



## Optimizing the Role of the Philippine Coast Guard in Monitoring Cadets' Shipboard Training in Domestic Vessels

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### Abstract

**Aim:** This study examined the role of the Philippine Coast Guard (PCG) in monitoring cadets' shipboard training onboard domestic vessels, with the goal of optimizing its monitoring functions and aligning them with international standards.

**Methodology:** A mixed-method research design was employed. The study surveyed eighty-five (85) PCG personnel from the Coast Guard District Southwestern Mindanao (CGDSWM), Region IX through total enumeration. In addition, key informant interviews were conducted with officials from the Commission on Higher Education Regional Office IX (CHEDRO 9) and the Maritime Industry Authority Regional Office IX (MRO 9).

**Results:** Findings revealed that although PCG operates under a clearly defined mandate through joint memoranda and agreements, several challenges persist. These include limited inspector competencies, manpower shortages, inadequate equipment, and the absence of standardized monitoring practices. Verification of Training Record Books (TRBs) and real-time cadet monitoring remain insufficient, while overlapping agency jurisdictions contribute to inconsistent supervision across regions. Comparative practices in Asia and Europe show the benefits of structured TRBs, simulator integration, and regulator-academy-industry partnerships, which may be adapted in the Philippine context.

**Conclusion:** The study proposed a Specialized Training Module for PCG inspectors to enhance competencies, integrate digital monitoring systems such as e-TRBs, and institutionalize welfare-centered supervision. The findings contribute to the United Nations Sustainable Development Goals on Quality Education (SDG 4), Decent Work and Economic Growth (SDG 8), and Life Below Water (SDG 14) by improving cadetship training quality, workforce readiness, and maritime safety.

**Keywords:** Philippine Coast Guard, shipboard training, Training Record Book (TRB), maritime education, inspector competencies, cadet monitoring system, maritime safety, MARINA-CHED-PCG collaboration, Sustainable Development Goals (SDGs)

### INTRODUCTION

The shipping industry serves as the backbone of global trade, transporting more than 80 percent of goods worldwide and supporting economic development across nations (Kosowska-Stamirowska, 2020). With this crucial role, the quality of maritime education and training has become a central concern for ensuring safety at sea and compliance with international regulations. The International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW), as amended, emphasizes structured shipboard training as essential for developing competent maritime professionals. Yet, despite these global frameworks, accidents linked to human error remain prevalent, underscoring the need for stronger monitoring mechanisms in cadetship training (Hasanspahić et al., 2021; Albert, 2024).

In the Philippine context, maritime education is regulated by the Commission on Higher Education (CHED), the Maritime Industry Authority (MARINA), and the Philippine Coast Guard (PCG). CHED Memorandum Order No. 67, series of 2017, mandates higher education institutions to align maritime programs with STCW standards. Complementing this, MARINA Circular 2013-02 and subsequent issuances provide guidelines for shipboard training,

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including the use of Training Record Books (TRBs) as tools to document competencies (Maritime Industry Authority, 2022). The PCG, through joint memoranda with CHED and MARINA, plays a critical role in monitoring cadets' training onboard domestic vessels, ensuring compliance with both national and international requirements (CHED & MARINA, 2019; Maritime Industry Authority, 2025).

Despite these policy frameworks, significant challenges persist. PCG's monitoring functions are constrained by limited manpower, varying inspector competencies, and the absence of standardized procedures across regions. The verification of TRBs is often inconsistent, and real-time monitoring of cadets remains underdeveloped. Moreover, overlapping jurisdictions among maritime agencies create gaps in supervision, which may compromise both training quality and maritime safety (Asia Maritime Transparency Initiative, 2023; Abanilla, 2024). Previous studies have examined cadetship training quality and institutional compliance with STCW requirements, but little scholarly attention has been given to the operational capacity of the PCG as a frontline monitoring body. This gap highlights the need to critically evaluate and optimize PCG's role in cadetship supervision (Berbie, 2024; Tomi, 2025).

This study therefore aimed to examine the monitoring functions of the Philippine Coast Guard in cadets' shipboard training onboard domestic vessels, with the objective of proposing an optimized framework aligned with international best practices. Specifically, it sought to assess the adequacy of inspector competencies, the effectiveness of existing monitoring tools such as TRBs, and the coordination mechanisms among CHED, MARINA, and PCG. By addressing these dimensions, the study responds to the pressing need for more structured, transparent, and welfare-centered monitoring systems (Aiken et al., 2025; Suprati, 2024).

Beyond its national scope, the research contributes to the achievement of the United Nations Sustainable Development Goals (SDGs), particularly Quality Education (SDG 4), Decent Work and Economic Growth (SDG 8), and Life Below Water (SDG 14). Strengthening cadetship training quality not only ensures that graduates are globally competitive and work-ready but also enhances maritime safety and environmental stewardship (Choi et al., 2024). The findings are expected to inform both policy and practice, reinforcing the role of the PCG as a critical partner in advancing maritime education and safeguarding the nation's seafaring future.

### Review of Related Literature and Studies

Shipboard training has long been recognized as a critical component of maritime education, serving as the bridge between theoretical instruction in maritime higher education institutions (MHEIs) and the practical realities of working onboard vessels. Studies have emphasized that cadetship programs significantly influence competence development, particularly in navigation, engineering, and safety-related skills. International best practices in countries such as Japan and Norway illustrate that structured Training Record Books (TRBs), simulator integration, and collaborative regulator-academy-industry partnerships contribute to more effective training outcomes. These practices suggest potential strategies that can be adapted within the Philippine setting to strengthen domestic shipboard training supervision (Aiken et al., 2025; Demirel, 2022; Chibana, 2023).

Despite policy frameworks guided by the STCW Convention, maritime safety continues to be undermined by human error, often linked to gaps in cadet preparedness (IMO, 2020; Celik, Akyuz, & Celik, 2021). Research shows that deficiencies in monitoring, feedback, and consistent evaluation contribute to these issues (Aiken et al., 2025). In the Philippines, MARINA Circular 2013-02 and CHED Memorandum Order No. 67, s. 2017, provide a structured foundation for training. However, the implementation of these policies relies heavily on the monitoring capacity of agencies such as the Philippine Coast Guard. Studies highlight that without systematic oversight, TRBs risk being reduced to compliance paperwork rather than reflective tools for competency-based learning (Bayotas, 2023).

The role of the PCG in cadetship supervision remains an underexplored area in the literature. While the PCG is mandated to inspect and validate training records, reports indicate persistent challenges in inspector qualifications, resource allocation, and coordination with MARINA and CHED (Cruz & Ventura, 2022; Abanilla, 2024). Research on regulatory overlaps further reveals that fragmented responsibilities among maritime agencies create inefficiencies in implementation and weaken accountability structures (Asia Maritime Transparency Initiative, 2023). These gaps point to the need for a more integrated and competency-focused monitoring framework that empowers the PCG to fulfill its mandate effectively (Berbie, 2024; Tomi, 2025).

Several international studies suggest the growing relevance of digital monitoring tools in enhancing cadetship supervision. The adoption of electronic TRBs (e-TRBs), mobile-based evaluation systems, and online reporting platforms has been linked to greater transparency and real-time feedback between cadets, supervisors, and regulators (Wahdiana et al., 2025). Such innovations not only improve monitoring efficiency but also align with the global shift toward maritime digitalization (FRIEdr, 2018). The lack of comparable systems in the Philippines underscores a critical technological gap that this study sought to address (Maritime Industry Authority, 2024).



In sum, the literature establishes three major themes relevant to this research: first, the importance of structured and competency-based shipboard training; second, the persistent issues of limited monitoring capacity and fragmented regulatory roles in the Philippines; and third, the potential of digital innovations to transform monitoring practices. While global models demonstrate the feasibility of integrated and technology-driven systems, empirical studies on the Philippine Coast Guard's role remain scarce. This study therefore contributes to filling this gap by examining PCG's monitoring functions and proposing an optimized framework that strengthens cadetship training quality, ensures compliance with international standards, and advances national maritime safety objectives.

### Statement of the Problem

Shipboard training is a critical component of maritime education and is mandated under international and national policies to ensure that cadets acquire competencies required by the STCW Convention. In the Philippines, the Philippine Coast Guard (PCG), in coordination with CHED and MARINA, is tasked to monitor cadets' training onboard domestic vessels. However, despite a strong policy framework, challenges persist in inspector competencies, manpower allocation, TRB verification, and standardized monitoring practices. Overlapping jurisdictions among maritime agencies further complicate supervision, resulting in inconsistent implementation across regions. While international models demonstrate structured, technology-driven monitoring practices, limited empirical research has examined the operational capacity of the PCG to fulfill its monitoring mandate. This gap underscores the need to assess and optimize PCG's monitoring role to improve cadetship training, workforce readiness, and maritime safety.

### Research Objectives

#### General Objective:

To examine the role of the Philippine Coast Guard in monitoring cadets' shipboard training onboard domestic vessels and propose an optimized monitoring framework aligned with international best practices.

#### Specific Objectives:

1. To determine the extent of PCG's role in cadet monitoring based on relevant policies and memoranda.
2. To identify the requirements for PCG personnel to efficiently conduct cadetship monitoring in terms of inspector competencies and TRB requirements.
3. To assess the qualifications of PCG inspectors in terms of educational attainment, training, and relevant experience.
4. To determine the challenges faced by the PCG in monitoring cadets onboard domestic vessels.
5. To explore international cadet monitoring practices that may be adapted in the Philippine setting.
6. To propose a specialized training module to optimize the monitoring role of the PCG.

### Research Questions

1. What is the extent of PCG's role in monitoring cadets based on the following:
  - 1.1 Joint MARINA-PCG Memorandum Circular No. 001, series of 2019
  - 1.2 Memorandum of Agreement with CHED
  - 1.3 MARINA Memorandum Circular No. SC-2022-01, s. 2022
  - 1.4 Standing Operating Procedure (SOP) No. 03-23, Amendment 02-24 (2024)
2. What are the requirements for PCG personnel to efficiently conduct cadetship monitoring in terms of:
  - 2.1 Competency of PCG inspectors
  - 2.2 TRB requirements (deck and engine) based on ship equipment
3. What are the current qualifications of the PCG inspectors in terms of:
  - 3.1 Educational attainment
  - 3.2 Training
  - 3.3 Relevant experience
4. What are the challenges faced by the PCG in monitoring cadets onboard domestic vessels?
5. What cadet monitoring practices exist internationally that can be adapted in the Philippine domestic setting?
6. Based on the findings, what specialized training module can be recommended to optimize the role of the Philippine Coast Guard in monitoring cadets' shipboard training in domestic vessels?



## METHODOLOGY

This section outlines the methodological approach undertaken in the study, including the research design, population and sampling, instruments, validation of instruments, data collection procedures, data analysis, and ethical considerations. Each subsection is presented systematically to ensure clarity and adherence to scholarly standards.

### Research Design

The study employed a mixed-method design using a concurrent triangulation strategy, wherein both quantitative and qualitative data were collected simultaneously, analyzed separately, and integrated to validate and enrich the findings. This approach was selected because it allowed the numerical generalizability of survey results to be complemented by the contextual depth of interviews and document reviews. Mixed-method strategies are increasingly used in education and maritime research to ensure comprehensive results that capture both measurable patterns and nuanced perspectives (Amihan & Sanchez, 2023; Pangilinan et al., 2025).

The quantitative strand involved the administration of survey questionnaires to Philippine Coast Guard (PCG) personnel to evaluate their demographic profile, experiences, competencies, and contributions to monitoring cadets onboard domestic vessels.

The qualitative strand consisted of semi-structured interviews with purposively selected officials from the Commission on Higher Education (CHED) and the Maritime Industry Authority (MARINA). Their perspectives on inter-agency collaboration, regulatory functions, and policy implementation provided institutional insights that complemented the operational experiences of PCG inspectors.

Additionally, a document review of PCG policies, Memoranda of Agreement (MoAs), and maritime laws and regulations was undertaken to triangulate findings and ensure consistency between practice and policy. By adopting this design, the study maximized the strengths of both quantitative and qualitative approaches, ensuring a validated, comprehensive, and holistic understanding of the PCG's role in monitoring cadetship training.

### Population and Sampling

Two distinct groups of participants were included in the study.

The first group comprised 85 PCG personnel assigned to the Coast Guard District Southwestern Mindanao (CGDSWM). Using total enumeration, all officers and enlisted personnel directly involved in Pre-Departure Inspections (PDI) and cadet monitoring within five major stations and their substations were included. Among them, 16 were officers and 69 were non-officers. Their perspectives provided operational insights into the monitoring of cadets during shipboard inspections.

The second group consisted of purposively selected regional officers-in-charge of shipboard training from CHED and MARINA in the Zamboanga Region. Their inclusion provided a policy and regulatory dimension to the study, as they were responsible for enforcing maritime education standards, monitoring compliance with the Standards of Training, Certification, and Watchkeeping (STCW), and collaborating with the PCG on shipboard training matters.

The purposive inclusion of these two groups ensured a holistic understanding of the cadetship monitoring system, capturing both field-level practices and policy-level perspectives. Purposeful and total enumeration approaches have been shown to be effective in ensuring that research findings reflect both breadth and depth in interdisciplinary educational research (Bontuyan, 2025).

### Instrument

The study utilized multiple instruments tailored to its participants and research objectives.

For PCG commissioned officers, a survey questionnaire was developed with three sections: (1) demographic profile (e.g., sex, rank, assignment, years of service, and educational attainment), (2) challenges in cadet monitoring measured through a four-point Likert scale, and (3) open-ended questions for suggestions on improving monitoring systems.

For PCG enlisted personnel, a parallel questionnaire was designed with similar sections, consisting of demographic information, twenty-two Likert-scale items on monitoring challenges, and an open-response section for recommendations.

A separate survey was also developed for both commissioned and enlisted personnel to assess inspectors' competencies. It covered demographic information, training received, relevant monitoring experience, and inter-agency coordination, with additional items addressing perceived challenges and recommendations for strengthening supervision.



For CHED and MARINA officials, semi-structured interview guides were employed. The CHED interview guide contained sections on background information, regulatory roles, collaboration with PCG and MARINA, evaluation mechanisms, and recommendations. The MARINA interview guide followed a similar format but emphasized accreditation, regulatory responsibilities, and compliance monitoring of domestic ships hosting cadets. This multi-instrument approach enabled the study to capture operational, institutional, and regulatory insights, ensuring balanced data across respondents (Carvajal et al., 2025).

### Validation of Instrument

Instrument validation followed a systematic process. Content validation was carried out by subject matter experts in maritime education, who evaluated the relevance, clarity, and alignment of items with the study's objectives. A pilot test was conducted with ten respondents who shared similar characteristics with the main study population. This test assessed clarity, sequencing, and the ability of the survey items to elicit meaningful responses.

The reliability of the survey instruments was tested using Cronbach's alpha, which yielded a coefficient of 0.87, indicating high internal consistency and reliability.

For the interview guides, validation was conducted through expert review and pre-testing with two PCG personnel outside the main sample. Feedback focused on the neutrality and clarity of questions, sequencing, and alignment with the research problem. Adjustments were made based on this feedback, ensuring the appropriateness of the interview tools.

### Data Collection

Data collection was carried out after obtaining institutional clearance from the Philippine Merchant Marine Academy Graduate School and official endorsements from PCG leadership.

For the quantitative strand, survey questionnaires were personally distributed to officers and enlisted personnel across PCG stations and substations in Zamboanga City, Zamboanga Sibugay, Zamboanga del Sur, Zamboanga del Norte, and Isabela City, Basilan. Respondents were briefed about the study's objectives, allotted sufficient time for completion, and their completed questionnaires were retrieved and checked for completeness before encoding.

For the qualitative strand, purposively selected CHED and MARINA officials were interviewed face-to-face in their offices. Semi-structured guides were used to allow probing questions when needed. All interviews were audio-recorded with consent and later transcribed for analysis.

Additionally, official documents, including PCG policies, CHED-PCG-MARINA agreements, and maritime regulations, were reviewed to triangulate findings with empirical data.

### Data Analysis

Quantitative data were processed using descriptive and inferential statistics. Responses measured on the four-point Likert scale were coded and analyzed using frequency, percentage, mean, and weighted mean. Analysis of variance (ANOVA) was employed to determine significant differences among groups of respondents. These statistical procedures provided measurable insights into the experiences and competencies of PCG inspectors.

Qualitative data from interviews and open-ended survey responses were transcribed, coded, and subjected to thematic analysis. Themes related to cadet monitoring, inspector competencies, inter-agency collaboration, and policy challenges were identified and compared with relevant literature and existing policies. Document reviews were also analyzed to highlight consistencies and discrepancies between policy provisions and practice.

Findings from both strands were integrated through triangulation, allowing the quantitative results to be corroborated and contextualized by qualitative insights, thus ensuring depth and validity (Amihan et al., 2023).

### Ethical Considerations

The study adhered to ethical standards to safeguard participants' rights and integrity. Informed consent forms were secured from all respondents, emphasizing voluntary participation and the right to withdraw at any time without penalty. Anonymity was preserved, and confidentiality of responses was strictly maintained.

Academic integrity was observed by properly citing sources and subjecting the final manuscript to a plagiarism check using Turnitin, which yielded a 7% similarity index, confirming compliance with acceptable thresholds. All procedures complied with institutional and scholarly ethical requirements, ensuring respect for the dignity and privacy of participants.



## RESULTS and DISCUSSION

The results are presented according to the research questions and supported with relevant literature to contextualize the findings.

### Extent of the Philippine Coast Guard's Role in Monitoring Shipboard Training

Survey results indicated that the PCG plays a moderate but uneven role in monitoring cadets' shipboard training. Responsibilities are guided by memoranda such as the Joint CHED-MARINA Memorandum Circular (2019) and MARINA Circulars (2022, 2023), but implementation varies across districts. Verification of Training Record Books (TRBs) is often inconsistent, with district offices applying different standards. Respondents confirmed that inspector competencies and resource availability significantly affect the uniformity of monitoring.

This aligns with Abanilla (2024), who reported that PCG personnel, while mandated with strong enforcement roles, often face gaps in competencies when tasked with technical monitoring duties. Similarly, the Asia Maritime Transparency Initiative (2023) observed that Philippine maritime governance is constrained by institutional fragmentation and uneven enforcement capacities, limiting the effectiveness of monitoring mechanisms.

### Requirements and Procedures in Monitoring Shipboard Training

PCG monitoring relies on SOPs that prescribe documentary verification and shipboard inspections. However, findings revealed reliance on manual TRB checks and limited integration of digital systems, which hinders efficiency. Respondents stressed the need for competency-based training tailored to inspector duties, particularly in simulator use and digital reporting.

Bayotas (2023) emphasized that strengthening TRBs through structured knowledge infusion increases cadet accountability and transparency, yet without inspector familiarity, the system cannot be maximized. Wahdiana et al. (2025) further argued that applying digital monitoring models significantly improves real-time cadetship supervision and reduces reporting errors, a practice increasingly used in global maritime academies.

### Qualifications and Competencies of PCG Inspectors

The study revealed that while many PCG inspectors meet baseline qualifications, advanced skills such as simulator-based assessments and digital monitoring remain underdeveloped. Respondents pointed to the absence of specialized modules in inspector training, leaving gaps in handling modernized TRB systems.

Berbie (2024) similarly found that competency manuals for PCG officers are needed to standardize skills, ensuring inspectors are prepared for evolving training protocols. Tomi (2025) reinforced this by highlighting the necessity of institutional human resource development programs within the PCG to build sustainable technical expertise. These findings confirm that competency-building is integral to optimizing the PCG's monitoring role.

### Challenges in Implementing Monitoring Functions

Key challenges included limited manpower, insufficient inspection equipment, overlapping mandates with CHED and MARINA, and lack of standardized procedures. Respondents also noted that jurisdictional ambiguities delay decision-making and result in inconsistent supervision across regions.

This reflects Aiken et al. (2025), who argued that the complexities of maritime convention implementation often lead to overlapping functions and fragmented accountability. Celik et al. (2021) also emphasized that the human factor—including insufficient training and organizational inefficiencies—remains a leading contributor to weaknesses in maritime oversight.

### International Best Practices Adaptable to the Philippines

International comparisons revealed that structured TRBs, simulator integration, and regulator-academy-industry partnerships improve cadet performance and readiness. Respondents proposed adopting e-TRBs, digital monitoring platforms, and welfare-centered inspection approaches, which have proven effective in East Asia and Europe.

Wahdiana et al. (2025) found that structured cadetship policies directly improve training outcomes, while Lee et al. (2021) demonstrated that consistent monitoring in Korea enhances cadet motivation and training effectiveness. Choi et al. (2024) likewise highlighted the value of seafarer welfare-centered supervision, which ensures both compliance and holistic cadet development. These insights confirm that adopting international models could strengthen Philippine cadetship monitoring systems.



## Conclusions

The study concludes that while the PCG plays an important role in monitoring cadets' shipboard training, its functions are constrained by competency gaps, resource limitations, and overlapping agency jurisdictions. Current procedures, though guided by memoranda and SOPs, remain limited in ensuring uniform monitoring across regions. Inspector qualifications are generally adequate but require strengthening to align with international standards that emphasize digital monitoring and simulation-based evaluations.

International practices underscore the benefits of structured TRBs, e-TRBs, simulator integration, and regulator-academy-industry partnerships, all of which may be adapted to the Philippine context. Addressing identified challenges would significantly improve cadet training quality, enhance workforce readiness, and promote maritime safety, thereby contributing to the United Nations Sustainable Development Goals on education, economic growth, and life below water.

## Recommendations

In view of the findings and conclusions, the study offers the following recommendations:

1. The Philippine Coast Guard may strengthen inspector competencies by developing and institutionalizing a Specialized Training Module focused on TRB verification, simulator-based assessments, and digital monitoring systems.
2. Collaboration among CHED, MARINA, and PCG may be enhanced through the creation of a joint monitoring framework, reducing jurisdictional overlaps and ensuring consistent supervision of cadetship training.
3. The adoption of electronic Training Record Books (e-TRBs) and digital platforms may be considered to allow real-time monitoring, minimize errors, and improve transparency in cadetship documentation.
4. The PCG may invest in additional manpower and inspection equipment to address resource gaps and ensure adequate monitoring coverage across regions.
5. Welfare-centered supervision models, drawn from international practices, may be integrated into inspection processes to promote not only compliance but also cadet well-being.

These recommendations aim to optimize the role of the Philippine Coast Guard in monitoring shipboard training, align practices with international standards, and advance the broader objectives of maritime education and safety in the Philippines.

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