)Passport with immigration stamp of departure and arrival for oceangoing sea service; and e) For OBT in domestic seagoing service, there shall be at least one (1) per month for a total 12-month duration of the following documents signed by the Master: a) Certified True Copy of the Masters' Declaration of Safe Departure (MDSD); and b) Crew list with ship's stamp and PCG Clearance stamp with signature (JCMMC-1-S, Annex B-PSG-OBT, 2019).

Cadets with duly validated onboard training may qualify to undergo an assessment relating to the tasks performed and competencies acquired during OBT. The methods of assessing the cadets' learning from the OBT shall be done through a) Written or computerized examination based on the TRB; b) Practical assessment using appropriate laboratory equipment, machinery, and/or simulator to demonstrate tasks in accordance with the table of competences of the STCW Code; and c) Panel Interview (oral assessment). This assessment method will allow the assessors to further evaluate the competencies of the STCW Code. The assessment results shall be recorded and signed by the Assessors and consolidated by the Onboard Training Supervisor, who shall sign the official grading sheet of the students to be submitted to the MHEIs Registrar (JCMMC-1-S, Annex B-PSG-OBT, 2019).

Onboard Training (OBT) is an integral component of the maritime education and training programs. It is a pre-requisite for the assessment of competence required for certification as Officer in Charge of a Navigational Watch on seagoing ships of 500 gross tonnage or more under Regulation II/1 and as Officer in Charge of an Engineering Watch in a manned engine room or as designated duty engineer in a periodically unmanned engine-room on seagoing ships powered by main propulsion machinery of 750 kW propulsion power or more under Regulation III/1 of the STCW Convention, 1978, as amended (Commission on Higher Education [CHED] & Maritime Industry Authority [MARINA], 2023) [12].

Onboard Training (OBT) is a vital linking phase between shore-based training and certification of competency. The quality of a future officer is predominantly dependent upon the quality of OBT they receive. OBT is an opportunity to strategically align the theoretical knowledge acquired in a maritime institution with practical day-to-day shipboard operations. When accomplished without any compromise on quality, onboard training has the potential to instill the underpinning skills and knowledge needed to transform trainees into effective future officers. The future sustainability of the shipping industry is overwhelmingly dependent on the availability of an adequate pool of capable and effective manpower. Taking this into consideration, the prospective officers (cadets) must be trained comprehensively on board in order to acquire the necessary knowledge, understanding, and proficiency to handle critical and emergency shipboard operations with courage and confidence (International Maritime Organization, 2016) [28].

The legislation laid out in the Standards for Certification and Watchkeeping, or STCW, has two (2) parts: the convention and the code, which are separate but are to be read hand in hand in order to get the full picture. The code has two (2) parts: A, which contains mandatory provisions, and Part B, which offers recommended guidance. Both sections, convention and code, have been modified numerous times, the latest being the Manila amendments in June 2010. The convention states that the deck officer candidate should be at least 18 years of age, have twelve (12) months of seagoing service if enrolled in an approved training program (maritime school), have taken part in bridge watchkeeping duties for a period of at least six (6) months, have an appropriate radio license, have met the standard of competence in the Training Record Book, and have valid Basic Safety, Advanced Firefighting, and Lifeboat training completed (International Maritime Organization, 2011).

The minimum standard of competence is laid out in STCW A-II/1 in the format shown below. This is to assist both the trainer and trainee in establishing a curriculum, both on land and at sea, although certain tasks can only be performed at sea. The A-II/1 annex contains 4 columns, column 1 being the topic. Column 2 lists what the trainee should be able to perform after the skill is acquired. Column 3 lists the method for demonstrating competence, namely, where the trainee should perform this task (on land, at sea, or in a simulator), and the required equipment for the task. Lastly, in the final column, the criteria the training officer should take into account when assessing the knowledge level of the trainee. In this example, for position fixing, the trainee

should take into account the most appropriate for the prevailing conditions, within an acceptable error margin (International Maritime Organization, 2011).

The Training Record Book, in large part, builds on the same competences contained in the table mentioned above; they will be listed in a much more user-friendly format so that the training officer can initial and both trainee and trainer can keep track of which tasks remain to be discussed. A sample of the ISF training book can be seen below. There are two (2) boxes next to each task, where the trainer can then initial once the trainee has demonstrated their competence. Once most of the tasks have been completed, the training officer or Master can then sign off on the whole section, and/or write further advice for improvement (International Maritime Organization, 2011).

Part A of the STCW code contains additional provisions regarding how the onboard training is carried out. The guidance mentioned in part B is not a mandatory provision; however will be covered under this heading. Every candidate for certification as officer in charge of a navigational watch of ships of 500 gross tonnage or more whose seagoing service, in accordance with paragraph 2.2 of regulation 11/1, forms part of a training program approved as meeting the requirements of this section shall follow an approved program of onboard training which: 1. ensures that, during the required period of seagoing service, the candidate receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a navigational watch, taking into account the guidance given in section B-II/1 of STCW Code; 2. is closely supervised and monitored by qualified officers aboard the ships in which the approved seagoing service is performed; and 3. is adequately documented in a training record book or similar document. Part B goes more into the details. It is expressed here that each training phase should have clear objectives for what competence is to be achieved by the end of each phase. Then, it goes into the various roles of all individuals involved in the process. It is very clearly stated that out of all these players, the trainee should be aware of the onboard training officer and the company training officer. The Company Training Officer is responsible for overall administration of all the trainees onboard, and monitoring the overall progress of trainees, also providing a link between the company and maritime colleges. The shipboard training officer is responsible for ensuring the training book is filled out at regular intervals and making sure the trainee is given ample opportunity to acquire and demonstrate their knowledge, taking into account the operational constraints of the vessel. The Master is the link between the shipboard training and the vessel, stepping in as the shipboard training if necessary. And finally, and perhaps most importantly, the trainee, who must make the most out of his time onboard while ensuring the Training Record Book is filled out accordingly. It is very clearly seen that this is not a “one-man show”, all players of the organization must come together to offer a quality experience for the future officer. The code then goes on, into assessment and evaluation, and lists five (5) ways of doing so: 1) direct observation of work activities (including seagoing service); 2) skills/proficiency/competency tests; 3) projects and assignments; 4) evidence from previous experience; 5) written, oral, and computer-based questioning techniques. One or more of these methods should be used to conduct a proper evaluation (International Maritime Organization, 2011).

Enhancing Cadets’ Performance Through Onboard Training

Philippine Maritime Higher Education Institutions (MHEIs) are crucial in meeting qualification standards for training future Filipino maritime professionals. The curriculum for Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BS MarE) includes a three-year academic program followed by a one-year Onboard Training (OBT). Before starting the OBT, cadets complete a three-year academic requirement that remains under the MHEIs (CHED & MARINA, 2023) [12].

Onboard Training (OBT) is important to bridge shore-based education and competency certification. The quality of OBT has a direct impact on the development of future officers. It integrates theoretical knowledge with practical shipboard operations. Effective OBT equips trainees with the necessary skills and knowledge, crucial for the shipping industry's sustainability. Comprehensive onboard training is vital for cadets to gain the expertise and confidence needed to handle critical and emergencies on board (International Maritime Organization, 2021).

There are several ways in which Maritime Higher Education Institutions (MHEIs) can enhance the effectiveness of Onboard Training (OBT). Ensuring that cadets acquire the necessary knowledge and skills before going on board will ultimately improve their shipboard training performance. A study on curriculum mapping in relation to cadets' shipboard training performance could be conducted to provide recommendations on specific subjects that should be taught before their shipboard training (Piñas *et al*., 2019) [51].

Joint CHED-MARINA Memorandum Circular No. 1 - Annex F series of 2023, outlines the guidelines for implementing approved onboard training for BSMT and BS MarE cadets. Section 3 of the guidelines emphasizes the responsibilities of the onboard training supervisor, which include the following: coordinate with the manning/shipping company; coordinate for the embarkation/disembarkation of cadets; conduct a comprehensive orientation of cadets before their embarkation; monitor the progress of cadets undergoing OBT by communicating, checking and providing guidance as to the accomplishment of the TRB; providing guidance and assistance as to onboard welfare, personal and professional concerns. These measures aim to ensure cadets receive effective and comprehensive onboard training and enhance cadets’ performance.

Manning/Shipping Company plays a vital role also in cadets’ onboard training (OBT). To stay competitive in the global market, many shipping companies recruit maritime students through diverse processes, providing them with the necessary knowledge, expertise, and skills. The hands-on experience gained by maritime cadets in the workplace enables them to understand and meet the employment demands on merchant vessels (Magsino, 2023).

Salinas (2010, cited in Sevilla & Arceño, 2017) emphasized that the president of the Filipino Shipowners Association (FSA) encouraged vessel owners to provide berths to cadets. Salinas stresses that in order for the Philippines to remain the number one producer of skilled seafarers in the world, shipping firms must be willing to contribute by offering berthing space on board ships for the cadets. This

contribution from the industry is extremely important. Otherwise, the nation will end up losing it competitive advantage and the maritime academies will have no choice but to continue providing inadequate training to their cadets.
Similarly, Adams (2014), cited in Sevilla and Arceño (2017), highlighted in a best practice guide for the recruitment, welfare, and competence of cadets that they are trainees at the beginning of their maritime careers. The maritime industry, therefore, has an obligation to provide a consistent training platform that fosters the development of skills, knowledge, and understanding in a suitable training environment and culture focused on the cadets' well-being.
The long-term sustainability of the shipping industry heavily relies on having a sufficient pool of skilled and effective personnel. Therefore, cadets (trainees) must receive thorough onboard training to gain the essential knowledge, understanding, and proficiency needed to manage critical and emergency shipboard operations with courage and confidence (IMO, 2016) [28].
The need to enhance the performance of cadets as prospective officers due to a predicted shortage of officers for the world merchant fleet. According to the BIMCO/ICS Manpower Report (2021), an additional eighty-nine thousand five hundred ten (89,510) officers will be needed by 2026. The Seafarer Workforce report also warns of a potential officer shortfall by that year. To meet this demand, the industry must actively promote maritime careers and improve maritime education and training globally.
However, Tang (2021) [64], in his study entitled "A shortage of seafarer officers? Evidence from Filipino seafarer statistics," revealed the real status of Filipino officers, particularly officers at the operational level. Study shows that based on Filipino seafarers' certification, deployment, and training statistical data from 2015 – 2017, there is no shortage of officers (at the operational level). Instead, there is a problem of oversupply – tens and thousands of certified Filipino seafarers obtain their first CoC each year, but more than half of them find it difficult to secure an officer position. Furthermore, more than forty thousand (40,000) new cadets were recruited each year, and only a small proportion of them could complete the training.
The officer shortage claim of Filipino officers is misleading. It has been seen by labor-supplying countries as an opportunity to expand seafarer cadet recruitment and training capacities. However, resources are limited, and in the context of an oversupply, focusing on quality is much wiser and more effective than spreading investments and efforts thinly to strive for quantity. This is especially the case in countries where training quality is lacking. Improved quality makes officers more competent and competitive in the labor market. This is beneficial not only to the specific nation but also to the whole industry in terms of developing human resources (BIMCO & International Chamber of Shipping, 2021) [4].

Role of Mentorship and Supervision in Onboard Training

Effective mentoring on ships serves purposes beyond simply passing technical knowledge down to the mentees. Mentoring works as a mental guide to help build both operational and personal strength in young sailors. However, the maritime industry tends to sabotage the entire process by favoring short term profits and operational goals over comprehensive training programs. Such an attitude towards education and mentoring not only results in lack of talent retention but also creates communication barriers between culturally diverse seafaring crews. The outcome of all these issues is an experience gap which makes the crew ill prepared for any situation and increases the risk of human error dramatically (Pike *et al*., 2019) [50].
While the necessity of having a structured process is obvious, however the activities undertaken by organizations in order to engage themselves in such programs of formal mentoring are yet to develop in the shipping industry. Currently, there are several instances in which maritime organizations as well as ship manning organizations use informal processes in order to mentor newly qualified people who experience stress in being onboard. In order to overcome this issue the need arises for active participation in the development of formal mentoring programs which can complement the maritime educational programs.
The profound effect of structured mentoring has been well established within the wider field of organizational research literature. For instance, Fahad *et al*., (2003 cited in Sevillo and Arceno 2017) found out that specific coaching on the job leads to marked improvement in employee performance and increases on the job leads to marked improvement in employee performance and increases self confidence and job satisfaction via adaptive learning. In the shipping industry, this enormous task rests onboard training officers. The officers will have to act as coaches all the time while trying to strike a balance between their hectic seafaring work and the crucial duty of mentoring cadets on the deck and engines. In an institute like PIT that is geared towards producing internationally competent graduates such arrangements will be important. As much as the international shipping companies set very high standards for us we should make sure that our officers who act as mentors are given everything required in terms of facilities, guidance and time.

Foreign and Local Studies

Several studies have been conducted regarding the issues and concerns on Onboard Training. Some of these studies are cited in the following discussions:

Onboard Training Challenges in the 21st Century

Beyond the mere transmission of technical skills, shipboard mentorship serves as a vital psychological anchor that cultivates both operational competence and personal resilience in junior seafarers. When executed effectively, these developmental relationships reinforce an organization's safety culture and drastically improve training efficiency. However, the maritime sector frequently suffers from deep inconsistencies in how these programs are deployed, which ultimately compromises individual career progression and weakens the industry's operational standards as a whole.
This systemic failure stems largely from a corporate preoccupation with immediate cost efficiency and short-term operational targets. By prioritizing immediate financial metrics over sustainable human resource development, management structures inadvertently choke off the attraction and retention of skilled personnel. Neglecting long-term support networks means that despite global industry growth and a soaring demand for qualified professionals, the maritime sector is struggling to keep its best talent. Without uniform educational frameworks to support this intricate international network, an experience deficit will inevitably

emerge, drastically elevating the likelihood of catastrophic human error across both ship and shore operations (Pike *et al*., 2019) [50].

Despite these looming operational risks, institutional investment in structured mentoring remains remarkably underdeveloped, with formal initiatives still in their infancy across the global fleet. Currently, a vast majority of shipping companies and crewing agencies fail to allocate dedicated resources to these programs, leaving a critical gap in the professional pipeline. To rectify this, industry stakeholders must aggressively promote and fund structured mentorship frameworks that actively support cadets during their highly stressful initial transition into professional life at sea.

A major avenue for improvement lies in structural alignment; synchronizing onboard mentorship initiatives with established maritime academy curricula could fundamentally change how theoretical knowledge is converted into practical, real-world competence. At present, the distinct lack of standardized, formal mentoring schemes forces incoming professionals to rely almost entirely on informal, ad-hoc guidance from random crew members to survive their early contracts (Popa *et al*., 2023) [52]. This lack of structure creates highly volatile training environments where the quality of instruction varies wildly from ship to ship.

The profound value of formalizing this dynamic is underscored by organizational research; for example, Fahad *et al*. (2003, cited in Sevilla & Arceño, 2017) established that structured on-the-job coaching radically accelerates employee performance, boosting vital metrics like self-confidence, team coordination, and motivation. On a vessel, this coaching role is mirrored by the shipboard training officer, who must guide deck and engine cadets through their real-world apprenticeships. For institutions like PIT, which are committed to aligning their programs with global standards, supporting these onboard trainers is essential. To successfully mold graduates who meet the intense performance expectations of international shipping firms, companies must equip these officers with explicit mandates, proper training aids, and—most importantly—the dedicated time required to teach alongside their intense daily operations.

Philippines' Maritime Education and Training (MET) Readiness for 21st Century Skills

In the study of Tabora (2023) [63] entitled "Aligning the Ship Engine Cadets' Skill to the 21st Century," the study aims to assess the engine cadets' skill level in relation to the requisite 21st–century skills while they were receiving shipboard training. The findings revealed that the engine cadets were competent in three areas but needed to be more competent in the remaining area, which is inventive thinking. This signified that the engine cadets need supplemental training in the areas where they are less apt to improve their skills. The study also concludes that to adapt to the 21st century, people must keep improving their talents. The transport business requires highly skilled and adaptable workers. Complex automated system failures cost lives and millions. Thus, staff must be trained in these systems. Engine cadets must improve their high-productivity skills, such as the ability to produce relevant, high-quality work outputs, to develop intellectual, informational, or material products that serve real purposes and result from their use of real-world tools to solve or communicate about real-world problems. MHEIs must prepare graduates for worldwide competitiveness and success in the 21st-century workplace and society, and Faculty must have 21st-century abilities, specifically. This requires professional development for faculty. The curriculum should promote 21st-century skills. The faculty needs recruits to have access to computers and the internet to teach.

Far beyond a basic mechanism for technical instruction, maritime mentorship functions as a vital psychological scaffold that fosters both operational confidence and professional resilience in junior seafarers. When poorly or inconsistently executed, however, these developmental frameworks fail, ultimately degrading industry-wide safety cultures and accelerating talent attrition. This issue is exacerbated by a corporate focus on short-term financial efficiency, which forces managers to prioritize immediate economic targets over sustainable, long-term human resource strategies. Consequently, despite a expanding global maritime market that desperately requires qualified personnel, shipping companies are struggling to retain skilled seafarers. Neglecting these essential support networks creates a distinct experience deficit within highly complex international crews, drastically increasing the probability of human error across both shipboard and shoreside operations (Pike *et al*., 2019) [50]. This operational vulnerability is worsened by the fact that formalized mentoring remains in its infancy, leaving newly minted professionals to rely on unpredictable, informal guidance to navigate their early onboard transitions (Popa *et al*., 2023) [52].

To mitigate this deficit, maritime enterprises and crewing agencies must actively fund and institutionalize mentorship initiatives, ideally integrating them directly with academic curricula to seamlessly bridge the gap between classroom theory and practical, deep-sea application. The profound impact of this approach is validated by organizational coaching data; for instance, Fahad *et al*. (2003, cited in Sevilla & Arceño, 2017) demonstrated that structured on-the-job guidance fundamentally elevates workforce performance, driving critical metrics like team coordination, self-motivation, and overall job satisfaction. Within the maritime context, this critical coaching responsibility falls upon shipboard training officers, who oversee the comprehensive practical evolution of deck and engine cadets. For institutions like PIT that are dedicated to delivering globally competitive graduates, matching the rigorous performance expectations of international shipping firms requires immediate, structural interventions. To turn these training frameworks into reality, shipping companies must explicitly equip their onboard training officers with dedicated instructional time, proper training aids, and clear institutional mandates to teach effectively alongside their standard operational duties.

Some Issues and Concerns Regarding Cadets' Onboard Training on International Vessels

The Anglo-Eastern Report (2002, cited in Xue, 2003) emphasizes the critical role of onboard training within an overall training strategy. Beyond standard emergency drills, it employs a multi-path approach that includes knowledge-based training by sea staff and on-the-job training. The company places a strong emphasis on Computer-based Training (CBT), equipping every ship with dedicated training computers and a PC-based ship-handling simulator.

Additionally, it offers courses to enhance crew motivation, work ethic, and teamwork, which have reportedly improved teamwork and harmony on board.

In this study, conducted by Rama *et al*. (2020) [53], which assessed the perceptions of officers, ratings, and trainees on key competencies for shipboard training using a descriptive survey method based on the STCW Code. The study involved 11 officers, 34 cadets, and five ratings. The results indicated that navigation is considered the most important competency for shipboard training, while radio communication is deemed the least important. Among officers, watchkeeping was rated as the most critical competency, whereas deck cadets prioritized navigation. The study concludes that maritime institutions should enhance their focus on the safety aspects of life at sea.

Lee *et al*. (2021) [39] conducted a survey to improve the onboard training environment for Korean maritime cadets, focusing on education, health and safety, and sexual harassment. The study highlighted a lack of detailed research on the problems and safety management in onboard training. Data from 284 cadets and 41 shipping company employees, collected between March and July 2020, revealed issues such as insufficient rest time and inadequate provision of personal protective equipment. Some companies treated cadets as crew members or temporary workers. Recommendations for improvement include assessing the suitability of ships for training, monitoring adherence to training guidelines, enhancing education on human rights, and systematically managing cadets as students, alongside physical improvements to the onboard environment (Lee *et al*., 2021) [39].

Fabian's (2018) [19] study examines onboard training from the trainer's perspective, focusing on how such training is conducted across various types of ships within the industry. The study is based on responses from a questionnaire distributed to qualified deck officers. The thesis provides detailed information on who is designated as the training officer, if applicable, the training methods used, the frequency of reviewing the training book, and the percentage of time spent on the bridge. Additionally, it explores the correlation between ship type and the rank of the training officer, as well as how the responses and onboard practices align with STCW regulations.

Kim *et al*. (2018) [37] examined the working conditions and onboard training satisfaction of merchant ship cadets following a fatal accident in 2017 examined by (Kim *et al*., 2018) [37] involving a cadet working 12 hours a day. The study aimed to investigate the working status and satisfaction of cadets during commissioned training and propose improvements. A survey of four hundred sixty-one (461) cadets revealed that 43% worked ten (10) hours daily, with 35.2% having an average rest time of eight (8) hours, and 15.6% working more than twelve (12) hours. Many cadets reported unreasonable orders unrelated to training. Satisfaction was highest among cadets on LNG carriers and lowest on bulk and container carriers. Key findings indicated that ship type, size, age, working hours, and rest time had minimal impact on educational satisfaction, but 56.8% of cadets felt training was like work. Recommendations include legislating work hours and rest periods for cadets and implementing protections against violence and harassment.

In this study, done by Jover (2019) [35] investigated the leadership styles of shipboard officers and their relationship to self-efficacy in managing crew members. The study, prompted by uncertainty about officers' ability to achieve goals through their leadership, used a descriptive and correlational method with one-hundred one (101) officers who last worked abroad between 2009 and 2016. Findings indicated no significant differences in self-efficacy levels based on age, position, area, or span of control, except for the number of years as an officer. The study concluded that there is a strong relationship between leadership styles and self-efficacy, suggesting that officers' understanding of their capabilities influences their leadership style. This understanding, along with their attitude and behavior, reflects their type of leadership.

Some Issues and Concerns Regarding Cadets' Onboard Training on Domestic Vessels

While mentoring is a powerful educational tool, its role as a psychological anchor—building the confidence and competence of junior crew members—is frequently undervalued in the maritime sector. When shipping companies implement mentorship inconsistently, it compromises both individual development and overall industry safety standards. Driven by immediate cost efficiencies and poor internal communication, management often prioritizes short-term operational targets over sustainable talent cultivation. This short-sightedness makes it difficult to attract and retain skilled professionals, even though the expanding global shipping industry desperately needs qualified crews. Ultimately, failing to invest in long-term support networks and uniform training frameworks creates a dangerous experience gap among international seafarers, directly increasing the risk of human error across both ship and shore operations (Pike *et al*., 2019) [50].

Compounding this issue, formal mentoring programs remain largely underdeveloped across the fleet, forcing green cadets to rely on informal, ad-hoc guidance to navigate their initial transition to life at sea. To fix this, shipping companies and crewing agencies must actively champion structured initiatives, ideally aligning onboard mentorship directly with maritime academy curricula to better bridge the gap between classroom theory and practical application (Popa *et al*., 2023) [52]. The value of this approach is backed by organizational research; Fahad *et al*. (2003, cited in Sevilla & Arceño, 2017) demonstrated that structured on-the-job coaching drastically improves employee performance, boosting vital metrics like motivation, teamwork, and job satisfaction. On a vessel, this responsibility mirrors the role of the shipboard training officer, who guides deck and engine cadets through their apprenticeships. For institutions like PIT that aim to deliver globally competitive graduates, supporting these officers is crucial. To satisfy the high-performance expectations of international shipping firms, companies must ensure that these onboard trainers are given clear instructions, adequate training facilities, and—critically—enough dedicated time to teach alongside their regular operational duties.

Favor *et al*. (2020)'s study evaluated the experiences of cadets from their internship onboard the MV Stella Del Mar, a Ro-Ro plying the Lipata-Liloan route. Results of the study showed that the cadets perceived the following aspects of internship to be well implemented: exposure to a safe work environment, protection of the marine environment, compliance with minimum manning requirements, capability to handle emergencies, guidance in accomplishing

the training record book, and a safe and hygienic environment. The study recommends the strengthening of elements of shipboard training that are perceived to have a low extent of implementation at workplace conditions and ensuring that the goals of the shipboard training are achieved through active involvement of an onboard training officer in the progress of the trainees.

Paraggua *et al*. (2017) [49] found that continuous monitoring and evaluation are essential for ensuring that graduates stay current with trends and demands in the maritime industry, preventing them from falling behind in the highly competitive shipping sector. The study assessed the academic preparation and shipboard training performance of PMMA cadets as a basis for improving the program to enhance customer satisfaction. A descriptive design was employed to gather and evaluate respondents' perceptions. The trainee-respondents rated the curriculum, faculty competency, and laboratory and equipment as very satisfactory. Similarly, evaluator-respondents rated the trainees' work competency, ethical standards, and knowledge and skills as very satisfactory. Trainees viewed the preparation of reports positively and successfully handled the tasks and functions outlined in their training record book, although there were some areas where a significant number did not gain experience. The study identified several emerging trends and demands that should be addressed and integrated into the maritime curriculum, including full compliance with security and safety regulations, the installation and use of modern navigational equipment, the inclusion of electronically controlled main engines, the adoption of simpler yet durable cargo handling equipment, and the implementation of effective garbage management systems. The identified weaknesses and gaps in the maritime curriculum and shipboard training highlight the need for reflection and adjustment to maintain the country's status as a leading provider of highly qualified marine officers (Sevilla & Arceño, 2017). The study emphasized the importance of continuous monitoring and evaluation to keep graduates up to date with the evolving trends and demands of the maritime industry, ensuring they remain competitive in the shipping sector, and evaluated the academic preparation and shipboard training performance of PMMA cadets as a foundation for program improvements aimed at enhancing customer satisfaction. The findings showed that trainee-respondents rated the curriculum, faculty competency, and laboratory facilities as very satisfactory, while evaluator-respondents similarly rated the trainees' work competency, ethical standards, and knowledge and skills. Trainees responded positively to the preparation of reports and effectively managed the tasks and functions outlined in their training record books, although there were some areas where many lacked experience. The gaps and weaknesses revealed by the study suggest that the maritime curriculum and shipboard training require careful consideration and adaptation to maintain the country's status as a premier provider of highly qualified marine officers.

Galicia's (2020) study aimed at ascertaining newly-hired seafarers' problems encountered onboard ships as the basis for a health intervention program. The study found that, generally, newly-hired seafarers had highly common problems encountered onboard ship. They shared five most common problems: they experienced homesickness and seasickness within a few months; long-distance relationships suffered; they hardly adjust to other crew members on board, and they suffered fatigue on board the ship. Significant differences existed in the common problems encountered by newly-hired seafarers onboard ships when classified according to age and residence location. No significant differences existed in the newly-hired seafarers' common problems encountered onboard ship when classified according to year of graduation.

Summary

Documented maritime training protocols highlight how essential it is for all industry participants to actively support a cadet's professional growth. Providing mentors and training officers with the modern tools required for contemporary skill development directly influences the caliber of tomorrow's shipboard leaders. Cultivating this shared responsibility not only preserves a nation's status as a premier provider of qualified maritime personnel but also strengthens global seafaring safety by mitigating human-error accidents.

The Seafarer Workforce Report (2021) warns of a shortfall of officers by 2026, which can be addressed by enhancing maritime education and training, which play an important role in improving the cadets' awareness, attitude, and performance and focusing on the diverse skills needed for a greener and more digitally connected industry.

The maritime industry will continue to grow and prosper as time goes by. As a maritime nation, the Philippines is committed to following the standards set forth by the International Maritime Organization through the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW Convention 1978, as amended) as the governing body for setting the minimum qualification standards for seafarers.

Finally, determining the cadets' awareness, attitude, and performance during onboard training will give the concerned maritime institutions an idea of the issues and concerns they will encounter during their onboard training and allow them to take appropriate action to address those issues and concerns through intervention. This way, the cadets' awareness will improve, they will exhibit a positive attitude, and their commendable performance during onboard training will serve as a passport for a well-deserved and excellent seafaring career in the future.

3. Research Design and Methodology

Chapter Three consists of three (3) parts: (1) Purpose of the Study and Research Design, (2) Method, and (3) Statistical Treatment of Data.

Part One, Purpose of the Study and Research Design, restates the research problem and explains the research design employed and the variables used in the investigation.

Part Two, Method, presents the respondents of the study, the sources of data, and the research procedure followed.

Part Three, Statistical Treatment of Data, explains the statistical tools used in the investigation.

Purpose of the Study and Research Design

This study aimed to find out the level of cadets' awareness, attitude, and performance of onboard training in maritime institutions as a basis for an enhancement program.

The descriptive-correlational research was employed in this study. Descriptive research, according to MacCombes (2020), aims to accurately and systematically describe a population situation or phenomenon, answering what,

where, and how but not why.

Descriptive research is an appropriate choice when the research aims to identify characteristics, frequencies, trends, and categories. It is useful when not much is known yet about the topic or problem. Before you can research why something happens, it is needed to understand how, when, and where it happens.

Correlational research is non-experimental research that facilitates predicting and explaining the relationship among variables (Seeram, 2019). Correlation analysis makes use of the Pearson product-moment correlation coefficient for quantitative variables. The correlational aspect of the design was utilized to determine the statistical association between the two quantitative variables.

Correlational research identifies, measures, and understands the relationship between two or more variables without manipulating them, to detect patterns characterized by relationships and make forecasts, (Bhandari, 2023) [6].

Method

This part presents in detail the respondents, the sources of data, and the research procedure employed in this study.

Respondents

The respondents in this study consisted of two hundred seventy-six (276) conveniently selected cadets from the three Maritime Higher Education Institutions (MHEIs) in the Zamboanga Peninsula who had completed either twelve (12) or thirty-six (36) months of onboard training, whether locally or internationally. The respondents were categorized according to type of vessel, route, years of service, and department.

In terms of vessel type, 84 or 30% of the respondents served on general cargo vessels, 69 or 25% on roll-on/roll-off (RoRo) vessels, 47 or 17% on passenger vessels, 28 or 10% on container vessels, 20 or 7% on tanker vessels, 19 or 7% on bulk carriers, and 9 or 4% on other types of vessels.

About the route, the majority of the vessels, 219 or 79%, operated on local routes, while 57 or 21% operated on international routes.

As to years of service, 241 or 87% of the respondents completed twelve (12) months of onboard training, whereas 35 or 13%of the respondents completed 36 months.

In terms of department assignment, most respondents, 187 or 68%, belonged to the engine department, while 89 or 32% were assigned to the deck department.

Table 1: Distribution of the Respondents

Category	f	%
Entire Group	276	100
Type of Vessel		
Passenger	47	17
Bulk Carrier	19	7
General Cargo	84	30
Tanker	20	7
Container	28	10
RoRo	69	25
Others	9	4
Route		
Local	219	79
International	57	21
Years of Service		
12 months	241	87
36 months	35	13
Department		
Deck	89	32
Engine	187	68

Sources of Data

The data on cadets' awareness were gathered using an adopted questionnaire checklist from Annex H of Joint Circular Memorandum Circular (JCMMC) No. 1, Series of 2022, entitled *Revised Guidelines on the Implementation of Onboard Training for BSMT and BS Mar-E Students*. The instrument consisted of fifteen (15) items and was content-validated by a panel of experts. Reliability testing yielded a Cronbach's Alpha coefficient of 0.940, indicating excellent internal consistency.

For the cadets' attitude, an adopted questionnaire from the study of Barlis *et al*. (2015) [5] was utilized. The instrument contained thirty (30) items, was likewise content-validated by a panel of experts, and obtained a Cronbach's Alpha coefficient of 0.814, indicating good reliability.

All items measuring cadets' awareness and attitude were rated using a five-point Likert scale: Always (5), Often (4), Sometimes (3), Rarely (2), and Never (1).

The data on cadets' performance were obtained from secondary sources. Scores from oral, written, and practical assessments were collected from the respective Onboard Training Offices (OBTOs) of the selected maritime institutions in the Zamboanga Peninsula.

The following scale of means, descriptions, and interpretations was used in analyzing cadets' awareness and attitude.

The following scale of means and description was used for cadets' awareness towards OJT:

Scale	Description	Interpretation
4.20 – 5.00	Very Aware	Cadet is highly knowledgeable and understood the importance of their onboard training (OBT)
3.40 – 4.19	Aware	Cadet is knowledgeable and understood the importance of their onboard training (OBT)
2.60 – 3.39	Moderately Aware	Cadet has partial or limited understanding the importance of their onboard training (OBT)
1.80 – 2.59	Unaware	Cadet has lack of knowledge, understanding and recognition of the importance of their onboard training (OBT)
1.00 – 1.79	Very Unaware	Cadet has a complete lack of knowledge, understanding and recognition of the importance of their onboard training (OBT)

The following scale of means and description was used for cadets' attitude towards OJT:

Scale	Description	Interpretation
1.00 – 1.25	Excellent	Cadet meets minimum competence with exceptional score
1.50 – 1.75	Very Good	Cadet meets minimum competence with over and above average score
2.00 – 2.25	Good	Cadet meets minimum competence with above average score
2.50 – 2.75	Satisfactory	Cadet meets minimum competence with average score
3.00	Passed	Cadet meets minimum competence
5:00	Failed	Cadet does not meet the minimum Competence

Procedure

The researcher requested permission to administer the research instrument from the Office of the President of the three selected Maritime Higher Education Institutions (MHEIs) in the Zamboanga Peninsula. Once the permit was approved, we distributed the questionnaires to the cadets. For those who were still on campus wrapping up their bachelor's degrees we handed out the forms in person after giving them a clear instructions. For the cadets who had already graduated and left campus, we reached out to them digitally, sending the questionnaires via email and online messaging platforms along with the same clear guidelines emails or via Facebook Messenger. Written instructions were clearly outlined to ensure that respondents completed the questionnaires correctly. The completed questionnaires were scored and subjected to appropriate computer-processed statistics using the Statistical Package for the Social Sciences (SPSS) software.

Statistical Treatment of Data

The data gathered was subjected to an appropriate descriptive and inferential statistical analysis through the SPSS software.

Mean, frequency, and percentage were the descriptive statistical tools employed in the study. The Mann-Whitney U Test for independent samples, the Kruskal-Wallis H Test, and the Spearman rho rank correlation for inferential analysis were set at the .05 level of significance.

Descriptive Statistics

Mean: Mean was used to determine the cadets' awareness, attitude, and performance towards onboard training.

Frequency and Percentage. Frequency and percentage were used to determine the number of respondents per type of vessel, route, years of service, and department.

Inferential Statistics

Mann-Whitney U: The Mann-Whitney U test was employed to find out if there are no significant differences in the cadets' awareness, attitude, and performance during onboard training when classified according to route, years of sea service, and department.

Kruskal-Wallis H: The Kruskal-Wallis H test was used to find out if there were no significant differences in the level of cadets' awareness, attitude, and performance towards onboard training when classified according to the type of vessel.

Spearman's rho: Spearman's rho rank correlation was used to determine the significant relationship among cadets' awareness, attitude, and performance towards onboard training.

All statistical computations were processed through Statistical Package for the Social Sciences (SPSS) software set at a .05 level of significance.

Descriptive statistics results in cadets' awareness, attitude, and performance, which constitutes the lowest mean of five (5) items, the differences, and the relationships were the bases for formulating a program to enhance.

4. Results and Discussions

Chapter Four presents the descriptive and inferential data gathered by the researcher through the use of a questionnaire checklist with its corresponding analyses and interpretations. Three (3) parts make up the presentation: (1) Descriptive Data Analysis and (2) Inferential Data Analysis.

Part One, Descriptive Data Analysis, shows the level of cadets' awareness and attitude towards on-the-job training (OJT).

Part Two, Inferential Data Analysis, presents the significant difference in the level of cadets' awareness, attitude, and cadets' performance on the OJT when classified according to type of vessel, route, years of sea service, department, and the relationship among cadets' awareness, attitude, and performance towards OJT.

Part Three presents the enhancement program developed based on the findings of the study.

Descriptive Data Analysis

Cadets' Level of Awareness Towards Onboard Training when taken as an Entire Group

Table 2 presents the level of cadets' awareness of onboard training in terms of personal factors.

The result revealed that, generally, the cadets in this investigation exhibited a very aware *(M* = 4.52*)* level of awareness towards onboard training. The respondents were "very aware" of all the items towards cadets' awareness, with a mean range from 4.19 to 5.00, which means that they are highly knowledgeable and understand the importance of OJT. This research corroborates the results of Canales *et al* (2014) who analyzed the levels of awareness regarding OJT and discovered that students realize the significance of linking their theoretical knowledge with practical seamanship skills. Their study highlighted that awareness influences the optimization of OJT benefits.

Table 2: Cadets' Level of Awareness Towards Onboard Training when taken as an Entire Group

S. No	Items	*M*	Description	*SD*
1	They are aware that the cadets should participate in conducting watch keeping duties and should fill out Daily Journal properly.	4.80	Very Aware	0.438
2	They are aware that the onboard training requirements should be accomplished by the cadets within their onboard training.	4.70	Very Aware	0.520
3	They are aware that the Onboard Training (OBT) prepares the cadets to become an officer by giving them systematic training and experience in the tasks, duties, and responsibilities of an officer.	4.59	Very Aware	0.606
4	They are aware that the Training Record Book (TRB) guides the cadets on various tasks/duties to be performed onboard.	4.58	Very Aware	0.641
5	They are aware on how to fill up the Training Record Book (TRB) properly.	4.55	Very Aware	0.656
6	They are aware on how to comply with Onboard Training Guidance (OTG).	4.47	Very Aware	0.690
7	They are aware that the designated onboard training officer supervises the cadets' various tasks/duties listed in the TRB.	4.43	Very Aware	0.758
8	They are aware that the tasks/duties assigned to the cadets aligns with the tasks/duties in the TRB.	4.40	Very Aware	0.725
9	They are aware that the designated onboard assessor conducts performance based-assessment after completing a task/duty.	4.35	Very Aware	0.812
10	They are aware that the designated onboard training officer checks the progress of the cadets' TRB in terms of the tasks/duties during OBT.	4.31	Very Aware	0.808
	Overall Mean	4.52	Very Aware	0.492

In terms of personal factors such as type of vessel, route, years of sea service, and department assignment, cadets demonstrated a very high level of awareness toward onboard training, with mean scores ranging from 4.20 to 5.00. Furthermore, ship officers' evaluations revealed uniformly "very favorable" levels of awareness and adaptability, indicating that students strongly recognize the value of OJT regardless of personal variables (Magsino *et al*., 2023).

Table 3: Cadets' Level of Awareness Towards Onboard Training when classified according to Personal Factors

Category	N	*M*	Description	*SD*
A. Type of Vessel				
Passenger	47	4.60	Very Aware	0.489
Tankers	20	4.56	Very Aware	0.432
General Cargo	84	4.52	Very Aware	0.519
Container	28	4.49	Very Aware	0.481
Roro	68	4.48	Very Aware	0.534
Bulk	19	4.36	Very Aware	0.403
Others	9	4.73	Very Aware	0.492
B. Route				
Local	219	4.54	Very Aware	0.493
International	57	4.45	Very Aware	0.491
C. Years of Sea Service				
36 months	34	4.54	Very Aware	0.388
12 months	241	4.52	Very Aware	0.506
D. Department				
Engine	187	4.57	Very Aware	0.472
Deck	89	4.42	Very Aware	0.518

Cadets' Level of Attitude Towards Onboard Training when taken as Entire Group

Table 4 presents the level of cadets' attitudes toward onboard training in terms of personal factors. The results revealed that the cadets generally demonstrated a positive attitude toward onboard training, with an overall mean of 4.58. All indicators reflected favorable responses, with mean scores ranging from 2.50 to 5.00. It reveals that the students possessed an attitude that is favorable toward OJT training. The findings are aligned with the study of Atienza *et al.* (2017) [3], which revealed that maritime students demonstrated highly positive attitudes toward school facilities and instructional materials that support OJT preparation, and these factors were positively correlated with academic performance.

Table 4: Cadets' Level of Attitude Towards Onboard Training when taken as an Entire Group

S. No	Items	*M*	Description	*SD*
1	They report on time during duty hours.	4.91	Positive	0.293
2	They display patience and *pakikisama* to their colleagues.	4.91	Positive	0.312
3	They work cooperatively with other crew members.	4.87	Positive	0.382
4	They maintain good rapport and relationships with their colleagues.	4.86	Positive	0.428
5	They are obedient to their superior.	4.84	Positive	0.423
6	They have the ability to perform tasks assigned to them.	4.80	Positive	0.430
7	They execute their duties and responsibilities assigned to them properly.	4.79	Positive	0.485
8	They are willing to render additional hours whenever needed.	4.77	Positive	0.495
9	They are easy to deal and go along with fellow crewmembers.	4.76	Positive	0.486
10	They observe punctuality in the scheduled tasks.	4.76	Positive	0.459
11	They display strength and enthusiasm in doing their work.	4.75	Positive	0.491
12	They have the initiative to perform other tasks.	4.74	Positive	0.480
13	They feel accountable towards their duties.	4.72	Positive	0.533
14	They respond to instructions promptly.	4.71	Positive	0.507
15	They participate in social gatherings.	4.70	Positive	0.547
16	They are resourceful.	4.63	Positive	0.567
17	They theoretically prepared by the institution.	4.61	Positive	0.559
18	They execute instructions immediately and accurately.	4.61	Positive	0.620
19	They do not argue based on the decisions made by the superior.	4.58	Positive	0.728
20	They have the knowledge in their assigned task.	4.53	Positive	0.606
21	They follow instructions and commands without questions.	4.49	Positive	0.691
22	They take a rest at the scheduled time.	4.47	Positive	0.751
23	They correct errors which done incorrectly.	4.40	Positive	0.783
24	They are not defiant on instructions against their opinion.	4.38	Positive	0.721
25	They need less supervision and they are trustworthy.	4.34	Positive	0.749
26	They do not have any illness or sickness.	4.32	Positive	0.854
27	They exercise regularly to maintain good health.	4.29	Positive	0.773
28	They have enough sleep prior to their next duty schedule.	4.28	Positive	0.776
29	They spend their vacant time to review and study.	4.18	Positive	0.712
30	They attend regular consultations with the physician.	3.54	Positive	1.244
	Overall Mean	4.58	Positive	0.309

In terms of personal factors such as type of vessel, route, years of sea service, and department assignment, the cadets demonstrated a positive attitude toward onboard training, with mean scores ranging from 4.20 to 5.00. These findings indicate that maritime students possessed a very favorable attitude with respect to personal factors. The results are consistent with the study of Barlis Jr. *et al*. (2015) [5], which found that ship officers rated BSMT and BS MarE cadets' attitudes toward colleagues as "very favorable" (M = 4.63), with an overall favorable mean score of 4.41. The study further revealed no significant differences in evaluations based on the evaluators' positions, although some differences were observed according to nationality. Positive attitudes were likewise maintained regardless of vessel type or department assignment.

Table 5: Cadets' Level of Attitude Towards Onboard Training when classified according to Personal Factors

Category	N	*M*	Description	*SD*
A. Type of Vessel				
Passenger	47	4.62	Positive	0.292
Tankers	20	4.61	Positive	0.491
General Cargo	84	4.56	Positive	0.291
Container	28	4.56	Positive	0.354
Roro	68	4.55	Positive	0.332
Bulk	19	4.50	Positive	0.309
Others	9	4.75	Positive	0.296
B. Route				
Local	219	4.59	Positive	0.307
International	57	4.57	Positive	0.323
C. Years of Sea Service				
36 months	34	4.59	Positive	0.303
12 months	241	4.58	Positive	0.309
D. Department				
Engine	187	4.63	Positive	0.273
Deck	89	4.48	Positive	0.359

Cadets' Level of Performance of the Onboard Training when classified according to Personal Factors

Table 6 presents the level of cadets' performance of the onboard training in terms of personal factors.

The results revealed that, generally, the cadets in this investigation exhibited a very good *(M* = 1.50*)* level of performance in the onboard training.

As to the type of vessel, cadets' performance of onboard

training in general cargo, tankers, containers, RoRo, and other types of vessels was very good, with a mean range from 4.20 to 5.00. While cadets onboard passenger and bulk carriers, cadets' performance on board was good, with a mean ranging from 1.50 to 1.75. In terms of route, cadets with OBT experience at domestic and international, and in terms of years of sea service, cadets with 12 months sea service, and in terms of department obtained a very good performance onboard, the mean range from 1.50 – 1.75, while cadets with 36 sea service obtained good performance *(M* = 2.00*)*. Generally, the level of performance was "very good," supported by Barlis *et al* (2015) [5] study.

Table 6: Cadets' Level of Performance of the Onboard Training when classified according to Personal Factors

Category	N	*M*	Description	*SD*
A. Type of Vessel				
Passenger	47	2.00	Good	0.763
Tankers	20	2.00	Good	0.621
General Cargo	84	1.50	Very Good	0.583
Container	28	1.50	Very Good	0.847
Roro	68	1.50	Very Good	0.856
Bulk	19	1.50	Very Good	0.822
Others	9	1.50	Very Good	0.879
B. Route				
Local	219	1.50	Very Good	0.811
International	57	1.50	Very Good	0.714
C. Years of Sea Service				
36 months	34	2.00	Good	0.670
12 months	241	1.50	Very Good	0.797
D. Department				
Engine	187	1.50	Very Good	0.766
Deck	89	1.50	Very Good	0.789
Overall Mean	**2.76**	**1.50**	Very Good	0.695

Inferential Data Analysis

Difference in the Cadets' Awareness Towards Onboard Training when classified according to Personal Factors

As shown in Table 7, the Mann-Whitney U test results reveal that a significant difference existed in the level of cadets' awareness towards onboard training in terms of the department *(z* = -2.328*, p* = .020*)*. This result implies that the cadets' department influences their level of awareness towards onboard training, which means that their level of awareness of onboard training was not the same.

On the other hand, no significant differences exist in the level of cadets' awareness towards onboard training in terms of the route *(z* = -1.683*, p* = .092*)*, and years of sea service *(z* = -447*, p* = .665*)*. These results imply that regardless of route and years of sea service, cadets have a similar level of awareness towards onboard training, but their understanding of onboard training was very necessary.

Securing the professional growth of maritime trainees demands a unified effort across every tier of the shipping sector. Industry frameworks consistently prove that a cadet's transition into a highly capable shipboard officer relies heavily on the active mentorship and support of all seasoned professionals around them. To achieve this, organizations must supply mentors and training officers with advanced educational resources tailored to modern seafaring complexities. By focusing heavily on these contemporary competencies, the industry can effectively bridge the gap between classroom theory and real-world ocean navigation.

Investing in this cooperative educational network does more than just elevate individual careers; it safeguards a nation's standing as a premier global supplier of elite seafaring talent. When maritime entities prioritize comprehensive, resource-backed training ecosystems, the entire global supply chain reaps the rewards. The ultimate payoff of this systemic dedication is a drastic reduction in human-error accidents, significantly lowering the frequency of open-sea mishaps and creating a fundamentally safer marine environment.

Table 7: Mann-Whitney U Test Result for the Cadets' Awareness Towards Onboard Training when classified according to Personal Factors

Category	N	Mean Rank	Sum of Ranks	z	Sig.
Route					
International	58	124.43	121.76	-1.683	.092
Domestic	218	142.16	141.54		
Years of Sea Service					
12 months	242	139.30	33710.00	-447	.665
36 months	34	132.82	4516.00		
Department					
Deck	89	122.44	10897.50	-2.328*	.020
Engine	187	146.14	27328.50		

Note. Asterisk (*) means significant at .05 alpha.

Kruskal-Wallis H Test Result in the Cadets' Awareness Towards Onboard Training when classified according to Type of Vessel

Kruskal-Wallis H Test result in Table 8 shows that no significant difference was found to exist in the cadets' awareness towards onboard training in terms of type of vessel, (χ^2= 5.601, p = .469). This result suggests that the type of vessel does not influence or is more or less the same level of cadets' awareness towards onboard learning.

International regulations mandate that all maritime cadets master foundational competencies, specifically safety awareness and terrestrial navigation, before beginning their professional careers. This essential safety awareness is primarily developed through structured classroom instruction and pre-sea training rather than being influenced by a specific type of vessel. Furthermore, the implementation of university-led curricula alongside a standardized training record book (TRB) guarantees that training requirements remain uniform across the entire merchant fleet. Because of this highly structured approach, cadets maintain a consistent level of productivity and situational awareness regardless of the specific ship environment they encounter. According to Sibali *et al*. (2026) [61], these uniform standards effectively ensure that new crew members are universally prepared for the demands of the maritime industry.

Table 8: Kruskal-Wallis H Test Result for the Cadets' Awareness Towards Onboard Training in terms of Types of Vessels

Category	Mean Rank	Kruskal-Wallis or Chi Square	df	Sig.
Types of Vessel				
Passenger	152.91	5.601	6	.469
Others	152.09			
Tanker	144.92			
General Cargo	139.85			
Container	135.52			
Roro	132.84			
Bulk Carrier	106.34			

Difference in the Cadets' Attitude Towards Onboard Training when classified according to Personal Factors

As shown in Table 9, the Mann-Whitney U test results reveal that a significant difference existed in the cadets' attitude towards onboard training in terms of the department *(z* = -2.066*, p* = .039*)*. This result implies that the cadets' department influences their attitude towards onboard training.

Research indicates that deck and engine cadets experience distinctly different levels of work engagement and mental health challenges during their 12-month mandatory onboard training (Santoso, 2025) [57]. Engine cadets, in particular, frequently report elevated stress levels stemming from the enclosed, high-temperature, and high-noise environments characteristic of the engine room when compared to their peers on the bridge (Arleiny & Widjatmoko, 2022) [1]. However, a comparative study by Hermanto *et al*. (2026) [24] published in Jurnal Penelitian Pendidikan IPA established that while learning motivation exerts a statistically significant effect on a cadet's overall professional competence across all departments, environmental factors, despite varying significantly between the engine room and the bridge, do not show a statistically significant impact on final competency outcomes.

On the other hand, no significant differences exist in the cadets' attitude toward onboard training in terms of the route *(z* = -191*, p* = .848*)*, and years of sea service (*z* = -1.040*, p* = .299*)*. These results imply that regardless of route and years of sea service, cadets have a similar attitude towards onboard training.

This finding is supported by Arleiny (2025) [2], who establishes that core competencies and operational tasks required of maritime personnel remain uniform across different operational routes (international vs. domestic). This correlation has resulted in cadets perceiving the ship based training from the perspective of regulatory requirements and licensing process instead of the geographical nature of a specific course of the ship. In addition, based on empirical studies it can be stated that during the first 12 month period of ship based training, the professional identity of cadets remains relatively stable irrespective of the total number of months spent on the sea. It is determined mainly by the practical need to graduate and get licensed (Santoso, 2025) [57].

Table 9: Mann-Whitney U Test Results for the Cadets' Attitude Towards Onboard Training when classified according to Personal Factors

Category	N	Mean Rank	Sum of Ranks	z	Sig.
Route					
International	58	136.54	7646.00	-191	.848
Domestic	218	137.75	30029.00		
Years of Sea Service					
12 months	242	139.50	33758.00	-1.040	.299
36 months	34	131.41	4468.00		
Department					
Deck	89	130.85	11645.50	-2.066*	.039
Engine	187	142.14	26580.50		

Note. Asterisk (*) means significant at .05 alpha.

Kruskal-Wallis H test result in Table 10 shows that no significant difference in the cadets' attitude towards onboard training in terms of type of vessel *(x^2* = 8.974*, p* = .175*)*. This result indicates that the type of vessel does not influence the cadets' attitude towards onboard training.

The finding is aligned with Piñas *et al*. (2019) [51] study, which specifically found that while skill domains might vary (e.g. deck vs engine) the overall performance and training outcomes showed no significant variance when grouped by vessel types.

Table 10: Kruskal-Wallis H Test Result for the Cadets' Attitude Towards Onboard Training in terms of Types of Vessels

Category	Mean Rank	Kruskal-Wallis H or Chi square	df	Sig.
Types of Vessel				
Others	159.09	8.974	6	.175
Passenger	146.04			
Tanker	142.16			
Bulk Carrier	142.16			
General Cargo	139.86			
Roro	131.31			
Container	125.44			

p<.05, Significant.

Differences in the Cadets' Performance of the Onboard Training in Terms of Personal Factors

As shown in Table 11, the Mann-Whitney U test results reveal that a significant difference existed in the cadets' performance of the onboard training in terms of years of sea service (*z* = -1.961, *p* = .050), and department *(z* = -3.994*, p* = .000*)*. These results imply that the cadets' years of sea service and department performance on onboard training differs.

The result is supported by the study of Sevilla and Arceño (2017), which compared deck and engine cadets and identified distinct performance profiles between the two departments, thereby supporting department-based differences in shipboard training experiences and task performance. Similarly, the study conducted at the Palompon Institute of Technology revealed that deck cadets generally obtained satisfactory academic and task performance ratings, while engine cadets demonstrated comparatively lower performance levels in certain areas, reflecting the influence of department-specific operational duties and apprenticeship expectations during their one-year onboard training on Dutch vessels.

On the other hand, no significant difference exists in the cadets' performance of the onboard training in terms of route *(z* = -1.485*, p* = .137*)*. This result implies that regardless of route, cadets have similar performance of the onboard training.

Table 11: Mann-Whitney U Test Results for the Cadets' Performance of the Onboard Training when classified according to Personal Factor

Category	N	Mean Rank	Sum of Ranks	z	Sig.
Route					
International	55	150.16	8259.00	-1.485	.137
Domestic	218	133.68	29142.00		
Years of Sea Service					
12 months	241	134.76	32613.00	-1.961	.050
36 months	34	161.73	5337.00		
Department					
Deck	186	150.34	27964.00	-3.994*	.000
Engine	89	112.20	9986.00		

Note. Asterisk (*) means significant at .05 alpha.

Kruskal-Wallis H Test result in Table 12 shows that a significant difference was found to exist in the cadets' performance of the onboard training in terms of the type of vessel ($x^2 = 9.063$, $p = .004$). This result suggests that the type of vessel does influence the level of cadets' performance in the onboard training.

The finding is consistent with the recent study showing that offshore and merchant fleet cadets develop distinct navigational competencies depending the vessel type and trade route (Ronelio *et al*., 2022) [55].

Table 12: Kruskal-Wallis H Test Result for the Significant Difference in the Cadets' Performance of the Onboard Training in terms of Type of Vessels

Category	Mean Rank	Chi Square	df	Sig.
Types of Vessel				
Passenger	164.67	19.069*	6	.004
Bulk Carrier	164.92			
General Cargo	143.47			
Others	138.70			
Container	132.19			
Tanker	124.18			
Roro	110.96			

Note. Asterisk (*) means significant at .05 alpha.

Following a significant Kruskal–Wallis test across vessel types, Dunn's test with Bonferroni adjustment was conducted to identify which specific vessel pairs differed in [insert your variable, e.g., level of cybersecurity preparedness]. The results of the pairwise comparisons are presented in Table 13.

Dunn's test revealed that roll-on/roll-off (RoRo) vessels had significantly higher than general cargo vessels (adjusted $p = 0.141$), bulk carriers (adjusted $p = 0.100$), and passenger vessels (adjusted $p = 0.002$). Among these, the roro–passenger comparison was the only one that reached statistical significance at the conventional $\alpha = 0.05$ level after Bonferroni correction, indicating that roro vessels scored higher than passenger vessels on this measure. The other roro–group comparisons (roro–general cargo, roro–bulk carrier) showed p-values below 0.05 in the unadjusted test but were not statistically significant after Bonferroni adjustment.

A pairwise post-hoc Dunn's test was performed utilizing a Bonferroni adjustment for multiple comparisons, where the level of significance was set at $\alpha = .05$. The result showed that the majority of the vessel type pairs did not differ significantly from one another. However, a statistically significant difference was shown exclusively in Ro-Ro and passenger vessels ($Z = 3.944$, $p = .000$, adjusted $p = .002$), indicating that passenger vessels have a higher mean rank compared to Ro-Ro vessels. No other pairwise comparisons reach statistical significance after Bonferroni adjustment. Table 13 shows the data.

Table 13: Pairwise Comparison of Vessels in Cadets' Performance of Onboard Training

Sample 1- Sample 2	Test Statistics	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.*
roro-others	-13.710	26.352	-.520	.603	1.000
roro-container	17.436	16.661	1.047	.295	1.000
roro-tanker	30.043	18.883	1.591	.112	1.000
roro-general cargo	32.734	12.081	2.710	.007	.141
roro-bulk carrier	54.359	19.264	2.822	.005	.100
roro-passenger	55.469	14.063	3.944	.000	.002
others-container	3.726	28.491	.131	.896	1.000
others-tanker	16.333	29.845	.547	.584	1.000
others-general cargo	19.024	26.079	.729	.466	1.000
others-bulk carrier	40.649	30.088	1.351	.177	1.000
others- passenger	41.759	27.054	1.511	.123	1.000
container-tanker	12.607	21.769	.579	.563	1.000
container-general cargo	15.298	16.226	.943	.346	1.000
container-bulk carrier	36.923	22.101	1.671	.095	1.000
container-passenger	38.033	17.751	2.143	.032	.675
tanker-general cargo	2.690	18.500	.145	.884	1.000
tanker-bulk carrier	24.316	23.821	1.021	.307	1.000
tanker-passenger	25.426	19.851	1.281	.200	1.000
general cargo-bulk carrier	21.625	18.889	1.145	.252	1.000
general cargo-passenger	22.735	13.544	1.679	.093	1.000
Bulk carrier-passenger	1.110	20.214	.055	.956	1.000
Note. Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is .05.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

Relationship Among Cadets' Awareness, Attitude, and Performance of the Onboard Training

Spearman rho rank correlation results in Table 14 showed that a positive and significant relationship between cadets' level of awareness and attitude ($r = .587$, $p = .000$). This result indicates that a higher level of cadets' awareness is associated with the attitude of cadets towards onboard training.

No significant relationship exists between cadets' performance and awareness ($r = .006$, $p = .0920$), and the cadets' attitude ($r = .009$, $p = 0.883$) and performance.

The findings that cadets' awareness and attitudes toward onboard training were significantly related, while no significant relationship was found between awareness/attitude and actual performance, are consistent with previous maritime education studies suggesting that affective factors such as awareness, attitude, and motivation primarily influence how cadets perceive and engage with training experiences. In contrast, actual shipboard performance appears to be more strongly associated with

personal qualities, professional knowledge, technical skills, and direct onboard exposure (Sevilla & Arceño, 2017).

Table 14: Spearman Rho Rank Correlation Results in the Relationship Among Cadets' Awareness, Attitude, and Performance of the Onboard Training

S. No	Variables	N	r	p-value
1	Awareness and Attitude	276	.587	0.000
2	Awareness and Performance	276	.006	0.920
3	Attitude and Performance	276	.009	0.883

Note. Asterisk (*) means significant at .05.

Proposed Enhancement Program

The enhancement program for cadets' awareness, attitude, and performance towards onboard training based on the findings of the descriptive and inferential statistics was the objective, strategies, persons involved, timeline, and the expected output.

The enhancement program, whose purpose is to improve the level of awareness, attitude, and performance of the cadets on board. Real situations based on the results will give an idea of how the enhancement program will be made for the purpose of achieving the goals of the shipping industry.

Table 15: Enhancement Program for Cadets' Level of Awareness, Attitude, and Performance towards Onboard Training

Objectives	Strategies	Persons Involved	Timeline	Expected Output
The proposed enhancement program is to improve cadets 'awareness, attitude, and performance toward onboard training (OBT)	Conduct a comprehensive Cadets' Pre-Departure Seminar with invited lecturers to discuss the following: A. Necessary instructions and documents before their OBT	College Dean	2 days	Cadets will accomplish the tasks/duties that are required from him/her to acquire during OBT
A. Cadets' Level of Awareness towards OBT Enhance cadets' understanding on the duties of training officer responsible for checking the progress of their duties during OBT.	Develop a monitoring scheme to ensure cadets' welfare and progress during their OBT can be monitored properly.	Program Advisers		Cadets can demonstrate the tasks/duties outlined in their TRB
Develop understanding on how the assessor onboard. Evaluate their performance based on their assessment after a completed task/duty.	Discussion of how the onboard evaluator assessed the cadets' performance on the task given.	Onboard Training Supervisor		Cadets will improve their performance during the evaluation of their TRB.
Make them realized that their duties/tasks should be align with what is listed in the TRB.	Recognition of their duties aligned with task on TRB as recorded.	Cadets Representative from maritime shipping		
B. Cadets' Attitude towards OBT Provide regular consultations with the company's physician to maintain good health	MHEIs should conduct seminars to discuss comprehensive health programs emphasizing regular medical consultations' importance. This could improve cadets' attitudes toward health and well-being	College Dean, Program Advisers, School Nurse, Cadets	1 day	Reduce health-related issues acquired by cadets during their onboard training (OBT). Good attitude towards work and relationship with peers
Utilize their vacant time Improve cadets' attitudes towards their health and well-being during onboard training (OBT). (Based on the lowest mean score)				
C. Cadets' Performance of OBT Improve cadets' level of awareness, and attitude towards OBT to improve cadets' overall performance after their OBT.	Develop a monitoring scheme to ensure that cadets onboard will be able to demonstrate all the necessary competencies stipulated in the Training Record Book	All Concerned Agencies (MARINA, CHED, Shipping Companies), College Dean, Onboard Training Supervisor	2 days	Improve the Employability rate of the graduates

5. Summary, Conclusions, Implications, and Recommendations

Chapter Five consists of four parts: (1) Summary of the Findings, (2) Conclusions, (3) Implications, and (4) Recommendations.

Part One, Summary of the Problem and the Findings, recapitulates on the significant parts of the study and its objectives and presents the investigation findings.

Part Two, Conclusions, gives the vital inferences from the study's findings.

Part Three, Implications discusses the implication for theory and practice.

Part Four, Recommendations, offers suggestions based on the findings and conclusions.

Summary of the Findings

This study generated the following findings:

1. The cadets in Zamboanga Peninsula exhibited a very aware level of awareness towards onboard training.
2. The cadets in Zamboanga Peninsula show a positive attitude toward onboard training.
3. The cadets in Zamboanga Peninsula got a very good rating in their performance of onboard training when taken as an entire group and when classified according to personal factors.
4. A significant difference existed in the awareness among cadets towards onboard training when classified according to the department. No significant difference existed in the awareness among cadets towards onboard training when

classified according to route.
5. A significant difference existed in cadets' attitude towards onboard training when classified according to department. No significant differences existed in the attitude among cadets towards onboard training when classified according to route and type of vessel.
6. Significant differences existed in the performance of the onboard training among cadets when classified according to years of sea service, department, and type of vessel. However, no significant difference existed in the cadets' performance when classified according to route.
7. A significant relationship existed between cadets' awareness and attitude toward onboard training. No significant relationships were found to exist between the awareness, attitude, and performance of the onboard training.
8. A training enhancement program was formulated to further improve the level of awareness, attitude, and performance of the onboard training among cadets in Zamboanga Peninsula. The descriptive statistics findings on cadets' awareness, attitude, and performance, which contributed the lowest mean of 5 items, the differences and the relationships were the bases for the formulation of the enhancement program.

Conclusions

Given the preceding findings, the following conclusions were drawn:
1. The level of awareness of the cadets towards onboard training when taken as an entire group and when classified according to personal factors was very aware seems to show that cadets has fully recognize of all the necessary instructions for onboard training (OBT). However, among the areas of concern, indicated that awareness of designated onboard training officers should check the progress of the cadets' TRB in terms of the tasks/duties during onboard training (OBT) got the lowest mean score.
2. The cadets' attitude towards onboard training, when taken as an entire group and when classified according to personal factors, shows all positive seems to show a very favorable attitude during their onboard training.
3. The cadets' performance of onboard training when taken as an entire group and when classified according to personal factors got an overall rating of very good, which indicates that cadets meet the minimum competencies with over- and above-average scores during their post-assessment after onboard training.
4. The findings revealed a significant difference in cadets' awareness of on-board training by department. The result indicated that deck and engine cadets received different exposure to on-board training information during their theoretical period. Since on-board training aims to improve the knowledge and skills acquired during the first two years of theoretical study, the department with lower awareness may require enhanced pre-departure orientation to ensure all cadets are adequately prepared for shipboard practices.
5. The findings showed a significant difference in cadets' attitude towards on-board training, indicating that deck and engine cadets differ in their motivation, expectations, and psychological readiness, as evidenced by studies showing that positive attitudes correlate with better task performance and overcoming challenges. The department with less positive attitudes may require enhanced pre-departure motivation, clearer role expectations, and mentorship programs.
6. A significant difference in cadets' performance during on-board training as to years of sea service, type of vessels, and department. The findings show that practical experience, the shipboard environment and the specific department a cadet belongs to are all critical factors in how well they perform at the operational level. Naturally, cadets with more time at sea perform better on practical tasks. This strongly suggest that accumulated sea time sharpens their knowledge and skills simply through repeated hands on exposure to the realities of a working vessel.
Cadets with more maritime experience likely demonstrate better task performance, suggesting that accumulated sea time enhances knowledge & skills through repeated exposure to a real work environment.
Performance across vessel types suggests that training quality & learning opportunities vary by vessel category. Cadets assigned to general cargo, Ro-Ro or heavy lift vessels may experience different training conditions compared to those in tankers, passenger vessels, or container ships.
As to the department, the performance between deck & engine cadets reflects department differences in work conditions, mentorship availability, or training protocols.
7. The relationship between awareness - attitude towards on-board training, the findings indicated that cadets possessing greater knowledge about on-board training requirements, procedures, and expectations tend to develop more favorable (or unfavorable) attitude towards training, which suggests that knowledge acquisition shapes psychological readiness and expectations, which are critical for effective performance.
Awareness-Performance Relationship - Cadets with higher awareness of on-board training demonstrates better performance outcomes.
Attitude and Performance Relationship - Cadets with more positive attitude toward on-board training achieve better performance result.

Implications

For Theory

The findings suggest that onboard training awareness, attitude, and performance are shaped more by departmental role and years of service than by route or, in some cases, vessel type. This supports role-based and experiential learning theories, which emphasize that learning is embedded in specific work contexts and cumulative practice rather than in generic or geographically varying conditions. The presence of significant differences by department but not by route indicates that theoretical models of maritime training should highlight departmental identity, task specialization, and seniority as key moderators, and should treat "route" as a weaker contextual factor unless specific operational or regulatory conditions intervene. The interaction of department, vessel type, and years of service further implies that theoretical frameworks must adopt multi-level, interactional models rather than single-factor explanations of cadet competence and attitude formation.

For Practice

For maritime education institutions and shipping companies, the results justify designing department-specific onboard

training modules for Deck and Engine cadets, with tailored learning objectives, practical tasks, and assessment criteria that reflect their distinct operational roles. Training programs should also be structured along experience levels (e.g., 0–1 year, 1–3 years, 3+ years), integrating progressive responsibilities, mentoring, and competency assessments that align with the observed link between years of service and performance. Since route did not significantly affect outcomes, a standardized core curriculum and basic performance standards can be maintained across routes, with only targeted, route-specific add-ons where operationally justified. Given the significant effect of vessel type on performance, practical training should include vessel-class familiarization (layouts, equipment, emergency procedures) through simulations or briefings, and evaluations should use type-specific checklists. Department-based differences in attitude and performance also call for targeted mentoring, recognition schemes, and supervisor training to sustain positive attitudes and translate them into consistent performance across departments. Finally, stakeholders should institutionalize periodic monitoring of cadet awareness, attitude, and performance by department, years of service, and vessel type, using the data to refine curricula, update policies, and inform certification requirements under international training standards.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are presented:

1. Maritime schools may establish a proactive monitoring framework to ensure that cadets receive consistent, active guidance from their designated onboard training officers. Formalizing this oversight could significantly enhance overall training effectiveness and guarantee that cadets remain on the right track while fulfilling their shipboard duties.
2. Maritime schools may conduct targeted seminars to discuss comprehensive health programs that emphasize the vital importance of routine medical consultations. This approach could improve cadets' attitudes toward proactive well-being, leading to optimized shipboard performance and fewer health-related disruptions at sea.
3. Maritime schools may enrich their existing curricula to incorporate a broader range of specialized knowledge and skills specific to these operational factors. This would ensure that cadets develop a highly versatile, comprehensive skill set, leaving them well prepared for the varied demands of different onboard training environments.
4. Maritime schools may ensure that during the cadets' pre-departure seminar, all necessary instructions and documents before their onboard training are thoroughly discussed and understood by cadets.
5. The lack of a significant relationship between awareness, attitude, and performance highlights the need for training programs to focus on practical skills and competencies. While awareness and positive attitudes are important, they should be complemented with rigorous practical training, assessments, and performance feedback to ensure cadets can translate their knowledge and attitudes into effective performance.
6. To further validate the present findings, this study may be replicated in other regions of the country where maritime schools are located to find out their cadets' awareness, attitude, and performance in the onboard training.
7. Enhancement program may be formulated by maritime schools based on the lowest value of the descriptive results with the inclusion of differences and relationship of cadets' awareness, attitude and performance, which will be used by shipping companies and should be validated by maritime institutions.
8. Recommend to the stakeholders to use/apply the enhancement program made.

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