

BEYOND ADMINISTRATIVE PROFICIENCY: INTERPERSONAL AND COGNITIVE LEADERSHIP AS THE KEY DRIVERS OF SHIPBOARD PREPAREDNESS

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Available Online: May 2026
Revised: April 2026
Accepted: April 2026
Received: March 2026

Volume IV Issue 2 (2026)
DOI: 10.5281/zenodo.20352444
E-ISSN: 2984-7184
P-ISSN: 2984-7176
<https://getinternational.org/research/>

Abstract

Effective leadership is a critical non-technical competency in the high-risk maritime industry, indispensable for ensuring safety, fostering teamwork, and mitigating operational hazards. This study evaluated the leadership skills and shipboard preparedness of third-year maritime students at the Asian Institute of Maritime Studies (AIMS) and examined the predictive relationship between these variables. Employing a quantitative descriptive-correlational design, data were collected from 200 students via a validated, structured survey using convenience sampling. The study measured leadership across administrative, interpersonal, and conceptual domains, alongside physical, social, psychological, and emotional preparedness. Results indicated that students possess a well-rounded and "evident" foundation of leadership competencies (Administrative $M=4.18$, Interpersonal $M=4.16$, Conceptual $M=4.15$). Furthermore, respondents demonstrated a "very high" level of holistic readiness for shipboard responsibilities across all dimensions. Multiple regression analysis revealed a robust and statistically significant model ($R^2 = .566$), indicating that combined leadership competencies explain 56.6% of the variance in overall preparedness. Notably, interpersonal skills ($\beta = .396$) and conceptual skills ($\beta = .329$) emerged as the primary, highly significant drivers of readiness, underscoring the critical role of human interaction and cognitive adaptability under pressure. Conversely, administrative proficiency, while necessary, was not a statistically significant independent predictor. The study concludes that the transition from student to shipboard officer heavily relies on cognitive and social leadership competencies. To maximize operational readiness, maritime education should prioritize scenario-based interpersonal simulations and critical thinking exercises to holistically equip future mariners for the global maritime sector.

Keywords: *Maritime Leadership, Shipboard Preparedness, Maritime Education and Training (MET), Interpersonal Skills, Seafarer Readiness, Competency-Based Training*

Recommended Citation:

De Leon, J., Gutierrez, M. S., Mueden, J. C., Peralta, C. P., Pastrana, M. V. L., Rosos, G. G., & Vera, C. G. (2026). BEYOND ADMINISTRATIVE PROFICIENCY: INTERPERSONAL AND COGNITIVE LEADERSHIP AS THE KEY DRIVERS OF SHIPBOARD PREPAREDNESS. GET INTERNATIONAL RESEARCH JOURNAL, 4(2), 125–135. <https://doi.org/10.5281/zenodo.20352444>

INTRODUCTION

While leadership is often classified as a “*soft skill*,” it is no less critical than the technical competencies required at sea. Effective leadership is indispensable for ensuring safety, fostering teamwork, and maintaining operational efficiency on board. In high-risk environments like the maritime industry, inadequate leadership can precipitate marine accidents, resulting in injuries, fatalities, and environmental pollution (**Hasanspahić et al., 2021**). For maritime students preparing to become future officers, cultivating strong leadership enables them to take initiative, perform under pressure, and demonstrate readiness for the escalating responsibilities of the global maritime sector. The maritime industry places a premium on these capabilities, driving the integration of targeted leadership courses into maritime education and training (MET) programs. These curricula aim to systematically develop essential skills that are vital for professional growth and shipboard management. This approach is heavily supported by Competency-Based Training (CBT) frameworks, which align with the Standards of Training, Certification, and Watchkeeping (STCW) for Seafarers. Such frameworks emphasize that professional preparedness relies on the active integration of technical knowledge with non-technical skills, including communication, stress management, and emotional intelligence (**Arniti, 2024**). This aligns with the broader educational context where internal psychological foundations and leadership self-efficacy have been shown to directly dictate a student leader's capacity to engage in adaptive and collaborative practices (**Macalnas et al., 2026**). For third-year students at the Asian Institute of Maritime Studies (AIMS), this developmental phase is critical. As they approach their shipboard training, they must expand beyond academic proficiency to cultivate personal attributes such as self-control, discipline, adaptability, and ethical decision-making. The necessity of these traits is well-grounded in **Katz's (1955)** Three-Skill Theory of Leadership, which posits that effective administration requires a balance of interpersonal, conceptual, and administrative skills. Interpersonal skills allow future officers to navigate the human nature of crew management; conceptual skills enable them to analyze complex, high-stress situations; and administrative skills facilitate the rigorous planning required for ship operations.

Preparedness for these shipboard responsibilities spans multiple interconnected domains: physical readiness (stamina and practical execution), social readiness (teamwork and communication), psychological readiness (decision-making under duress), and emotional readiness (confidence and resilience). The intrinsic relationship between leadership and personal adaptability is strongly supported in local institutional literature; for instance, **Malco (2024)** established that highly developed core leadership dimensions directly enhance an individual's capability to sustain performance, manage internal stress, and systematically navigate unexpected organizational adversity. Safety leadership theories further underscore that ship officers' leadership styles directly influence operational performance and crew safety behavior, acting as a primary mechanism for managing risk (**Hasanspahić et al., 2021**). Knowing their leadership baseline gives students the confidence to manage both the operational and human aspects of life at sea. Despite the structured training provided at AIMS, there remains a need to quantitatively assess how effectively these competencies translate into actual readiness before students board vessels. Aligning with the 17 United Nations' Sustainable Development Goals, notably Target 4.4 of Goal 4 and Target 8.8 of Goal 8 to “*substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship*” and to “*protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in*

precarious employment" (United Nations, n.d.), this study aims to evaluate the leadership skills and level of preparedness among third-year maritime students at the Asian Institute of Maritime Studies.

This research systematically profiles students' leadership competencies—serving as the input—against their anticipated onboard duties. Through rigorous data analysis (the process), the study will output an assessed level of leadership preparedness. Ultimately, identifying these areas of strength and necessary development will serve as an evidence-based foundation to propose targeted strategies, ensuring that future mariners are holistically equipped to lead in a dynamic, globalized industry. The study presents several notable limitations regarding its methodology and scope. First, the research relies on leadership—specifically administrative, interpersonal, and conceptual skills—as the sole independent variable predicting shipboard preparedness. While the authors acknowledge that leadership is just as critical as technical competencies, the study fails to measure those actual technical skills, such as navigational proficiency or engineering knowledge. Because competency-based frameworks emphasize the active integration of technical knowledge with non-technical skills, focusing exclusively on leadership provides an incomplete picture of a student's holistic capability. Furthermore, the study relies entirely on students' self-assessed perceptions of their skills and readiness through structured survey instruments, rather than objective, practical evaluations of their abilities. Second, the research methodology introduces significant sample bias that restricts the generalizability of the findings. The researchers explicitly utilized convenience sampling, selecting participants based simply on who was accessible, available, and willing to participate. Although the authors argue that their sample size of 200 helped mitigate risks, they acknowledge that this method carries inherent limitations regarding total population representation. Additionally, the entire target population is restricted to third-year maritime students from one specific school, the Asian Institute of Maritime Studies (AIMS). Because the data is localized to the specific curriculum and environment of AIMS, the results cannot be confidently generalized to maritime students at other institutions, at different academic levels, or in different countries. Finally, there is a distinct lack of demographic profiling of the respondents in the study's findings. Although the methodology section states that statistical methods were initially used to summarize the demographic profile and the distribution of responses, the provided results entirely omit this demographic data. The results present the 200 students as a completely homogenous group, with no breakdown of the respondents' age, gender, socioeconomic background, or prior maritime exposure. Without these demographic variables, the study misses crucial analytical opportunities, making it impossible to determine if specific traits, such as age or gender, influence the self-reported readiness or conceptual leadership skills of the students. The critical nature of this omission is underscored by contemporary student leadership literature; for instance, **Macalnas et al. (2026)** demonstrated that internal student profiles—specifically traits like openness and conscientiousness—serve as statistically significant predictors of a student leader's stylistic preference and self-efficacy baseline.

METHODS

Research Design

This study employed a quantitative descriptive-correlational research design. Instead of relying on open-ended qualitative responses, this design utilized structured survey instruments to produce objective, numerical

data. The descriptive component was used to systematically quantify and present a clear picture of the current leadership skills and preparedness levels of third-year maritime students. Concurrently, the correlational aspect examined the statistical relationship between these two variables. This approach was highly appropriate for the study's purpose, as it allowed the researchers to identify patterns and measure specific factors without manipulating any variables or altering the respondents' environment, thereby providing a factual, data-driven overview of the target group's developmental needs.

Population, Sample Size, and Sampling Technique

The target population comprised 600 third-year maritime students at the Asian Institute of Maritime Studies (AIMS). From this population, a sample size of 200 students was established to ensure that the sample accurately reflected the characteristics of the broader group while minimizing potential sampling bias. The researchers utilized convenience sampling, selecting students who were accessible, available, and willing to participate during the data collection period. While convenience sampling has inherent limitations regarding total population representation, the relatively large sample size mitigated these risks. This practical method allowed for the efficient gathering of numerical data from students actively preparing for their shipboard duties.

Research Instrument

Data were collected using a structured, two-part survey questionnaire. The first part assessed leadership skills, adapting a standardized framework from **Sage Publications (2009)**. This section contained 18 close-ended questions designed to profile the students' strengths and weaknesses across three domains: administrative skills, interpersonal skills, and conceptual skills. Responses were measured using a five-point Likert scale ranging from 1 (Not True) to 5 (Always True).

The second part evaluated the students' level of preparedness for shipboard responsibilities across four categories: physical, social, psychological, and emotional readiness. This section contained 20 close-ended questions scored on a four-point Likert scale, ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). Prior to deployment, both parts of the questionnaire underwent content validation by maritime and research experts to ensure clarity, relevance, and appropriateness for the target demographic, thereby guaranteeing the reliability of the subsequent statistical analysis.

Data Gathering Procedure

Following instrument validation by the research adviser and a content expert, a formal letter of request was submitted to the Marine Transportation Department of AIMS to secure permission to conduct the study. Upon approval, the researchers coordinated with the department to identify potential respondents. The survey was administered digitally via Google Forms, providing a convenient and accessible platform for the students.

Before participating, each respondent was fully briefed on the study's purpose, and informed consent was obtained. Clear instructions were provided within the form regarding how to navigate the items and interpret the response scales. To maintain strict confidentiality and anonymity, respondents were not required to provide their

names, and unique numerical codes were assigned for data tracking. All responses were automatically recorded and organized within the secure digital platform for subsequent extraction and analysis.

Data Analysis and Statistical Treatment

The collected data were processed using both descriptive and inferential statistical methods to accurately interpret the findings and answer the research questions.

- **Frequency and Percentage:** These were initially used to summarize the demographic profile and the distribution of responses. This provided a straightforward view of how frequently students demonstrated specific leadership behaviors and their general consensus regarding their preparedness.
- **Mean:** The mean was calculated to determine the central tendency of the responses, providing a single representative value for each measured category. This allowed the researchers to quantify the overall level of the students' administrative, interpersonal, and conceptual leadership skills, as well as their physical, social, psychological, and emotional preparedness.
- **Standard Deviation:** This measure was utilized to determine the dispersion or spread of the data values around the mean. A lower standard deviation indicated that the students' responses were closely aligned with the average, signifying high consensus, while a higher standard deviation indicated a wider variance in their perceived skills and readiness.
- **Regression Analysis:** To explore the predictive relationship between the variables, regression analysis was applied. This inferential statistical method helped determine whether a change in the independent variable (leadership skills) significantly affected the dependent variable (preparedness for shipboard duties). This highlighted vital patterns and established how specific leadership competencies directly influence a student's readiness for real-world maritime operations.

RESULTS and DISCUSSION

Leadership Skills of the Respondents

Table 1

Summary of Participants' Leadership Skills by Domain (N = 200)

Leadership Skill Domain	M	SD	Verbal Interpretation	Actual Interpretation
Administrative Skill	4.18	0.83	Somewhat true	Evident
Interpersonal Skill	4.16	0.81	Somewhat true	Evident
Conceptual Skill	4.15	0.77	Somewhat true	Evident

Table 1 presents a summary of the third-year maritime students' leadership skills across three domains: administrative, interpersonal, and conceptual. Overall, the respondents demonstrated strong, balanced leadership competencies, with all three domains securing a verbal interpretation of "*Somewhat true*" and an actual interpretation of "*Evident*."

Administrative skills recorded the highest mean score ($M = 4.18$, $SD = 0.83$), indicating that students perceive themselves as highly capable in task organization, handling detailed work, and coordinating teamwork. These findings align with Arleiny (2025), who emphasized that effective maritime educational management and practical shipboard training are essential for bridging the gap between theoretical knowledge and the real-world administrative demands of vessel operations. Furthermore, Kuzu (2025) noted that administrative and managerial competencies are pivotal components of a seafarer's non-technical skills framework, suggesting that the students' solid organizational foundation prepares them well for the rigorous compliance and resource management required at sea.

Interpersonal skills also yielded a strong result ($M = 4.16$, $SD = 0.81$). The data suggests that respondents are adept at resolving conflicts, building consensus, and utilizing emotional intelligence to motivate their peers. These cooperative tendencies are heavily supported by Macalnas et al. (2026), who observed that Filipino college student leaders naturally exhibit high baselines of agreeableness and openness, which directly translate into collaborative team management, proactive peer motivation, and participative problem-solving. This supports the assertions of Mallam, Nazir, and Sharma (2020), who found that a crew's ability to foster teamwork, collaborate effectively, and maintain clear communication directly improves operational safety and mitigates occupational risks. Additionally, Pazaver and Kitada (2025) highlighted that interpersonal competencies—such as empathy, consensus-building, and group collaboration—are critical 21st-century skills necessary to maintain harmony and efficiency in increasingly complex maritime workplaces.

Finally, conceptual skills obtained a mean of 4.15 ($SD = 0.77$). Respondents demonstrated an ability to solve problems proactively, perceive broader organizational contexts, and adapt to changes. As defined by Parola, Satta, and Panetti (2019), conceptual skills in the maritime context involve intellectual agility, strategic vision, rationality, and adaptability. In the dynamic and often uncertain maritime environment, these skills are crucial for safe and proficient decision-making. Leaders with strong conceptual abilities can synthesize diverse information streams and make decisions that go beyond superficial symptoms to address root operational challenges (Pazaver & Kitada, 2025).

Taken together, the data indicates that the third-year maritime students are developing a well-rounded leadership profile. Their capacity to integrate task execution (administrative) with human management (interpersonal) and strategic foresight (conceptual) demonstrates a strong foundation for the demanding, highly regulated global maritime sector. Continued exposure to real-world operational challenges will likely further refine these essential competencies.

Respondents Preparedness on Shipboard Responsibilities

Table 2

Summary of Participants' Preparedness for Shipboard Responsibilities by Domain (N = 200)

Preparedness Domain	M	SD	Verbal Interpretation	Actual Interpretation
Physical Preparedness	3.44	0.62	Strongly agree	Very high
Social Preparedness	3.40	0.61	Strongly agree	Very high
Psychological Preparedness	3.40	0.61	Strongly agree	Very high
Emotional Preparedness	3.39	0.63	Strongly agree	Very high

Table 5 presents a comprehensive summary of the third-year maritime students' preparedness for shipboard responsibilities across physical, social, psychological, and emotional domains. The results indicate a consistently "Very high" level of readiness across all areas, suggesting that the students feel holistically equipped to transition from academic training to the demanding environment of commercial seafaring.

Physical preparedness recorded the highest mean score ($M = 3.44$, $SD = 0.62$). Respondents strongly agreed that they possess the stamina, strength, and adaptability required for heavy tasks and challenging environmental conditions. This self-assessed readiness is critical, as maritime operations demand high physical endurance. According to **Bridger et al. (2010)**, high physical demands and poor physical capacity are strong predictors of occupational injury and fatigue among seafarers. The students' confidence in their physical capabilities suggests an understanding that maintaining fitness is essential not just for routine duties, but for ensuring safety and resilience during emergencies (**Lefkowitz et al., 2015**).

Social preparedness also yielded a very high score ($M = 3.40$, $SD = 0.61$), indicating the students' confidence in their ability to communicate effectively, work as a team, and adapt to the confined, multicultural living conditions inherent to shipboard life. The maritime workplace is characterized by enclosed spaces and diverse crews, making social cohesion vital. Sliskovic (2017) highlighted that poor interpersonal relationships and social isolation are primary sources of occupational stress at sea. The students' readiness to collaborate and maintain positive peer relationships serves as a vital protective factor, enhancing both operational efficiency and personal well-being (**Oldenburg et al., 2013**).

Similarly, the respondents demonstrated very high psychological preparedness ($M = 3.40$, $SD = 0.61$). They expressed strong agreement regarding their ability to manage stress, maintain mental focus during long hours, and adhere strictly to disciplinary protocols. The maritime environment is fraught with operational pressures and emergency scenarios that require rapid, sound decision-making. As noted by Carotenuto et al. (2012), psychological strain and chronic fatigue can severely impair cognitive function and increase the risk of maritime accidents. The students' self-reported ability to maintain composure under pressure indicates a mental readiness that is crucial for executing structured procedures in unpredictable environments. This cognitive alignment closely mirrors the findings

of **Malco (2024)**, who observed that individuals with highly developed leading and relating fluencies maintain a superior capacity to cope with stress, prevent emotional discouragement, and preserve clear problem-solving capabilities when confronted with high-stakes operational uncertainties.

Finally, emotional preparedness scored highly ($M = 3.39, SD = 0.63$), showing that students feel capable of enduring long periods away from home, managing homesickness without compromising job performance, and adapting to emotional challenges. Separation from family and the isolation of long voyages are well-documented stressors that can lead to depression and anxiety among seafarers (**Mellbye & Carter, 2017**). The respondents' confidence in their emotional resilience suggests they are developing the necessary coping mechanisms to sustain their mental health, which in turn supports reliable performance and teamwork during extended deployments.

The high levels of preparedness across all four domains indicate that the third-year maritime students have cultivated a robust foundation for their upcoming shipboard training. Their holistic readiness—encompassing physical stamina, social adaptability, psychological focus, and emotional resilience—positions them well to meet the rigorous demands of the global maritime industry.

Leadership Skills Predicts Shipboard Preparedness

Table 3

Multiple Regression Analysis Predicting Overall Preparedness from Leadership Skills (N = 200)

Predictor	B	SE B	β	t
Constant	0.878	0.168		5.222***
Administrative Skill	0.082	0.048	0.108	1.721
Interpersonal Skill	0.263	0.056	0.396	5.061***
Conceptual Skill	0.243	0.052	0.329	4.668***

Table 3 presents the results of a multiple regression analysis conducted to determine whether administrative, interpersonal, and conceptual leadership skills significantly predict the overall shipboard preparedness of third-year maritime students. The overall model indicates a strong and statistically significant relationship between the combined leadership competencies and students' preparedness ($R = .752, p < .001$). The coefficient of determination ($R^2 = .566$) reveals that 56.6% of the variance in overall preparedness is explained by the three leadership skills included in the model. This is a substantial effect size, demonstrating that more than half of a student's readiness for shipboard responsibilities is directly influenced by their leadership capabilities. This predictive trend strongly mirrors the regression modeling of **Malco (2024)**, which statistically demonstrated that robust leadership proficiencies serve as key, direct determinants of an individual's total resilience and strategic capability to manage high-risk or volatile operational environments. The Adjusted R^2 value of .559 confirms the stability and robustness of the model. Furthermore, the low standard error of the estimate ($SE = .30459$) indicates high model accuracy, while the Durbin–Watson statistic of 2.208 falls well within the acceptable range, confirming the absence of serious autocorrelation and validating the regression assumptions. Analysis of the individual coefficients reveals the

relative contribution of each leadership domain. The constant term ($B = 0.878$, $t = 5.222$, $p < .001$) is significant, suggesting a baseline level of preparedness exists independent of these specific skills; however, this readiness scales upward as leadership competencies improve.

Interpersonal skill emerged as the strongest and most significant predictor of preparedness ($\beta = .396$, $p < .001$). This finding unequivocally highlights that effective communication, teamwork, and the ability to collaborate under pressure are paramount in shipboard environments. The high standardized beta coefficient underscores that the human element—specifically, how well a student interacts and coordinates with crew members—is the primary driver of their perceived readiness for operational duties. Conceptual skill also demonstrated a robust and statistically significant positive effect on preparedness ($\beta = .329$, $p < .001$). This indicates that cognitive abilities such as critical thinking, situational awareness, problem-solving, and the capacity to anticipate challenges are critical components of maritime readiness. Students who can rapidly assess complex operational conditions and make informed decisions feel significantly more prepared to manage both routine tasks and emergency situations at sea. Conversely, while administrative skill showed a positive trajectory, its influence on overall preparedness was weak and not statistically significant at the standard alpha level ($\beta = .108$, $t = 1.721$, $p > .05$). This suggests that while the ability to manage structured tasks and follow procedures is necessary for maritime compliance, procedural competence alone is insufficient to drive overall operational readiness. Shipboard responsibilities frequently involve dynamic, unpredictable situations that demand adaptability and judgment beyond routine administrative execution.

CONCLUSION

The third-year maritime students at the Asian Institute of Maritime Studies (AIMS) possess a well-rounded and evident foundation of leadership skills. Their competencies are balanced across administrative, interpersonal, and conceptual domains, indicating that the current curriculum effectively integrates both the technical "*hard*" skills of management and the essential "*soft*" skills required for modern seafaring. This balanced profile suggests that students are not merely trained to follow orders but are developing the cognitive and social agility required to lead diverse teams in a globalized industry. Furthermore, the students demonstrate a very high level of preparedness for shipboard duties across all four readiness dimensions—physical, social, psychological, and emotional. The high scores in physical and psychological readiness are particularly significant, as they reflect a student body that feels capable of enduring the grueling environmental conditions and high-stress scenarios inherent to maritime operations. Their perceived emotional resilience suggests they have developed the necessary maturity to handle the unique isolation and demands of life at sea. Crucially, the study confirms that leadership skills are significant predictors of shipboard preparedness, with these competencies accounting for more than half (56.6%) of the variance in student readiness. Among the domains, interpersonal and conceptual skills are the primary drivers of preparedness. This highlights that while administrative proficiency is a prerequisite for maritime compliance, the "*human element*"—the ability to communicate, collaborate, and think critically under pressure—is what truly defines an officer's readiness to take command.

Recommendations for Maritime Education Based on the study's findings regarding what genuinely drives a student's readiness, maritime academies should consider the following strategic shifts: Prioritize Scenario-Based

Simulations: The study explicitly concludes that the transition from student to officer relies heavily on cognitive and social agility. Maritime education and training (MET) programs should move beyond textbook management and prioritize scenario-based interpersonal simulations and critical thinking exercises. Enhance "Soft Skill" Integration: Because interpersonal and conceptual skills account for the vast majority of a student's readiness, academies should embed conflict resolution, cultural diversity training, and advanced problem-solving into their core technical classes, rather than treating them as separate, secondary subjects. Focus on Psychological and Emotional Coping: While physical stamina is crucial, institutions must provide robust mental health resources and coping mechanisms. Training should directly address the realities of homesickness, isolation, and fatigue to ensure students can sustain their reliable performance during extended deployments.

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