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Supervision During Cadets' Onboard Training Basis for Enhancement Plan

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Abstract

This study examined the level of supervision experienced by Bachelor of Science in Marine Engineering (BSMarE) cadets of the Zamboanga State College of Marine Sciences and Technology (ZSCMST) during their onboard training. Specifically, it determined the demographic profile of cadets based on vessel route and type, assessed the level of supervision during onboard training, and examined whether significant differences existed in supervision when grouped according to vessel route and type. The study revealed that the majority of the BSMarE cadets of the Zamboanga State College of Marine Sciences and Technology (ZSCMST) were deployed on domestic vessels, particularly Ro-Ro passenger ships. Results further showed that onboard supervisors consistently provided instructions before assigning tasks/duties to cadets and regularly allowed them to perform engine watchkeeping duties. Giving feedback after the task/s, as well as guiding them on their onboard training plan and sea projects, was often provided. However, inspection of cadets' Training Record Book (TRB) by the chief engineer and the company representative was only

conducted occasionally. Cadets were also sometimes assigned duties that were not in their TRB, while manuals and computer-based training materials were sometimes just provided. Study time and review were just given sometimes as well. The study also found no significant differences in the level of supervision when cadets were grouped according to vessel route or vessel type. Likewise, vessel characteristics such as route and type were not significant predictors of the level of supervision experienced by cadets. These findings suggest that factors beyond vessel characteristics, such as company training policies, the competence and commitment of supervising officers, and the implementation of structured onboard training programs, may play a more important role in determining the quality of supervision during cadetship. The study recommends improving monitoring mechanisms and establishing more shipping companies with structured training programs to improve the overall onboard training experience of maritime cadets.

Keywords: Supervision, Cadets' Onboard Training, Enhancement Plan, Maritime Higher Education Institutions, Multiple Regression, Zamboanga State College of Marine Sciences and Technology, Zamboanga City

1. Introduction

Background of the Study

The Philippines is the world's leading provider of seafarers, supplying the most significant number of officers and ratings to the global maritime workforce. As the demand for skilled maritime professionals continues to grow, the global supply of officers is expected to increase steadily, further reinforcing the Philippines' crucial role in the international shipping industry (BIMCO & ICS 2020).

The future sustainability of the shipping industry is overwhelmingly dependent on an adequate pool of capable and effective manpower. Considering this, prospective officers/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 (International Maritime Organization 2017).

Under the Standards of Training, Certification and Watchkeeping Code, onboard training is a mandatory requirement and component of the Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering

(BSMarE) programs that pertain to the required One-year sea-going service as provided under Regulations II/1 and Regulations III/1 of the STCW Code (JCMC No. 1, Series of 2023).

According to Mori Y. *et al.* (2023) ^[9], onboard training conducted on ships has been well recognized as one of the most effective means of practical training for seafarers because OBT offers cadets the opportunity to apply theoretical knowledge in real-world settings (Lee *et al.*, 2021), while Magsino *et al.* (2023) ^[8] emphasize its purpose in reinforcing skills and knowledge before graduation. Sevilla *et al.* (2017) ^[11] similarly stress that cadets are onboard primarily to learn and should be trained accordingly. These perspectives align with the broader view that cadets are future seafarers and valuable assets to the maritime industry (Lee *et al.*, 2021), making OBT a crucial bridge between academic learning and professional readiness.

During onboard training, cadets must complete various requirements, including tasks in the Training Record Book, project work, and related activities (Bacasdoon *et al.*, 2024) ^[1]. To support their learning, they need close supervision from qualified officers. This guidance is vital for giving cadets hands-on experience with the duties of a watchkeeping officer, as required by the STCW Code. Proper supervision helps cadets build their skills to become competent professionals (International Maritime Organization).

However, onboard training (OBT) for cadets offers opportunities and challenges (Bacasdoon *et al.*, 2024) ^[1]. A successful apprenticeship depends on practical learning, proper supervision, mentoring, and a conducive training environment (Mori Y. *et al.*, 2023) ^[9]. Cadets often face issues such as a lack of available training officers (Magsino *et al.*, 2023) ^[8], being treated as regular crew rather than trainees (Lee *et al.*, 2021), and limited supervision that restricts hands-on learning (Hodroj, 2020) ^[5].

Demirel (2020) ^[4] adds that limited training opportunities and heavy workloads hinder cadets' learning. Similarly, IAMU studies (2016; 2020) show that training is often deprioritized due to operational demands. As a result, cadets are left to manage their development without proper guidance from a Shipboard Training Officer (STO), consistent supervision, or support in maintaining their Training Record Book (TRB).

Supervision is essential to ensure that cadets learn effectively and perform their onboard training requirements properly. As trainees, they depend on clear guidance, consistent supervision, and proper encouragement to acquire the necessary competencies (IMO). Since cadets must complete various requirements, including tasks in the Training Record Book (TRB), project work, and related activities (Bacasdoon *et al.*, 2024) ^[1], such supervision is crucial to support their learning and compliance.

These persistent training deficiencies have profound implications for the Philippine maritime industry. To maintain its position as a top global supplier of seafarers, the country must ensure that cadets receive high-quality, structured learning aligned with international standards (Chibana, 2023). However, sustaining a steady supply of skilled Filipino seafarers remains a challenge. Chibana (2023) notes a shortage of qualified personnel and limited opportunities for career progression within the maritime sector.

Supporting this concern, Tang *et al.* (2021) ^[12] reported that although around 10,000 Filipino officers obtain their first Certificate of Competency (CoC) each year, more than half struggle to secure officer positions onboard. They emphasize that focusing on the quality of training and development, rather than simply increasing the number of graduates, would lead to more sustainable outcomes.

Del Rosario (2020) reinforces this point, highlighting that improving cadet success rates is essential for increasing seafarer placement, yet this continues to be a widespread issue across many regions.

Addressing these challenges requires coordinated efforts among maritime stakeholders to improve training quality and invest in marine education. Building on these insights, this research examines one critical aspect of cadet development: the level of supervision that designated qualified officers provide during onboard training.

Theoretical Framework

This study is anchored on the Developmental Models of Supervision (Smith, 2009). In her paper, she outlines stages of growth from novice to expert, each with distinct skills and confidence levels. Beginners typically have limited skills and low confidence, while those in the middle stage develop more competence but may struggle with independence. Experts demonstrate strong problem-solving and reflective abilities in both counseling and supervision (Haynes, Corey, & Moulton, 2003).

Supervisors using this approach must assess the supervisee's current stage and provide appropriate support to encourage growth (Littrell, Lee-Borden, & Lorenz, 1979; Loganbill, Hardy, & Delworth, 1982; Stoltenberg & Delworth, 1987). This process, known as "scaffolding" (Zimmerman & Schunk, 2003), helps supervisees build on existing knowledge to acquire new skills. As they progress, supervisors adjust their guidance to introduce more advanced learning.

Conceptual Framework

In this study, the Route of the Vessel and Type of the Vessel are the Independent Variables, while the Level of Supervision on Cadets' Onboard Training is the Dependent Variable. The output is the enhancement plan derived from the study's findings.

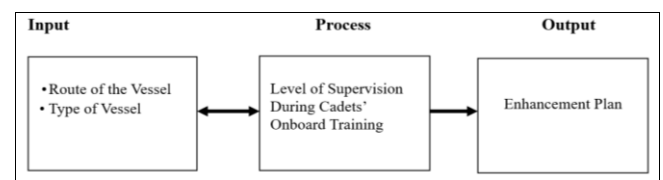


Fig 1: Conceptual Model

Fig 1 depicts the conceptual model, which is constructed using an Input-Process-Output framework, and depicts how the elements in all these categories of variables (inputs, process, and outputs) are interrelated to one another systematically and dynamically throughout the entire research study or system considered.

Input variables are the factors that may influence the level of supervision during onboard training. The route of the vessel refers to the trading area or voyage pattern of the ship (e.g., international route, domestic route, coastal route). Different routes may affect the availability of officers to supervise

cadets. Type of vessel refers to the classification of the ship (e.g., container ship, bulk carrier, tanker, passenger ship). The type of vessel may determine operational workload and supervision practices.

Process variables are the measurable aspects of implementation that describe how activities are performed and provide insight into the factors that contribute to the success or failure of a program, intervention, or training process. This study, it describes how onboard training is conducted and supervised. These variables help explain the quality of the training process and may influence outcomes such as cadet competence, skill development, and training effectiveness.

Output variables refer to the final results, outcomes, or products generated by a research study or system. These variables are commonly considered the dependent variables, as they are influenced by the interaction of the input and process components. The nature and extent of the outputs depend on how the inputs are utilized and how the processes are carried out. Consequently, the outputs serve as indicators of the effectiveness, adequacy, and appropriateness of the inputs and processes employed throughout the study.

Statement of the Problem

This study aimed to assess the level of supervision in cadets' onboard training and to determine whether there were significant differences between the independent and dependent variables. But specifically, it seeks to answer the following questions:

1. What is the cadets' profile in terms of:
 - 1.1 Route of the vessel, and
 - 1.2 Type of vessel?
2. What is the level of supervision in cadets' onboard training when taken as a whole and when classified according to the categories?
3. Is there a significant difference between the level of supervision in cadets' onboard training when classified according to categories:
 - 3.1 Route of the vessel, and
 - 3.2 Type of vessel?
4. Is there a significant influence between the vessel characteristics (route and type of vessel) and the level of supervision during cadets' onboard training?
5. What enhancement program will be formulated to improve the level of supervision in cadets' onboard training?

Hypothesis

This study formulated the following null hypotheses:

There is no significant difference between the level of supervision in cadets' onboard training when classified according to route of the vessel and type of vessel.

There is no significant influence between the vessel characteristics (route and type of vessel) and the level of supervision during cadets' onboard training.

Significance of the Study

The result of this study can be used as a reference for the following:

Government Agencies

Maritime Industry Authority (MARINA) can use the data as a factual basis to understand the actual conditions experienced by cadets, particularly regarding the level of supervision provided by their onboard supervisors in both

local and international shipping. This insight can guide the development of policies aimed at improving the current onboard training system and ensuring better supervision for cadets.

Maritime Higher Education Institution (MHEIs)

Administrators can use the data to develop targeted intervention plans, particularly in improving the deployment and monitoring of their cadets during onboard training.

Student/Cadet

They may benefit most from the result 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

The study may provide future researchers and scholars with useful concepts and information about the level of supervision given to our cadets' onboard training by their training officers.

Scope and Delimitations of the Study

The scope of the study is delimited to onboard training related to the acquisition of the first Certificate of Competency (CoC) for officers under Regulation II/1 of the STCW Convention, focusing specifically on the education and training.

The study focuses exclusively on BSMarE cadets from Zamboanga State College of Marine Sciences and Technology who completed their classroom instruction from 2021 to 2024 and utilized an International Seafarers' Federation (ISF) type of Training Record Book only.

The researcher employed convenient sampling to collect data from BSMarE cadets who have completed their one-year onboard training with various local or international shipping companies.

Definition of Terms

The following terminologies were defined as how the researcher intended to use them in the study.

Cadet/Trainee/Prospective Officer: This refers to a student of a Maritime Higher Education Institution who is required to undergo training on board registered international ships or domestic ships to fulfill a maritime academic course. (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

Daily Journal of Engine-room Watchkeeping Duties (DJEWD):

This refers to documentary evidence required by the MARINA showing specific activities during engine-room watchkeeping of a candidate for COC as Officer-in-Charge of an Engineering Watch, under the supervision of the chief engineer officer or a qualified engineer officer for a period of not less than one hundred eighty (180) days, in compliance with Regulation III/1 (2.3) of the STCW Convention, 1978, as amended. (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

Onboard Training (OBT): This refers to a seagoing service requirement as part of an approved training program for BSMT or BSMarE students to qualify for graduation and to take the assessment of competence required for

certification under Regulation II/1 and Regulation III/1 of the STCW Convention, 1978, as amended, and is documented in an approved TRB. It provides all cadets with the opportunity to receive systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a watch. (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

Onboard Training Guidance (OTG): This refers to the plan document approved by the Onboard Training Supervisor of the MHEI and Company Training Officer of the shipping company, which is annexed to the OBT Agreement, indicating the planned schedule for the onboard training tasks under each competence in the TRB which will be accomplished during the OBT period, in consideration of the available machineries, equipment and instruments of a particular ship. Competences and/or tasks that cannot be completed onboard the ships shall likewise be specifically indicated in the OTP. (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

Onboard Training Supervisor: This 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. (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

Supervision: This refers to the act of overseeing, watching, or directing a person, activity, or process to ensure it is done correctly, safely, and in compliance with established rules. (Cambridge Dictionary).

Supervision Onboard: This refers to the structured oversight and guidance provided by qualified shipboard training officers to cadets during their Onboard Training (OBT). (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

Training Record Book (TRB): This refers to an updated version of the International Shipping Federation (ISF) or Global MET Training Record Book (TRB) or MARINA-approved TRB in accordance with the requirements of the STCW Convention, 1978, as amended. (Maritime Industry Authority M.C. NO. SC 2022-0 series of 2022).

2. Review of Related Literature and Studies

This chapter presents a review of related literature and studies that support the present research study on supervision during cadets' onboard training.

Related Literature

The International Legal Framework for Maritime Education and Training (MET) is established through the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention), 1978, as amended. This convention sets the minimum standards for knowledge, understanding, and skills required to obtain certificates of competence on board merchant sea-going ships; these requirements must be fulfilled to secure a Certificate of Competency (Lušić *et al.*, 2019).

In the Philippines, maritime education is regulated by the Commission on Higher Education (CHED), the Maritime Industry Authority (MARINA), and Maritime Higher Education Institutions (MHEIs). These bodies are mandated by national law to develop and implement curriculum standards that align strictly with the STCW Convention (Pabutawan, 2023) ^[10].

Under the Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering

(BSMarE) curricula, onboard training is a mandatory component. It requires one year of sea-going service, as stipulated under Regulations II/1 and III/1 of the STCW Code (JCMMC No. 1, Series of 2023). Specifically, for the BSMarE program, this requirement is met through a combination of workshop skills training and an approved seagoing service of at least 12 months. This period must include no less than 6 months of engine-room watchkeeping duties performed under the supervision of the Chief Engineer or a qualified engineer officer. The training follows a structured program aboard a ship with a propulsion power of 750 kW or more, and progress is formally documented in an approved Training Record Book (TRB) and Daily Journal of Watchkeeping Duties (JCMMC No. 1, Series of 2023).

Marine Engineering cadets undergoing onboard training may be deployed to various types of vessels with a propulsion power of 750 kW or above, regardless of whether the vessel operates in local or international waters. This exposure allows cadets to gain practical experience in real-world operations, familiarizing them with different machinery systems, operational procedures, and work environments—all essential for developing technical competence, adaptability, and proper understanding of engine room practices according to industry standards.

Vessel types are defined under international regulations such as the Safety of Life at Sea Convention (SOLAS). Bulk carriers, designed to transport unpackaged bulk cargo, constitute approximately 21% of the world's merchant fleet, ranging from small vessels to massive ships capable of carrying up to 400,000 deadweight tons (DWT); the largest of these are classified as Valemax vessels (World Largest Bulk Carriers, 2020). Tankers transport liquid bulk cargo such as crude oil, petroleum, and other liquid products, playing a vital role in meeting global energy demands (Mohit, 2019). Container ships carry manufactured goods in standardized containers, mostly operating on fixed scheduled routes. It is estimated that about 90% of global trade is carried by sea, supported by over 50,000 merchant vessels worldwide. Container ships vary significantly in size, from small feeder vessels to Ultra Large Container Vessels (ULCVs)—one notable example being the *Ever ACE*, which has a capacity of up to 23,992 TEUs (MI News Network, 2019).

During onboard training, cadets must be closely supervised and monitored by qualified officers to receive structured practical training covering the tasks, duties, and responsibilities of an officer in charge of a watch, in compliance with the STCW Code. As trainees, cadets rely heavily on guidance and supervision to successfully develop their competencies (International Maritime Organization). Onboard Training (OBT) is recognized as a vital mechanism that allows cadets to apply theoretical knowledge in real-world settings, reinforcing skills acquired during academic study and bridging the gap between classroom learning and professional readiness (Lee *et al.*, 2021; Magsino *et al.*, 2023 ^[8]; Sevilla *et al.*, 2017 ^[11]). Cadets are viewed as future seafarers and valuable assets to the maritime industry, making the quality of their training a critical factor in workforce development (Lee *et al.*, 2021).

Onboard training on ships is widely acknowledged as one of the most effective forms of practical training for seafarers. However, its effectiveness depends heavily on factors such as the quality of the learning process, the standard of

guidance and support provided, and the relevance of the working context to the training objectives (Mori Y. *et al.*, 2023) ^[9].

Supervision is central to the success of any training program. Casalini (2020) ^[2] explains that supervision provides guidance, support, and oversight to enhance performance, while supervisors play a key role in delivering feedback and mentorship essential for professional growth. Madrasah *et al.* (2020) emphasize that educational supervision directly improves the quality of education and training outcomes. Furthermore, Casalini (2023) ^[2] notes that effective supervision contributes to both individual and organizational success by fostering a positive and productive work environment. In the maritime setting, qualified officers must supervise cadets closely during watchkeeping duties, as required by the STCW Code. This guidance is crucial in helping cadets develop the skills and confidence needed to become competent officers. Since the future of the shipping industry relies on a steady supply of skilled personnel, cadets must receive comprehensive onboard training to prepare them for both routine operations and emergency situations at sea (International Maritime Organization, 2017).

To maintain the Philippines' standing as a major global supplier of seafarers, it is essential to address the challenges faced by Filipino seafarers and ensure strict compliance with international quality standards (Chibana, 2023). The sustainability of producing competent Filipino seafarers depends largely on the quality of supervision and training provided to cadets as future officers.

Related Studies

Despite the intended purpose of onboard training, multiple international and local studies have revealed significant inconsistencies in the implementation of OBT programs. Research conducted by the International Association of Maritime Universities (IAMU) in 2016 and 2020 found that onboard training is frequently deprioritized due to operational pressures. This leads to inadequate supervision and places the burden of skill development largely on the cadets themselves, undermining the purpose of OBT and creating competence gaps—evident in issues such as poorly maintained Training Record Books (TRBs) resulting from a lack of designated Ship Training Officers (STOs).

Hodroj (2020) ^[5], in a study of Finland's deck officer training system, identified systemic shortcomings including insufficient supervision, limited bridge watchkeeping time, and ineffective use of TRBs. These deficiencies highlight a clear mismatch between the regulatory expectations set by the STCW Code and actual onboard training practices. Similarly, Lee *et al.* (2021), in a study within the Korean maritime education context, observed that cadets were often deprived of sufficient rest and treated as temporary crew members rather than trainees. This treatment shifts the focus away from structured learning, compromising training quality and negatively affecting cadet well-being and professional development.

Demirel (2020) ^[4] further noted that in some cases, cadets are treated as ratings rather than learners, resulting in excessive workloads and minimal opportunities for structured training. This dual role, as both trainee and working crew member, reduces the time and energy cadets can dedicate to learning, thereby hindering the acquisition of essential skills and competencies.

In the Philippine setting, Magsino *et al.* (2023) ^[8] found that although cadets were exposed to various technical tasks and developed resilience during training, the absence or unavailability of assigned training officers onboard remained a persistent weakness in the program. This finding mirrors international concerns and underscores the urgent need for improved oversight and structured support throughout the training period.

Several studies have also highlighted challenges in maintaining a steady supply of skilled Filipino seafarers. Chibana (2023) cited issues such as shortages of qualified workers and limited career advancement opportunities within the maritime industry. Tang *et al.* (2021) ^[12] observed that many certified Filipino officers were unable to secure employment as officers aboard ships. The study noted that while approximately 10,000 individuals acquire their first Certificate of Competency (CoC) annually, over half struggle to obtain officer positions. The authors emphasized that prioritizing quality over quantity is a more effective strategy for the industry.

Del Rosario (2020) reinforced this perspective, stating that improving the placement of Filipino seafarers begins with enhancing the success rate of maritime cadets—an area that continues to face significant challenges across most regions. Despite strategic initiatives introduced by MARINA through Joint CHED-MARINA Memorandum Circulars, implementation remains incomplete, resulting in a shortage of qualified Filipino cadets and alarmingly low success rates. The author stressed that addressing these issues requires active collaboration among stakeholders to improve training quality, invest in maritime education, and enhance working conditions and benefits for seafarers.

Overall, research indicates persistent challenges in the implementation of cadets' onboard training across both domestic and international vessels. While OBT is designed to produce competent and confident future officers, there remains a substantial gap between intended outcomes and actual practice. Contributing factors include insufficient supervision, operational pressures, unclear definitions of trainee roles, and inconsistent adherence to the STCW Code. To close this gap, maritime institutions, shipping companies, and regulatory bodies must collaborate to strengthen the structure, supervision, and integrity of OBT programs. Building on these findings, the present study aims to assess the level of supervision provided to cadets by qualified officers during onboard training, covering both domestic and international shipping companies.

3. Methodology

This chapter presents the research methodology used in the study. It included the research design, locale of the study, population sampling design, research instrument, data gathering procedure, and statistical tools.

Research Design

The purpose of this descriptive study was to determine the level of supervision in cadets' onboard training as the basis for an enhancement program. A descriptive research method was employed in this investigation, as the data were collected to answer questions about the level of supervision of cadets during onboard training.

Descriptive research, according to Gay (2009), involves collecting data to answer questions concerning the current work status of the subjects in the study. Descriptive

research, Gay adds, determines and reports the way things are.

The data needed for this research were gathered at the level of supervision in cadets' onboard training. The research instrument was crafted based on the structured 3-1 scheme onboard training program of a seagoing ship of 500 gross tonnage or more, powered by main propulsion machinery of 750 kW or more, documented in the Training Record Book (TRB) designed by the International Shipping Federation (ISF) as required by the STCW Convention, 1978, as amended. The instrument was a researcher-developed questionnaire duly validated by a five-member jury.

Means, frequency, rank, and percentage for descriptive analysis; One-Way ANOVA. Pearson *r* correlation and Multiple Linear Regression. The alpha level was set at .05.

Research Locale

This study was conducted at Zamboanga State College of Marine Sciences and Technology (ZSCMST), located along Fort Pilar, Zone IV, Rio Hondo, Zamboanga City. As a premier maritime higher education institution in the southern Philippines, ZSCMST is recognized for its strong focus on marine sciences, fisheries, and maritime education, offering Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BSMarE) programs accredited in compliance with national standards and the STCW Convention. The institution serves as a key training ground for future Filipino seafarers, drawing students from Zamboanga Peninsula, Northern Mindanao, and neighboring regions, and maintains partnerships with various domestic and international shipping companies for the deployment of cadets for their mandatory one-year onboard training. The respondents of this study were BSMarE graduates from the school years 2021–2022 to 2023–2024, who had completed their sea service requirement aboard different types of vessels operating in both local and international routes.

This locale was selected for several important reasons. First, ZSCMST is a leading producer of maritime graduates in Mindanao, and assessing the quality of supervision received by its cadets provides valuable insights into the status of onboard training implementation in the region, which contributes significantly to the national seafarer workforce. Second, the institution's wide network of shipping partners means its cadets are deployed across diverse vessel types and operational routes, allowing the researcher to effectively examine how these characteristics relate to the level of supervision provided onboard. Third, conducting the study within this setting offers direct, evidence-based data that the institution can use to strengthen its monitoring systems, improve training guidance, and ensure that its graduates meet the required international competence standards. Finally, findings from this locale are highly relevant to maritime education stakeholders, as they reflect common challenges and practices in onboard training that apply to many maritime institutions across the Philippines.

Population and Sampling Design

The respondents in this study were 56 BSMarE Cadets from Zamboanga State College of Marine Sciences and Technology who had completed 365 days of onboard training on domestic or international vessels.

Convenient sampling was employed to select respondents, in which a hard copy of the research questionnaire was

provided after the cadets completed their process for their Bachelor's degree. The completed research questionnaire was collected in person by the researchers.

Table 1: Distribution of Respondent's Population

School Year	No. of BSMarE Cadets	Percentage
S.Y. 2021-2022	24	42%
S.Y. 2022-2023	21	38%
S.Y. 2023-2024	11	20%
Total	56	100%

Table 1 shows the breakdown, the largest group of respondents came from School Year 2021–2022, with 24 cadets accounting for 42% of the total population. This significant proportion suggests that this batch had the highest number of eligible graduates who had completed their onboard training and degree requirements at the time of data collection. Following this, School Year 2022–2023 contributed 21 cadets, representing 38% of the respondents, this is the second-largest group and shows a relatively consistent number of eligible participants compared to the previous school year. Meanwhile, School Year 2023–2024 had the smallest representation, with only 11 cadets or 20% of the total sample. This lower percentage may be attributed to the fact that this batch was the most recent, meaning fewer graduates had fully completed all academic and training requirements, or that a portion of the cohort had not yet finalized their degree processing when the data gathering was conducted.

Collectively, the distribution across the three school years covers a reasonable span of time, which helps capture variations or trends in the cadets' onboard experiences across different batches. While the sample is not evenly distributed, the total of 56 respondents provides a sufficient number of participants to yield meaningful insights, especially since all meet the key criterion of having completed the required onboard training. It is also important to note that because convenience sampling was used, the results reflect the perspectives of those who were available and accessible during the data collection period, which is a common limitation in research but does not undermine the relevance of the findings given the specific eligibility criteria applied.

Research Instrument

The data were gathered using a researcher-made questionnaire based on Annex H of JCMC No. 1, series of 2019 - Revised Guidelines on the Implementation of Onboard Training for BSMT and BSMar-E Students, ISF Training Record Book (TRB), and Memorandum Circular No. SC 2022-01, Series of 2022.

All items in the research questionnaire had factor loads of .05 for the level of supervision in cadets' onboard training, respectively, under the valid constructs intended for the study.

According to Alicia (1995), there is no hard-and-fast rule regarding which factor loadings to be retained or culled out, except that which the investigator himself arbitrarily defines. However, a factor loading equal to or greater than +.5 appears to be commonly used.

The instrument consisted of two parts: Part I elicited information on the cadet's type of vessel boarded and route of the vessel boarded during onboard training.

Part II elicited data on the level of supervision in cadets' onboard training. To answer this portion of the instrument, the respondents were instructed to choose from among the following options: "Always", "Often", "Sometimes", "Rarely", and "Never".

For the level of supervision in cadets' onboard training, the score of an individual respondent in the questionnaire was determined by adding the numerical equivalent of the choices chosen, and then the mean was computed. The mean was transmuted into a numerical scale with assigned values, description, and indicators as follows:

Where:

Table 2: Likert Scale for the level of supervision during cadets' onboard training

No	Scale	Option	Description
1	4.20 – 5.00	Always	Supervision was consistently present
2	3.40 – 4.19	Often	Supervision was frequent
3	2.60 – 3.39	Sometimes	Supervision was occasional
4	1.80 – 2.59	Rarely	Supervision was infrequent
5	1.00 – 1.79	Never	No supervision was provided

Reliability and Validity of the Research Instrument

To establish reliability, a pilot test was conducted with 10 BSMarE cadets who were not part of the final sample but met the same eligibility criteria, graduates of ZSCMST from S.Y. 2021–2024 who had completed their one-year onboard training, and the results were analyzed using Cronbach's Alpha, the standard measure of internal consistency. The analysis yielded a coefficient of 0.892, which exceeds the minimum acceptable threshold of 0.70 (Nunnally, 1978), signifying strong internal consistency among all 15 items in Part II, confirming that the questions are closely related and collectively measure the same variable, Level of supervision, and proving that the instrument generates consistent and dependable results. Furthermore, the test-retest method was employed to verify stability, wherein the same questionnaire was administered to the same pilot group after a two-week interval, producing a high correlation coefficient ($r = 0.87$) that confirms the instrument remains stable over time and that responses are not influenced by temporary factors.

To further establish content validity, the instrument was subjected to validation by three experts. These experts were qualified individuals with extensive experience and knowledge in maritime education, shipboard operations, and training management, including maritime instructors, research expert, and a statistician.

Data Gathering Procedure

For the procedure in administering the research questionnaire, the researcher requested permission from the office of the vice president of research, innovation, and extension. Upon approval of the request, a research questionnaire was distributed to the BSMarE cadets who completed their Bachelor's degree with clear instructions provided beforehand. The researcher collected the questionnaires from the cadets after they finished answering the items.

Ethical Considerations

This study was conducted with full respect for ethical standards to ensure the protection, safety, and rights of all participants involved. Before data collection, every

respondent was properly informed about the purpose, importance, and scope of the research. They were clearly told that their participation was voluntary, and they had the right to withdraw or stop answering at any time without any negative consequences. All agreed to take part willingly and with full understanding of how their responses would be used.

Confidentiality and anonymity were strictly observed throughout the study. No personal details such as names, student numbers, names of vessels, or shipping companies were collected or included in the final report. All information gathered was kept secure and private, and results were presented only as general summaries or group data. This ensured that no individual or organization could be identified from the findings, preventing any possible harm, bias, or disadvantage to the participants.

The researcher ensured that the study caused no harm or distress to anyone. The questions were neutral, respectful, and designed only to gather facts about the level of supervision during onboard training. The goal of the research was to identify areas for improvement and support better training practices, not to criticize or assign blame to any person or group. The selection of respondents was fair and unbiased, following clear eligibility criteria to ensure all qualified cadets had an equal chance to participate.

Honesty and accuracy were maintained in every step of the process. All data were recorded, analyzed, and reported exactly as they were given, without changes, omissions, or manipulation to fit any preferred outcome. Proper credit and citation were given to all sources, regulations, and previous studies used, respecting intellectual property rights. Finally, the results of this research will be shared and used responsibly, solely to help improve onboard training programs, supervision quality, and the overall development of future maritime officers.

Statistical Tools

The data gathered were subjected to appropriate descriptive and inferential statistics through the SPSS software.

Means, frequency. Percentages were determined using descriptive statistical tools. The Mann-Whitney U Test for independent samples, the Kruskal-Wallis H Test, for inferential analysis. The alpha level was set at .05.

Mean: This was used to determine the level of supervision in cadets' onboard training.

Frequency: This was used to determine the number of participants.

Percentage: This was used to determine the proportion of respondents belonging to each category of variables.

t-test: This was utilized to test the significant difference in the level of supervision during cadets' onboard training when classified according to the route of the vessel.

Analysis of One-Way Variance (ANOVA): This was employed to determine the significant difference in the level of supervision during cadets' onboard training when classified according to the route and type of the vessel.

Pearson r correlation and Multiple Linear Regression: This was used to determine if there is a significant influence between the vessel characteristics (route and type of vessel) and the level of supervision during cadets' onboard training.

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

4. Results and Discussion

This chapter includes the presentation, analysis and interpretation of data gathered based on the questionnaire. Findings of the study were arranged based on the statement of the problem of this study. The data were statistically treated and presented in a tabular form.

Research problem 1: What is the cadets’ profile in terms of route of the vessel and type of vessel?

Table 3: Profile of the vessel in terms of the route of the vessel

Route of Vessel	Frequency	Percent	Ranked
Local	42	75.0	1 st
International	14	25.0	2 nd
Total	56	100.0	

Table 3 presents the distribution of vessels according to their route of operation, where the cadets conducted their onboard training. The results reveal that the majority of the vessels operate on local routes, with a frequency of 42, or 75.0 percent, ranking first among the categories. In contrast, vessels operating on international routes recorded a frequency of 14 or 25.0 percent, ranking second. Out of the total 56 vessels, most cadets were assigned to vessels navigating within domestic waters.

This finding indicates that engine cadets of ZSCMST are more frequently deployed on vessels engaged in local maritime operations rather than international, confirming that one of the real challenges faced by seafarers’ supplying nations like the Philippines may be attributed to the implementation of onboard training, including insufficient training quality and limited availability of training berths for students (Mori, 2025).

A study of Elfattah & Badawy (2025) mentioned also in their study “Global Shortage in the Age of Automation,” the Philippines suffers from significant dropout rates and weak cadetship to employment pathways due to limited cadetship placement opportunities. Mori (2025).

Table 4: Profile of the cadet in terms of the type of vessel

Type of Vessel	Frequency	Percent	Ranked
Passenger	20	35.7	1 st
General Cargo	18	32.1	2 nd
Container	12	21.4	3 rd
Tanker	4	7.1	4 th
Bulk Carrier	2	3.6	5 th
Total	56	100.0	

Table 4 presents the distribution of vessels according to the type of vessel where cadets conducted their onboard training. The data reveal that passenger vessels obtained the highest frequency of 20 or 35.7 percent, ranking first among all vessel types. This was followed by general cargo vessels with a frequency of 18 or 32.1 percent, ranking second. Container vessels recorded 12 or 21.4 percent, placing third, while tanker vessels had 4 or 7.1 percent, ranking fourth. Lastly, bulk carrier vessels had the lowest representation with only 2 or 3.6 percent, ranking fifth.

Research problem 2: What is the level of supervision during cadets’ onboard training when taken as a whole and when classified according to the categories?

In Table 5, it presents the level of supervision cadets experienced during their onboard training, as perceived by

the respondents. The results revealed that the top 5 highest means in the level of supervision during cadets’ onboard training were: they were given instructions before doing a task (Mean = 4.518), rank 1; they were allowed to perform watch-keeping duties (Mean = 4.429), rank 2; they were advised on improvements after doing a task by their Chief Engineer and other engineers (Mean = 3.839), rank 3; they were supervised by their Chief Engineer and other engineers in their Onboard Training Guidance (Mean = 3.679), rank 4; they were supervised by their Chief Engineer and other engineers in accomplishing their project work (Mean = 3.536), rank 5.

However, the following were the lowest ranked in the level of supervision during cadets’ onboard training: checking the progress of the tasks on their Training Record Book by their company superintendent or representative (Mean = 2.714), rank 1; monthly inspection of the Chief Engineer regarding the progress of the tasks in their Training Record Book (Mean = 2.964), rank 2; in assigning a tasks or duties that are not in my Training Record Book (Mean = 3.161), rank 3; in providing with manuals and computer-based training materials by their Chief Engineer or other engineers (Mean = 3.179), rank 4; in giving time to study and review by their Chief Engineer (Mean = 3.179), rank 5.

Table 5: Level of supervision in cadets’ onboard training when taken as an entire group

S. No	Items	Weighted Mean	Descriptive Rating	Verbal Description
1	I am given instructions before doing a task.	4.518	Always	Very High
2	I am allowed to perform watch-keeping duties.	4.429	Always	Very High
3	I am advised on improvements after doing a task by the Chief Engineer and other engineers.	3.839	Often	High
4	I am supervised by the Chief Engineer and other engineers in my Onboard Training Plan.	3.679	Often	High
5	I am supervised by the Chief Engineer and other engineers in accomplishing my sea project work.	3.536	Often	High
6	I am supervised by the Chief Engineer and other engineers in complying with other required documents (Crew List, Sea Service, etc.).	3.464	Often	High
7	I am assessed by an engineer after I perform a task.	3.464	Often	High
8	I am supervised in the different tasks or duties in my Training Record Book.	3.429	Often	High
9	I am supervised by my Chief Engineer and other engineers in accomplishing my Daily Journal.	3.375	Sometimes	Moderate
10	I am supervised by my Chief Engineer and other engineers in maintaining	3.339	Sometimes	Moderate

	my Training Record Book.			
11	I am given time by my Chief Engineer to study and review.	3.196	Sometimes	Moderate
12	I am provided with manuals and computer-based training materials by the Chief Engineer or other engineers.	3.179	Sometimes	Moderate
13	I am assigned tasks or duties that are not in my Training Record Book.	3.161	Sometimes	Moderate
14	I am inspected monthly by the Chief Engineer regarding the progress of the tasks in my Training Record Book.	2.964	Sometimes	Moderate
15	I am checked by the company superintendent or representative regarding the progress of the tasks in my Training Record Book	2.714	Sometimes	Moderate
	Overall Mean	3.4850	Often	High

Scale: Always (4.20-5.00); Often (3.40-4.19); Sometimes (2.60-3.39); Rarely (1.80-2.59); Never (1.00-1.79)

The level of supervision cadets experienced during their onboard training, as perceived by the respondents. The results show that the overall weighted mean is 3.4850, which is described as ‘‘Often’’. This indicates that, in general, cadets experienced frequent supervision during their onboard training.

Research problem 3: Is there a significant difference in the level of supervision during cadets’ onboard training when grouped according to Route of the vessel and Type of vessel?

Table 6: Results of the significant difference in the level of supervision during cadets’ onboard training when grouped according to the route of the vessel

Route of the vessel	N	Mean	t-value	p-value	Remarks	Decision on Ho
International	14	3.7329	1.564	.124	Not Significant	Accept Ho
Local	42	3.4024				

Table 6 presents the results of the independent samples t-test conducted to determine whether there is a significant difference in the level of supervision during cadets’ onboard training when grouped according to the route of the vessel. The results show that cadets assigned to the international

Table 8: Results of the significant influence of the vessel characteristics (route and type of vessel) and the level of supervision during cadets’ onboard training

	R	R ²	Unstandardized Coefficients		Standardized Coefficients		t-value	p-value	Remarks	Decision on Ho
			B	Std. Error	Beta					
(Constant)			4.023	.391			10.296	.000	Significant	Reject Ho
Route of the vessel	.220 ^a	.048	-.371	.226	-.234		-1.642	.106	Not Significant	Accept Ho
Type of vessel			.034	.064	.076		.533	.596	Not Significant	Accept Ho

Route (n = 14) obtained a mean score of 3.7329, while cadets assigned to the local Route (n = 42) obtained a mean score of 3.4024. This indicates that cadets assigned to the international Route perceived a slightly higher level of supervision compared to those assigned to the local Route. However, the computed t-value of 1.564 and the p-value of 0.124 indicate that the difference between the two groups is not statistically significant at the 0.05 level of significance. Since the p-value (0.124) is greater than 0.05, the null hypothesis is accepted, which means that there is no significant difference in the level of supervision during cadets’ onboard training when grouped according to the route of the vessel.

Table 7: Results of the significant difference in the level of supervision during cadets’ onboard training when grouped according to the type of vessel

Type of vessel	N	Mean	F-test	p-value	Remarks	Decision on Ho
Container	12	3.4267	.690	.602	Not Significant	Accept Ho
Tanker	4	3.3825				
General Cargo	18	3.5622				
Bulk Carrier	2	4.2000				
Passenger	20	3.3995				
Total	56	3.4850				

Table 7 presents the test of significant difference in the level of supervision experienced by cadets during onboard training when grouped according to the type of vessel. The results show that container vessels obtained a mean of 3.4267, tanker vessels 3.3825, general cargo vessels 3.5622, bulk carrier vessels 4.2000, and passenger vessels 3.3995, with an overall mean of 3.4850. The computed F-test value of 0.690 with a p-value of 0.602 indicates that the difference in the level of supervision across vessel types is not statistically significant. Since the p-value is greater than the 0.05 level of significance, the null hypothesis is accepted, which means that the level of supervision experienced by cadets does not significantly differ according to the type of vessel. This finding implies that regardless of whether the cadets are assigned to container ships, tanker vessels, general cargo ships, bulk carriers, or passenger vessels, the supervision provided by officers during onboard training is generally consistent.

Research problem 4: Is there a significant influence between the vessel characteristics (route and type of vessel) and the level of supervision during cadets’ onboard training?

Table 8 presents the results of the multiple regression analysis conducted to determine whether vessel characteristics, particularly the route of the vessel and the type of vessel, significantly influence the level of supervision during cadets' onboard training. The results show that the model obtained a correlation coefficient (R) of 0.220 and a coefficient of determination (R²) of 0.048. This indicates that only 4.8% of the variation in the level of supervision during cadets' onboard training can be explained by the vessel characteristics (route and type of vessel) included in the model. This relatively low percentage suggests that the level of supervision is influenced by other factors not included in the study, such as the training policies of shipping companies, the competence of supervising officers, and the structured training programs implemented onboard. Looking at the individual predictors, the route of the vessel obtained an unstandardized coefficient (B) of 0.371, a standardized coefficient (Beta) of 0.234, a t-value of 1.642, and a p-value of 0.106. Since the p-value is greater than the 0.05 level of significance, the influence of route on the level of supervision is not statistically significant. This indicates that the operational route of the vessel does not significantly determine the level of supervision experienced by cadets during onboard training.

Similarly, the type of vessel obtained an unstandardized coefficient (B) of 0.034, a standardized coefficient (Beta) of 0.076, a t-value of 0.533, and a p-value of 0.596. Because the p-value is also greater than 0.05, the type of vessel does not significantly influence the level of supervision during cadets' onboard training. Based on these findings, the null hypothesis (H₀) is accepted, indicating that vessel characteristics such as route and type of vessel do not significantly influence the level of supervision during cadets' onboard training.

Research problem 5: Based on the findings, what enhancement plan can be proposed to improve the level of supervision during cadets' onboard training?

Program Title: Strengthened Onboard Supervision and Training Support Program.

Target Beneficiaries: BSMarE/BSMT cadets, Shipboard Training Officers (STOs), Shipping Companies, Maritime Higher Education Institutions (MHEIs) like ZSCMST, and MARINA.

Basis: Study findings show that overall supervision is *High (Often)*, but critical areas such as TRB progress monitoring, provision of learning materials, dedicated study time, and regular inspections are only *Moderate (Sometimes)*. Supervision quality is not significantly affected by vessel route or type, meaning improvements can be applied uniformly across all vessels.

I. Objectives

1. Raise the level of supervision in all training aspects from *High to Very High* standard.
2. Ensure consistent, structured guidance in accomplishing

Training Record Books (TRB), daily journals, and project works.

3. Eliminate the practice of assigning cadets to tasks outside their approved training program.
4. Establish clear roles and responsibilities for onboard supervisors, company representatives, and MHEI training coordinators.
5. Align all supervision practices strictly with STCW requirements and MARINA guidelines.

II. Key Components and Action Plans

Component 1: Standardized Supervision Guidelines and Role Definition

Problem Identified: Inconsistent supervision practices; unclear duties of Chief Engineers, designated training officers, and company representatives; cadets sometimes assigned non-training tasks.

Table 9: Standardized Supervision Guidelines and Role Definition

Action Steps	Responsible Parties	Timeline	Expected Outcome
Develop and distribute a <i>Standard Supervision Manual</i> based on STCW, JCMC No. 1 s. 2023, and MARINA MC 2022-01. Include: <ul style="list-style-type: none"> • Weekly task schedules aligned with TRB competencies • Limits on non-training related duties • Standard procedures for instruction, demonstration, practice, and feedback 	MHEI + Shipping Companies + MARINA	3 months	Unified standards followed by all vessels; cadets focus on learning, not regular crew work.
Designate a specific Shipboard Training Officer (STO) on every vessel, formally assigned and trained for the role. No cadet shall be deployed without a designated STO.	Shipping Companies + MHEI	Immediate implementation	Eliminates lack of assigned supervisors; ensures one person is accountable for training.
Define a clear "No Non-TRB Task" policy, except for emergency duties. Document all assigned work to ensure compliance.	Company Management + Ship Crew	Ongoing	Reduces workload interference; maximizes training time.

Component 2: Strengthened Monitoring and Documentation

Problem Identified: Low frequency of monthly TRB inspections by Chief Engineers and very low monitoring by company superintendents; inconsistent record-keeping.

Table 10: Strengthened Monitoring and Documentation

Action Steps	Responsible Parties	Timeline	Expected Outcome
Implement Mandatory Monthly Progress Reviews: Chief Engineer must sign and comment on TRB progress every month, with copies sent to the MHEI and company.	Chief Engineer / STO	Monthly	TRB completed on schedule; clear evidence of supervision.
Establish a Digital Monitoring Platform / Online Portal (mobile/web-based) where cadets upload weekly reports, photos of activities, and completed tasks. MHEI supervisors and company officers provide feedback remotely.	MHEI IT Unit + Shipping Company	4–6 months	Real-time monitoring regardless of vessel route; solves distance and communication gaps.
Require Company Superintendent Visits or Virtual Check-ins at least once every 3 months to verify training status.	Shipping Company	Quarterly	Ensures company accountability and oversight.

Table 11: Provision of Learning Resources and Support

Action Steps	Responsible Parties	Timeline	Expected Outcome
Equip every vessel carrying cadets with a Cadet Training Kit containing: <ul style="list-style-type: none"> • Approved technical manuals and STCW guides • Access to digital training software or e-learning modules • Reference books related to engine operations 	Shipping Company + MHEI	Before deployment	Adequate learning materials available; improves self-study and understanding.
Allocate Minimum 2 Hours Per Day specifically for cadet study and review time, protected from operational duties.	Master / Chief Engineer	Daily	Cadets can study theories and prepare for assessments.
Create a Centralized Digital Resource Library accessible online to all cadets, maintained by the MHEI.	MHEI	Ongoing	Continuous access to updated materials even after onboard hours.

Table 12: Training and Competency Development for Supervisors

Action Steps	Responsible Parties	Timeline	Expected Outcome
Conduct Seminar-Workshop for Shipboard Training Officers covering: <ul style="list-style-type: none"> • Mentoring techniques • Proper TRB assessment and documentation • Adult learning principles • MARINA/STCW requirements 	MHEI + MARINA + Shipping Companies	Annually	Supervisors are skilled and knowledgeable; quality of guidance improved.
Issue a Certificate of Training to qualified STOs; only certified officers can supervise cadets.	MARINA / Accredited Training Providers	Once trained	Standardized competence among supervisors.

Table 13: Institutional and Policy Enhancements

Action Steps	Responsible Parties	Timeline	Expected Outcome
Establish or Partner in a Training Vessel Program: MHEI to acquire or co-manage a dedicated training ship or secure long-term agreements with international fleets to increase high-quality placements.	MHEI + Government/Industry Partners	1–2 years	More opportunities on international routes; structured environment.
Strengthen Pre-Deployment Orientation: Brief cadets on their rights, duties, expected supervision standards, and reporting procedures for issues.	MHEI	Before every deployment	Cadets are empowered to demand proper supervision and report gaps.
Develop a Feedback and Grievance Mechanism: Anonymous channel for cadets to report lack of supervision or unfair treatment without fear of retaliation.	MHEI + Shipping Company	Immediate	Issues identified and resolved early; safety net for trainees.

Component 3: Provision of Learning Resources and Support

Problem Identified: Insufficient supply of manuals, technical books, and training materials; limited time allocated for study and review (See Table 11).

Component 4: Training and Competency Development for Supervisors

Problem Identified: Variation in quality of guidance; officers may not be trained on how to mentor or document training effectively (See Table 12).

Component 5: Institutional and Policy Enhancements

Problem Identified: Limited placement on international vessels; domestic vessels form the majority of deployments;

lack of dedicated training platforms (See Table 13).

III. Implementation Strategy

Phase 1 (Months 1–3): Policy Formulation, Manual Development, and Formation of a Joint Committee

During the first three months, the core focus is establishing the foundational framework required for the initiative. This stage begins with drafting and finalizing essential policies, guidelines, and operational standards that align with regulatory requirements and industry needs. Alongside policy development, a comprehensive operational manual is created to serve as the primary reference for all stakeholders, detailing procedures, roles, and responsibilities

to ensure consistency and clarity. Central to this phase is the formation of a joint committee composed of representatives from Maritime Higher Education Institutions (MHEIs), shipping companies, and the Maritime Industry Authority (MARINA). This collaborative body is tasked with overseeing planning, aligning goals across sectors, and ensuring that all developed policies and manuals are practical, compliant, and beneficial to everyone involved.

Phase 2 (Months 4–6): Training of STOs, Rollout of Digital Platform, and Distribution of Training Kits

From the fourth to the sixth month, the focus shifts to preparation and capacity building to support smooth execution. A key activity here is the systematic training of Ship Training Officers (STOs), equipping them with the necessary knowledge, skills, and understanding of the new policies, processes, and tools they will use. Concurrently, the digital platform designed to manage training records, assessments, and reporting is officially launched and made accessible to all authorized users, with support provided to ensure proper adoption. To reinforce learning and standardize practices, complete training kits containing reference materials, forms, and guides are prepared and distributed to all relevant institutions and personnel, ensuring that everyone has the resources needed to apply the new system effectively.

Phase 3 (Month 7 Onwards): Full Implementation, Monitoring, and Evaluation

Starting in the seventh month, the initiative moves into full operation, where all policies, procedures, and systems are applied across all participating MHEIs and shipping companies. At this stage, regular monitoring is conducted to track progress, observe compliance, and identify any challenges or gaps that arise during daily operations. Alongside monitoring, formal evaluation activities are carried out to measure performance against set objectives, assess the quality of training and services delivered, and determine whether the intended outcomes are being achieved. This ongoing oversight allows the joint committee and stakeholders to address issues promptly, maintain service quality, and ensure that the system functions as intended in real-world conditions.

Phase 4: Annual Review and Improvement Based on Feedback and Audit Results

Once the system is fully operational, an annual review process is established to ensure long-term relevance, efficiency, and effectiveness. Every year, the joint committee gathers and analyzes feedback from users, stakeholders, and beneficiaries, alongside findings from internal and external audits. This information is carefully assessed to identify areas for enhancement, update policies or procedures, and adapt to changes in regulations, technology, or industry standards. By incorporating lessons learned and emerging best practices, this phase ensures continuous improvement, keeping the entire framework responsive, up-to-date, and aligned with the evolving needs of the maritime education and training sector.

IV. Monitoring and Evaluation

The primary measure of success for this initiative is a clear improvement in the quality and consistency of supervision provided. Specifically, we target an increase in the weighted

mean score of supervision from the current level of 3.48, which corresponds to a rating of "Often," to 4.20 or higher, reflecting a rating of "Always." This shift demonstrates that guidance, monitoring, and support are no longer just regularly available, but are consistently provided in every relevant situation, ensuring that learners and staff receive the necessary assistance whenever it is needed.

Alongside this main goal, several secondary indicators will help confirm that the program is working effectively. First, we aim to achieve a 100% completion rate for all tasks outlined in the Training Record Book (TRB), ensuring that every required activity, assessment, and documentation step is fully accomplished. Second, we expect to see a noticeable reduction in complaints related to excessive workload or insufficient guidance, showing that support systems are better aligned with actual needs and that individuals feel adequately assisted. Third, we anticipate higher pass rates in Certificate of Competency (CoC) assessments, which will serve as proof that improved supervision directly translates to better learning outcomes and mastery of required skills.

To accurately measure and verify these results, a structured evaluation process will be used. This will include administering post-program surveys to gather feedback on the quality and frequency of supervision received. We will also conduct a thorough review of TRB documents to track task completion and ensure all requirements are met. Additionally, interviews will be held with both program graduates and partner companies to gain deeper insights into the practical impact of the supervision provided, covering aspects such as preparedness, support received, and overall satisfaction with the training process. Together, these methods will provide a comprehensive and reliable assessment of whether the intended improvements have been achieved.

V. Expected Impact

This enhancement plan ensures that supervision is consistent, structured, and compliant across all vessel types and routes. By addressing the weakest areas identified in the study, monitoring, resources, and time for learning, this program will produce more competent, confident, and well-trained marine engineers, strengthening the Philippines' position as the world's leading supplier of quality seafarers.

5. Conclusions and Recommendations

This chapter presents the conclusions and recommendations drawn from the analysis and interpretations, as well as the recommendations to further improve the supervision during cadets' onboard training.

Conclusions

Based on the findings of the study, the following conclusions are drawn:

1. Most cadets were deployed on domestic routes, with fewer assigned to international voyages. Placements were mostly on passenger and general cargo vessels, while assignments to specialized ships like tankers and bulk carriers were limited.
2. Supervision was generally frequent and satisfactory. However, monitoring of training records, provision of learning materials, and allocation of study time were inconsistent. Cadets were also occasionally assigned tasks unrelated to their training program.

3. No significant difference was found in the level of supervision when grouped by vessel route or type. Guidance and oversight were consistent across all categories of vessels and operations.
4. Vessel route and type do not significantly influence the level of supervision. Training quality depends more on company policies and officer competence rather than vessel characteristics.
5. A gap exists between regulatory requirements and actual practice. Compliance with structured training and documentation standards remains inconsistent onboard.
6. Since supervision is uniform across all vessel types and routes, standard improvement programs can be applied broadly to ensure consistent training quality.

Recommendations

Based on the findings and conclusions, the following recommendations are suggested:

To MARINA

It is recommended that MARINA strictly enforce regulations requiring every ship to assign a designated training officer who will be fully accountable for guiding and monitoring cadets throughout their sea service. The agency should also create a standardized supervision guide containing clear procedures and learning objectives, while conducting thorough and regular checks of Training Record Books (TRB) to ensure all required competencies are properly documented and achieved. Additionally, MARINA must implement a certification system for officers assigned as trainers, verifying that they possess the necessary knowledge, instructional skills, and mentoring ability to effectively teach and develop future maritime officers.

To Maritime Schools (MHEIs like ZSCMST)

It is recommended that maritime schools expand their industry partnerships by collaborating with more shipping lines, especially those with international operations, to provide students with better deployment opportunities and exposure to global maritime standards. These institutions should also adopt and use digital or online monitoring systems to track cadet progress, performance, and compliance with academic requirements even while they are onboard vessels. Furthermore, schools must conduct comprehensive orientations before deployment to fully educate cadets about their legal rights, welfare benefits, duties, and professional responsibilities, ensuring they are well-prepared and informed before starting their training.

To Shipping Companies

It is recommended that shipping firms arrange work schedules that allocate adequate time for cadets to study, practice skills, and complete their training requirements, making sure they are not treated or utilized as regular crew members for basic labor. Every vessel should also be fully equipped with essential learning resources such as textbooks, technical manuals, and reference materials to support cadets' studies and practical understanding of shipboard operations. Moreover, companies should organize training sessions for their ship officers to develop their mentoring, guidance, and assessment skills, enabling them to properly supervise and evaluate cadets during their service.

To Cadets

It is recommended that cadets take an active role in their own learning by participating enthusiastically in all assigned tasks, observing operations closely, and asking questions whenever they encounter concepts or procedures they do not fully understand. They must also maintain their Training Record Books and daily journals diligently, ensuring every entry is accurate, complete, and updated regularly as these documents serve as official evidence of their acquired skills and experience. Above all, it is recommended that cadets approach their training with full dedication and seriousness, recognizing that this period is the most vital preparation for becoming competent, skilled, and responsible maritime officers in the future.

To Future Researchers

It is recommended that future studies explore and analyze other relevant factors that influence the quality of onboard training, such as company policies, working conditions, and the competency level of assigned officers, to provide a more complete understanding of the subject. Researchers are also advised to include deck cadets (BSMT students) in their investigations alongside engine cadets, allowing for direct comparison of experiences and results between the two groups. Additionally, it is recommended that subsequent research test, implement, and evaluate the effectiveness of the training improvement program or framework proposed in this study to determine its practical value and impact on maritime education and training.

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