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Examining the Influence of Interpersonal Communication, Leadership Capability, Adaptability, and Excellence on Managerial Competence and Leadership Performance in Maritime Vocational Higher Education

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ABSTRACT

Understanding how leadership moderates the effectiveness of maritime vocational higher education institutions is essential but underexplored. This study investigated the relationships between interpersonal communication, adaptability, capability, leadership excellence, managerial competence, and perceived leadership performance. A quantitative causal design was employed, collecting data through structured questionnaires from 145 lecturers at maritime vocational higher education institutions in Indonesia using purposive sampling. Data were analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) to evaluate path coefficients and relationships between variables. The results indicate that interpersonal communication significantly influences perceived leadership performance but does not directly impact managerial competence. Conversely, leadership adaptability enhances both managerial competence and perceived leadership performance. Leadership excellence emerged as the most critical factor positively influencing both outcomes, while leadership capability demonstrated no significant direct effects on either. Additionally, managerial competence did not moderate the relationships between predictor variables and perceived leadership performance. These findings underscore the importance of fostering adaptability, communication, and leadership excellence in maritime vocational education. Tailored leadership development programs are necessary to cultivate these competencies among future leaders, enabling them to navigate the unique challenges of this sector. By focusing on these areas, institutions can prepare flexible, competent, and equipped leaders to enhance performance and managerial effectiveness in maritime education.

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1. INTRODUCTION

Good organizational management determines how well a leader can direct the organization toward its vision and mission (Yue et al., 2023). Leaders need to inspire and enable members of their organizations to align their efforts toward common objectives. Leadership ability is a vital attribute that shapes a leader's performance by directing the organizational members to achieve previously set goals (Chatterjee et al., 2023). The driving element to deliver organizational performance is leadership and skills (skills) that leaders have to run daily efforts and long-term strategies that can shape the adaptability and resilience of an organization (Van Wart et al., 2019). The leadership capabilities required to improve technical institutions continually result from recent studies on leadership in vocational education. For instance, Wang et al. (2017) have highlighted that leadership in vocational settings significantly impacts student outcomes, staff development, and operational efficiency. However, much of this literature has focused on general vocational education, such as Lin et al. (2016) and Pratomo and Arifin (2020), often overlooking maritime vocational institutions' unique challenges and demands. The maritime vocational higher education sector is a unique blend of technical, compliance, and competency-based education, a relatively unexplored feature in the literature. For leaders in an organization, the ability to nurture innovation within the company to meet the desired objectives is also a leadership capability. A leader's orientation, powered into view with leadership capability, is focused on making the organizational targets (long-term or short-term). A leader utilizes previous experiences as building blocks to tackle future organizational challenges, enabling them

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to use previous experiences as lessons to be applied to the current circumstances of their leadership journey and practices (Çimen & Karadağ, 2019).

Interpersonal communication is crucial to effective leadership in maritime education, directly impacting organizational performance by fostering collaboration and clear direction. Interpersonal communication is the exchange of information between individuals in an informal process (Han & Xu, 2020). Leaders rely on interpersonal communication to convey information and gather ideas from others. Communication is essential for sharing information between parties, and leaders must communicate their ideas to foster organizational development (Reyes & Redoña, 2021). Interpersonal communication relates to the satisfaction of organizational members with how their leader communicates ideas and concepts in conversation (Bhoyar et al., 2022).

Additionally, good interpersonal communication improves the lead managerial quality to direct and guide the organizational action and may help improve economic performance (Shahid et al., 2021). Interpersonal communication is one of the most critical elements of leadership, as leaders can chart a clear path for others while also getting direction in return. Good leadership through effective communication enables members of the organization to act, focusing them on the organizational vision, mission, and strategies (Selvarajah et al., 2020), eventually improving organizational performance. The performance reached toward organizational objectives dictates that leadership's purpose is facilitating organizational members.

Other studies, such as Harrison & Bazzy (2017) and Murtedjo & Suharningsih (2016), found that performance is strongly influenced when a leader can coordinate organizational culture and leadership excellence to achieve optimal performance. A leader across industries performs by leading others to do their work, but leadership in maritime vocational education requires something vastly different. Leaders within these institutions are critical decision-makers who balance the maritime industry's various regulatory and technical demands (Jensen et al., 2020). They have a key role in driving organizational performance and balancing the demand for academic outcomes with industry-specific requirements for learning and training (Ghosh, 2017). While leadership theory has tended to center on where to allocate attention (decision-making, focusing on "doing" the right thing), the existing literature does not address the unique challenges that those within the maritime vocational higher education sector may encounter, particularly in terms of expertise in leading maritime institutions to upgrade human resources and foster collaboration among stakeholders in education to achieve specific organizational objectives.

Part of a leader’s role is to empower leaders of an organization to perform their jobs and provide alternatives when the job is not easy to accomplish (Lin et al., 2016). This is an important leadership skill in maritime vocational education since you need to be flexible in the unique environment of this type of institution, an institution with the institution over time. A flexible leader builds trust and leads the team towards a defined outcome. This competency will be crucial for understanding the organization’s valuesorganization'sAdaptability enables leaders to align with maritime industry demands and the academic community, enhancing their managerial capabilities through deeper institutional insight (Seah & Hsieh, 2015). Research shows that adaptable leaders in this sector can establish more effective management practices, aligning academic objectives with the demands of the maritime industry (Howell et al., 2022). How well a leader managleader'srganization, both effectively and efficiently, is the measure of their performance. Adaptation means leaders modify elements of their leadership style to comprehend the organization’s culture and values (Ehlers, 2020; Filho et al., 2020). This flexibility displays a leader’s ability to manage the organization, which reflects a solid managerial talent to adapt to where the organization needs to go.

Leadership is key in organizing students to deal with maritime industry issues in higher education students. However, leadership frameworks in maritime vocational higher education still need to be developed. Research suggests that managerial capabilities significantly influence performance (Mariani et al., 2019). Studies have also shown that leadership affects the managerial capabilities (Wang et al., 2022). Leaders with values, attitudes, competencies, abilities, and professional characteristics are better equipped to overcome managerial challenges in today's organizations (Asiyai, 2020). Applying various leadership skills in educational institutions, particularly leadership roles within maritime vocational higher education, requires further examination. Research shows that managerial skills directly influence leadership performance, while technical, social, and conceptual skills exert an indirect impact (Mencl et al., 2016). The quality of leadership in maritime vocational institutions directly impacts students' preparedness for instudents'et current leadership models still need to be examined more. However, existing research largely focuses on managerial skills in general education contexts,

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leaving a significant gap in understanding how these skills are specifically applied within maritime vocational institutions.

2. MATERIAL AND METHOD

Research Design

This research uses a quantitative causal-comparative research design to explore the cause-and-effect relationship between the variables of leadership performance and managerial competence in maritime vocational higher education. Because no experimental manipulation of exposure to a potential risk factor was needed, this design was chosen because it adheres to principles of identifying causal relationships and allows for the analysis of pre-existing differences. The study focused on a retrospective analysis of how interpersonal communication, leadership adaptability, leadership capability, and leadership excellence impact managerial competence and leadership performance.

The causal-comparative method is advantageous, especially in education and organizations, where experimental manipulation of the independent variables is impractical or unethical. Rather, it allows scientists to discover relationships by studying naturally occurring variation. This approach is aligned with the purpose of this study, which is to understand leadership dynamics in the context of the maritime vocational institution where leadership development is vital but less studied.

For the study's conclusions, a structured questionnaire was constructed to collect quantitative data from participants. For each tool, the data for each construct variable area unit standardized measures that allowed for accuracy and analytical tests. In agreement with Ingleby (2012), this approach supports using numerical data and statistical calculations to draw objective conclusions.

The study's research design was correlational, making it possible to test hypotheses emphasizing independent variables' direct and indirect effects on managerial competence and perceived leadership performance. The comprehensive framework served as a solid foundation for investigating leadership behaviors and offered practical-field-based insights into enhancing leadership practices in maritime vocational higher education.

Participants

Using purposive sampling, the study sample consisted of 145 lecturers and academic staff at 1,266 maritime vocational higher education institutions across Indonesia. Participants were selected according to predetermined inclusion criteria, ensuring they had relevant experience and role responsibilities in leadership or management within their respective institutions. The sampling method was conducted using the Slovin formula, which is used to calculate sample size from a population with an error margin. For this study, a 10% margin of error was deemed acceptable, leading to a sample size of 145 participants. We aimed for a sample size that was large enough to generalize the findings yet practical for data collection.

All participants were involved in this study voluntarily. They were informed about the study's purpose before participating (informed consent). Conciseness was enhanced through strict measures to maintain anonymity and confidentiality, which provided participants with a context in which they felt comfortable giving accurate and frank answers. These ethical safeguards are intended to improve the reliability and validity of the collected data. As it specifically focused on a purposively selected group of individuals directly engaged in leadership functions, the present study maintained the contextual relevance of its findings as it pertains to maritime vocational higher education leadership.

Data Collection

The study measures its core variables: Interpersonal communication, adaptability, leading capability, leading excellence, managerial competence, and leadership performance. Data collection is based on a structured questionnaire designed specifically for data collection. It used a standardized questionnaire as the primary data collection tool to allow standardization and standardization among respondents.

To ensure maximum participation and remove geographical restrictions, the survey was conducted online through Google Forms. The spread of Indonesia's maritime vocational institutions where the participants came from opened access.'' Furthermore, conducting the study online allowed data to be collected more effectively since users could complete the questionnaire at their own pace.

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The questionnaire was developed based on the study objective and pilot-tested on a smaller sample of participants before it was finally distributed. A pretest is used to evaluate the instrument's reliability (the instrument should give consistent results when repeated) and validity (the instrument can measure the constructs it was designed for). After the pilot, the wording and layout were adjusted to improve clarity and ensure the relevance and comprehensiveness of questions.

Survey completion was preceded by sign-up, incorporating a purview with eligibility requirements for active participants. This saves replies from people in a direct consultation or managerial position. Such intensive data collection ensured that the data collected were relevant and valid in the study setting.

Data Analysis

The gathered data were examined by Structural Equation Modelling (SEM) based on the Partial Least Squares (PLS) using SmartPLS software. The analytical approach was chosen for data adherence to assumptions because of the small sample size, non-normality, and complex relationships between dependent and independent variables. PLS-SEM suits exploratory and predictive studies, which is part of the intention of this study.

Data analysis consisted of two primary phases. In the first stage, the measurement model consisted of tests of the reliability and validity of the constructs. Convergent validity examined whether the indicators of each construct shared a large proportion of variance, such as factor loadings and Average Variance Extracted (AVE). To ensure the distinctiveness of each construct from others, discriminant validity was assessed through the Fornell-Larcker criterion and cross-loadings. Also, Cronbach's alpha and composite reliability scores were used to explore internal consistency reliability, confirming the constructs' stability and dependability.

The second stage consisted of assessing the structural model, which allowed for testing the proposed hypotheses via the path coefficients that assessed the strength and the direction of the relationships established between the constructs of the study. Next, the bootstrapping algorithm was used to derive the confidence intervals and p-values for the pathways to assess the significance of each relationship. The model's predictive performance was also evaluated using R^2 values, which indicate the percentage of variance in the dependent variables explained by the independent variables (Leguina, 2015).

Additionally, this comprehensive approach allows the study to assess better the direct and indirect impact among the variables, such as the total effect between interpersonal communication, leadership adaptability, leadership capability, and leadership excellence towards managerial competence and perceived leadership performance. This exploratory study provides an empirical foundation for conclusions and practical suggestions on improving maritime vocational higher education governance.

Limitations

Several limitations of this study must be acknowledged. These include restricted access to highly detailed data and potential biases in the sampling process. Additionally, the results of the Bebras Challenge may only partially capture students' CT abilities in other contexts.

3. Result

Validity Test Result

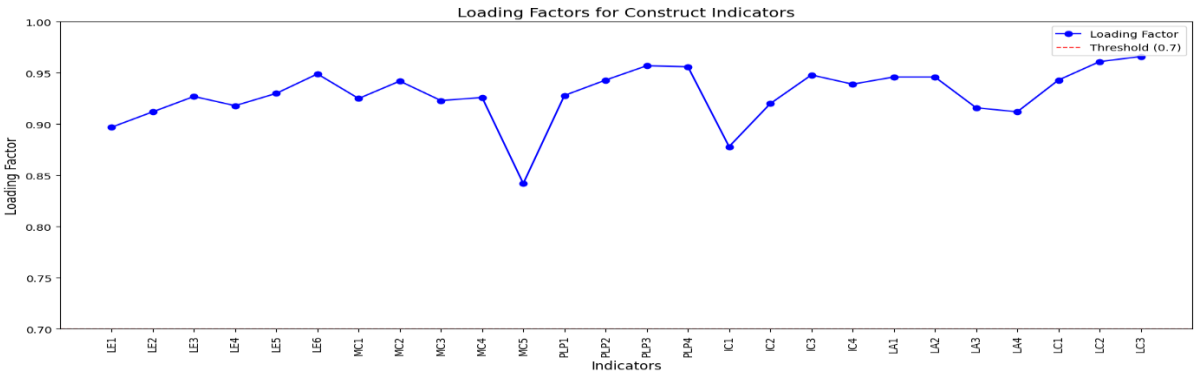

Figure 1. Loading Factor for Construct Indicator

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In this subsection, please focus on the loading factor of each indicator to validate the measurement model and evaluate whether they properly represent the associated construct. Loading factors greater than or equal to zero point seven are the acceptability threshold for validity to establish a good relationship between the indicator and the underlying construct. All guarantee robustness and appropriateness for continued analysis, as revealed in Figure 1, where all remained above the 1.0 threshold.

All constructs exhibit highly significant loading factor values, suggesting a high degree of convergence of items into each construct. For example, the dimensions composing Leadership Excellence (LE) all exhibited favorable loadings, with LE1 to LE6 surpassing the threshold, with a range between 0.897 and 0.949. Likewise, the indications for Managerial Competence (MC) (MC1 to MC5) demonstrated values from 0.842 to 0.942, confirming their validity. The Perceived Leadership Performance (PLP) construct presented equally good validity, as evidenced by loading factors between PLP1 and PLP4 ranging from 0.928 to 0.957.

The high values of the loading factor suggest a strong measurement model where the indicators are strongly associated with their underlying latent constructs. Similarly, the constructs for Interpersonal Communication (IC), Leadership Adaptability (LA), and Leadership Capability (LC) were also valid as their loading factors ranged from 0.878 to 0.966 concerning their indicators. The threshold is indicated by the dotted horizontal line at 0.7 in Figure 1, and all indicators are clearly above this level, demonstrating the reliability of the constructs.

Overall, the validity test results suggest that the measurement model is good and the indicators are suitable for further analysis. This suggests that each indicator effectively captures the property it was constructed to represent, creating a strong foundation for subsequent structural analysis. Figure 1 represents this information visually, allowing one to observe the high values of loading factors and their proximity to the validity threshold.

Reliability Test Result

The reliability of the constructs is a fundamental metric to guarantee that the indicators reliably mirror their corresponding latent variables. Cronbach's Alpha, rho_A, Composite Reliability, and AVE (Average Variance Extracted) were extracted to assess reliability. Through these metrics, we establish the internal consistency, converging validity, and general robustness of affect constructs. The constructs displayed high reliability and validity, as summarized in Table 1, ensuring they were appropriate for further analysis and hypothesis testing.

Table 1. Reliability Test Result

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Interpersonal Communication Skill	0.941	0.941	0.958	0.849
Leadership Adaptability	0.948	0.950	0.963	0.865
Leadership Capability	0.954	0.956	0.970	0.915
Leadership Excellence	0.965	0.966	0.972	0.851
Managerial Competence	0.950	0.973	0.961	0.832
Perceived Leadership Performance	0.961	0.961	0.971	0.895

The reliability of the constructs was assessed using multiple measures: Cronbach's Alpha, rho_A, Composite Reliability, and Average Variance Extracted (AVE). These metrics collectively confirmed the internal consistency and validity of the constructs. The Cronbach's Alpha values ranged from 0.941 to 0.965, significantly exceeding the recommended threshold of 0.70, indicating excellent internal consistency. For example, Leadership Excellence (LE) recorded the highest Cronbach's Alpha value of 0.965, reflecting its strong reliability. In contrast, Interpersonal Communication Skill (IC), with a value of 0.941, also demonstrated strong consistency

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among its indicators. Similarly, the rho_A values, considered a more precise measure of reliability, ranged from 0.941 to 0.973, aligning closely with Cronbach's Alpha and further supporting the robustness of the constructs. Notably, Managerial Competence (MC) achieved the highest rho_A value of 0.973, showcasing its reliability.

The Composite Reliability values ranged from 0.958 to 0.972, all well above the threshold of 0.70, confirming that the indicators within each construct were highly correlated and effectively measured their respective latent variables. For instance, Leadership Capability (LC) achieved the highest Composite Reliability score of 0.972, emphasizing its internal consistency. Additionally, the Average Variance Extracted (AVE) values, which measure the proportion of variance captured by the construct, ranged from 0.832 to 0.915, surpassing the critical threshold of 0.50. These results confirm the convergent validity of the constructs, ensuring that the indicators effectively represent the underlying concepts. Among the constructs, Leadership Capability (LC) exhibited the highest AVE value of 0.915, meaning 91.5% of the variance in its indicators was attributable to the construct itself, with minimal measurement error.

In conclusion, the high scores across all four reliability measures (Cronbach's Alpha, rho_A, Composite Reliability, and AVE) demonstrate that the constructs in the model are reliable, consistent, and valid. These findings establish a robust foundation for the structural model evaluation and subsequent hypothesis testing.

Model Fit and Coefficient Determination

the explanatory power of the research model by analyzing the **R^2 values** and their adjusted counterparts. These values represent the proportion of variance in the dependent variables that can be explained by the independent variables included in the model. The results of the coefficient determination analysis are summarized in Table 2, highlighting the differing levels of explanatory power for the two dependent variables: **Managerial Competence** and **Perceived Leadership Performance.**

Table 2. Coefficient Determination

	R Square	R Square Adjusted
Managerial Competence	0.034	0.007
Perceived Leadership Performance	0.786	0.778

For **Managerial Competence**, the **R^2 value** is **0.034**, meaning that only **3.4% of the variance** in managerial competence can be explained by the independent variables. After accounting for the degrees of freedom in the model, the **Adjusted R^2** drops to **0.007** (0.7%), indicating an extremely weak relationship between the independent variables and managerial competence. These results suggest that factors outside the scope of the current model play a far more significant role in influencing managerial competence. This outcome highlights the need to investigate additional external or contextual variables that might better explain the variability in managerial competence.

In contrast, the model demonstrates strong explanatory power for **Perceived Leadership Performance**, with an **R^2 value** of **0.786**, indicating that **the independent variables explain 78.6% of the variance in perceived leadership performance**. The **Adjusted R^2** is slightly lower at **0.778** (77.8%), but it still confirms the robustness of the model in explaining this dependent variable. These findings validate the model's relevance in capturing the factors contributing to perceived leadership performance, emphasizing leadership traits such as interpersonal communication, adaptability, capability, and excellence.

In summary, the results show that while the model is highly effective in explaining perceived leadership performance, it is much less effective in accounting for managerial competence. These findings suggest that further research is required to identify additional variables that strongly impact managerial competence. Table 2 provides a detailed summary of the coefficient determination results, showcasing the contrasting levels of explanatory power for the two dependent variables.

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Structural Model and Direct Effect Analysis

The structural model examines the relationships between the independent variables—**Leadership Capability, Interpersonal Communication Skill, Leadership Adaptability, and Leadership Excellence**—and the dependent variables—**Managerial Competence** and **Perceived Leadership Performance**. The results of the direct effects analysis, presented in Table 3, provide a detailed understanding of each relationship's strength and statistical significance. At the same time, the structural model shown in Figure 2 offers a visual representation of these connections.

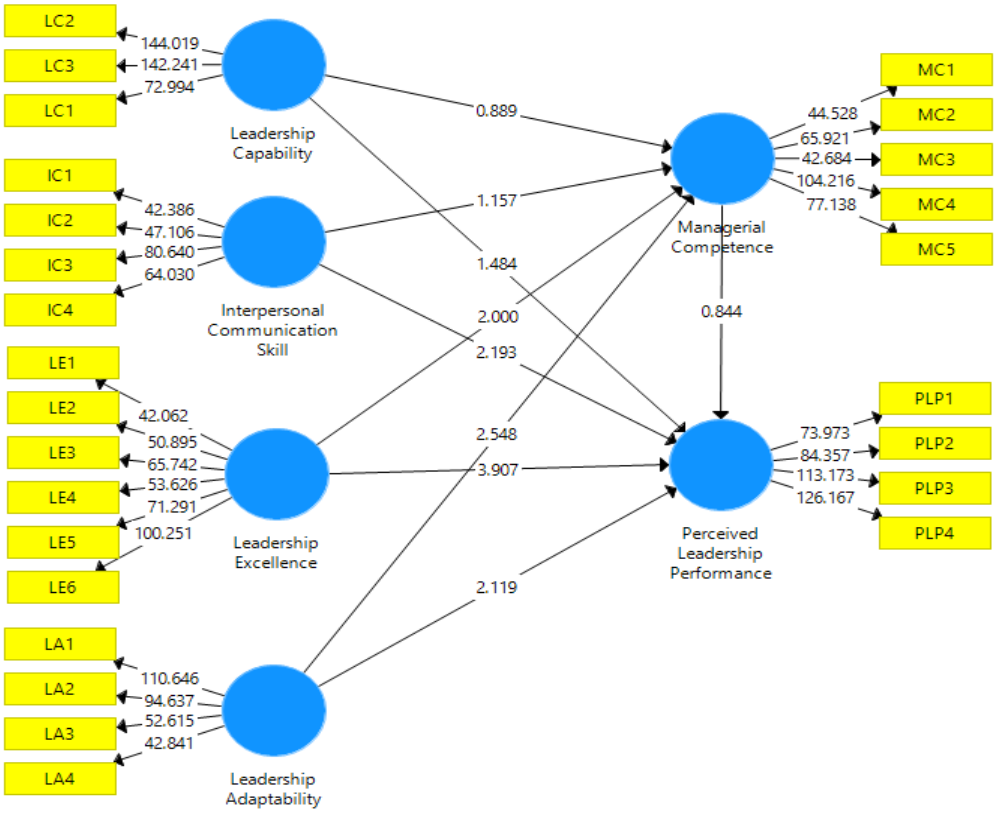

Figure 2. Structural Model of Direct Relationships

Figure 2 illustrates the relationships between constructs and highlights their path coefficients. The blue circles represent the latent constructs, while the yellow boxes indicate the observed indicators, each with its respective loading values. The arrows connecting the constructs show the direct paths, with numerical coefficients reflecting the strength of the relationships. For example, Leadership Excellence strongly affects Perceived Leadership Performance, with a path coefficient 2.548. At the same time, Leadership Adaptability also shows a notable effect on the same dependent variable, with a coefficient of 2.119. Conversely, weaker relationships can be seen for Interpersonal Communication Skills and Managerial Competence, as their coefficients are much lower.

Table 3 details the direct effects by providing path coefficients, standard deviations, T-statistics, and P-values for each relationship. The results indicate that Leadership Excellence has a strong and significant positive effect on Managerial Competence (O = 0.431, p = 0.044) and Perceived Leadership Performance (O = 0.504, p = 0.000), making it the most impactful factor in the model. Similarly, Leadership Adaptability significantly influences Managerial Competence (O = 0.395, p = 0.010) and Perceived Leadership Performance (O = 0.271, p =

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0.037), emphasizing its critical role in leadership dynamics.

Table 3. Direct Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Interpersonal Communication Skill → Managerial Competence	0.257	0.247	0.222	1.156	0.248
Interpersonal Communication Skill → Perceived Leadership Performance	0.247	0.226	0.114	2.160	0.031
Leadership Adaptability → Managerial Competence	0.395	0.386	0.153	2.578	0.010
Leadership Adaptability → Perceived Leadership Performance	0.271	0.285	0.130	2.084	0.037
Leadership Capability → Managerial Competence	0.120	0.102	0.136	0.886	0.376
Leadership Capability → Perceived Leadership Performance	0.128	-0.117	0.088	1.451	0.147
Leadership Excellence → Managerial Competence	0.431	0.452	0.213	2.02	0.044
Leadership Excellence → Perceived Leadership Performance	0.504	0.494	0.127	3.953	0.000
Managerial Competence → Perceived Leadership Performance	0.052	0.053	0.062	0.828	0.408

In contrast, interpersonal communication skills significantly affect perceived leadership performance (O = 0.247, p = 0.031) but do not significantly affect managerial competence (O = 0.257, p = 0.248). Meanwhile, Leadership Capability does not directly affect Managerial Competence (O = 0.120, p = 0.376) or Perceived Leadership Performance (O = 0.128, p = 0.147), suggesting that leadership capability alone may not translate directly into measurable outcomes. Finally, Managerial Competence does not significantly influence Perceived Leadership Performance (O = 0.052, p = 0.408), indicating that other factors may have a more dominant role in shaping leadership performance perceptions.

The results reveal that Leadership Excellence and Adaptability are the most influential predictors of Managerial Competence and Perceived Leadership Performance. In contrast, interpersonal communication skills show a limited but notable effect, while leadership capability and managerial competence contribute minimally to the outcomes of this model. These findings underscore the importance of fostering adaptability and excellence in leadership roles within maritime vocational higher education to enhance performance outcomes. Figure 2 represents these relationships, while Table 3 offers statistical evidence supporting these conclusions.

Structural Model and Direct Effect Analysis

This subsection analyzes the mediating effects of Managerial Competence on the relationship between the independent variables (Leadership Capability, Leadership Adaptability, Interpersonal Communication Skill, and Leadership Excellence) and the dependent variable Perceived Leadership Performance. The results of the indirect effects are summarized in Table 4, which presents the path coefficients, standard deviations, T-statistics, and P-values for each mediated pathway.

The findings indicate that none of the proposed mediating effects through Managerial Competence were statistically significant, as all P-values exceed the 0.05 threshold. For example, the indirect effect of Leadership Capability → Managerial Competence → Perceived Leadership Performance produced a path coefficient of 0.006 with a P-value of 0.659 and a T-statistic of 0.441, demonstrating a lack of statistical significance. Similarly, the indirect effect of Leadership Adaptability → Managerial Competence → Perceived Leadership Performance resulted in a coefficient of 0.020, with a P-value of 0.438 and a T-statistic of 0.775, which further indicates that this mediating pathway is not significant.

The same trend is observed for interpersonal communication skills and leadership excellence, where the indirect effects of managerial competence failed to achieve significance. Specifically, the pathway Interpersonal Communication Skill → Managerial Competence → Perceived Leadership Performance had a path

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coefficient of 0.013 with a P-value of 0.501, while the pathway Leadership Excellence → Managerial Competence → Perceived Leadership Performance recorded a coefficient of 0.022 with a P-value of 0.452. Both results suggest that Managerial Competence does not mediate the effects of these leadership traits on Perceived Leadership Performance.

Table 4. Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Leadership Capability → Managerial Competence → Perceived Leadership Performance	0.006	0.008	0.014	0.441	0.659
Leadership Adaptability → Managerial Competence → Perceived Leadership Performance	0.020	0.019	0.026	0.775	0.438
Interpersonal Communication Skill → Managerial Competence → Perceived Leadership Performance	0.013	0.008	0.020	0.674	0.501
Leadership Excellence → Managerial Competence → Perceived Leadership Performance	0.022	0.020	0.029	0.752	0.452

The analysis presented in Table 4 confirms that Managerial Competence does not serve as a significant mediator in this model. This finding highlights that the direct effects of Leadership Excellence and Adaptability on Perceived Leadership Performance are stronger and more meaningful than any mediated pathways involving Managerial Competence. Consequently, the results underscore the importance of focusing on direct leadership traits (particularly adaptability and excellence) as the key drivers of leadership performance in maritime vocational higher education.

4. Discussion

Impact of interpersonal communication on managerial competence

According to the references, the research revealed that interpersonal communication skills have a significant impact, but the relationship is complex regarding managerial competence. Research suggests that interpersonal communication skills are a key part of managerial competence. For example, Mashavira et al. (2022) found that interpersonal competencies explained managerial competencies. Moreover, effective managers have one of the key competency areas: communication skills, according to Masoud & Khateeb (2020). Similarly, Rachmawati et al. (2020) indicated that the development of managerial abilities and interpersonal skills can significantly promote the quality of educational leadership in schools. However, other research and my work indicate that interpersonal skills do not necessarily matter most, or even all, of the time. According to a note by Lara et al. (2019), managerial competencies are probably shaped by various aspects, especially cultural perception and the call for a consultation. Barzegar et al. (2020) found that managerial jobs need a broad range of competencies, skills, and abilities, not only interpersonal skills. Results from studies of the maritime education context are similarly mixed. Danylenko et al. (2021) emphasized the necessity of communicative competence for future seafarers. In contrast, Jo et al. (2020) and Sharma et al. (2022) also pointed out that other than interpersonal skills, maritime workers will increasingly need digital and technological skills to align with Industry 4.0. Overall, the evidence indicates that interpersonal communication skills are relevant to managerial competence, although more for general categories than a single direct link. Managerial competence involves leadership training, strategic management, decision-making, personality traits, and work experience for developing institutional competencies (Masoud & khateeb, 2020; Barzegar et al., 2020; Rachmawati et al., 2020). However, within the context of the maritime vocational higher education sector, more research is essential to ascertain and clarify the extent, meaning, and direction of the relationship that interpersonal communication skills share with managerial competence.

Impact of interpersonal communication on perceived leadership performance

Based on the analysis from this study, interpersonal communication skills significantly affect perceived leadership performance in maritime vocational high education. Effective interpersonal communication facilitates

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trust and strong relationships, enabling leaders to create a positive work culture where people feel appreciated and strive to achieve common goals (Shahid et al., 2021; Junaidi, 2021). Communication also empowers leaders to handle issues and conflicts in the team and mitigate their escalation, thereby retaining team-building and productivity. Because maritime education is based on working together in academic and operational environments, these abilities are important for helping develop successful leaders. The empirical findings in Table 3 (Direct Effect) validate this relationship, with a path coefficient of 0.247, a T-statistic of 2.160, and a P-value of 0.031, showing that interpersonal communication significantly and positively impacts perceived leadership performance.

Similarly, Leadership Adaptability had a strong, positive relationship with Perceived Leadership Performance before and after controlling for its antecedents, as shown in the Structural Model in Figure 2. Establishing the measurable pathway from Leadership Adaptability to Perceived Leadership Performance strengthens its position to ensure great leadership performance. As presented in the reliability tests in Table 1, the Leadership Adaptability construct shows high reliability, as evidenced by Cronbach's Alpha = 0.948 and Composite Reliability = 0.963. The results are in keeping with the tenets of situational leadership theory, which postulates that leaders are at their most effective when they can adjust their styles to the readiness levels of their employees. Adaptive leaders who adjust their way of leading to the needs of their teams improve perceptions of their leadership performance in maritime vocational higher education contexts with high dynamism and operational intensity.

Moreover, adaptive leadership helps to foster positive outcomes for organizations, including greater job satisfaction, better team performance, and commitment to organizational goals. Highly adaptive leaders build trust, demonstrate problem-solving capabilities, and always ensure high team productivity with basic indicators for academic and operational success in maritime education. Alongside leadership adaptability is the nature of interpersonal communication, which is critical to the maritime setting. Which prompted your next question: Danylenko et al. (2021) highlight the need to develop future maritime professionals' communicative competence, while Jo et al. (2020) and Sharma et al. (2022) suggest that integrating interpersonal communication with both digital and technological skills corresponds to solving many of today's problems. Adding interpersonal communication to adaptability, maritime leaders can develop trust and cooperation (Junaidi, 2021; Shahid et al., 2021).

These findings emphasize the need to incorporate leadership training programs into maritime dual-purpose higher education. These programs should prioritize the development of essential skills such as interpersonal communication, strategic management, and decision-making to prepare graduates with the capabilities necessary for effective leadership in increasingly sophisticated maritime environments. Since these skills prepare institutions to meet the requirements of future leaders to guide their organizations through operational challenges, these skills should be cultivated.

Impact of Leadership adaptability on managerial competence

This study's findings show that leadership adaptability was essential to managers' competence in maritime vocational higher education institutions. Leaders can be flexible in their style and approach to address the challenges faced in the maritime education sector. Such challenges are a common risk across the industry characterized by the need for agile action plans in response to changing regulations and environmental, organizational, and technical requirements. This approach mirrors situational leadership theory, explaining how effective leadership requires leaders to adjust their conduct to circumstances (Imron et al., 2019). Leaders who can quickly gauge the needs of their subordinates as well as that of their organizational environment and adjust their leadership styles and or methods to meet those needs find it easier to work through changes and deal with complex challenges (Wu & Cormican, 2021; Seah & Hsieh, 2015), especially in maritime vocational settings.

The empirical results in Table 3 (Direct Effect) confirm that Leadership Adaptability significantly

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improves Managerial competence (Path coefficient = 0.395, T-stat = 2.578, P-value = 0.010). That suggests adaptive leaders gain key management competencies (decision-making, communication, and team leadership) necessary for institutional success. Such findings also agree with Sijabat (2024), who highlighted that developing leadership and teamwork skills is essential for the readiness of maritime cadets to function in dynamic operating environments. Mallillin (2022) similarly stressed the importance of adaptive leadership approaches, which promote transformative change and innovation within education systems. This is particularly important in maritime vocational higher education, where leaders must reconcile the requirements of academia with the exploitable realities of the maritime industry.

These findings are bolstered through the strong measurement model. The Leadership Adaptability construct exhibited high loading factor values, ranging between 0.912 and 0.946, indicating that the respective construct was composed reliably, as shown in Figure 1. Borders are Test Results (Reliability Table 1) shows 0.948 Cronbach's Alpha and Composite Reliability 0.963. These findings highlight the importance of adaptive leadership in cultivating managerial skill sets that fuel institutional thriving. Help your work using quote areas between strong mental and moral primer that helped us change our minds, force us to act, and ameliorate in the new ocean landscape of education (Mallillin, 2022). Maritime vocational institutions must develop leaders and students to reckon with this challenging sector through adaptive leadership development.

Impact of Leadership adaptability on perceived leadership performance

This study's results reveal that leadership adaptability positively affects Perceived Leadership Performance in maritime vocational higher education institutions. One of these is leadership adaptability, which is a leader's ability to modify their behavior and their leadership style in response to the needs of a particular circumstance, matching their behavior to the readiness levels of their lower-level employees and the tasks they face (Yusuf et al., 2023). This versatility enables maritime leaders to be directive or supportive based on whether tasks need operational complexity or collaboration. This adaptation of leadership has a considerable direct effect on perceived leadership performance, as shown in Table 3 (Direct Effect), with a path coefficient of 0.271, a T-statistic of 2.084, and a P-value of 0.037. Such results imply that their subordinates view adaptive leaders as more effective in building trust, increasing job satisfaction, and enhancing team cohesion (Sauphayana, 2021).

The results are concurrent with Leadership Adaptability, which directly correlates with Perceived Leadership Performance, as depicted in the model in Figure 2. The findings suggest that leadership adaptability significantly predicts perceived leadership performance, with the path being statistically significant. Finally, Table 1 further presents evidence of good measurement for Leadership Adaptability, with the construct exhibiting a Cronbach's Alpha of 0.948 and Composite Reliability of 0.963, indicating strong internal consistency and robustness. This study is consistent with the fundamental ideas behind situational leadership theory, which claims that when leaders adjust their styles according to the readiness levels of their subordinates, leadership effectiveness is greater. The flexibility these leaders offer creates better alignment between what leadership does and what a team needs, which increases the perception of leadership effectiveness.

Not only that, but flexible leaders are always regarded as more effective, as they deliver better organizational results in increased job satisfaction, greater team performance, and stronger team commitment toward organizational objectives. The flexibility depends on the qualities of the leaders who can respond with appropriate action to the organization's continuously changing scenario/ condition. Yes, leaders are naturally built to gain the trust of their subordinates. Given the academic and operational circumstances of maritime vocational higher education institutions, these effects are particularly important where flexible leadership approaches are needed. As a result, you can see that by enabling their team members and creating an organizational ecosystem that rewards flexibility and assistance, leaders play a role in the success of individuals and the organization.

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Impact of Leadership capability on managerial competence

Leadership Capability is about the ability of a leader to motivate, inspire, and empower their teams. At the same time, managerial competence focuses on effectively managing resources, making sound decisions, and maintaining operational efficiency. They are necessary for maritime development and education organizational objectives, which often have nuances concerning maritime performance. In Table 3 (Direct Effect), Leadership Capability→ Managerial competence had a path coefficient of 0.120 with a P-value of 0.376 and T-statistic of 0.886. This implies that leadership capability does not statistically impact managerial competence in the current study. These findings underscore a departure from previous research and highlight the importance of investigating additional variables or contextual factors that may mediate this relationship (Wang et al., 2017; Zhang et al., 2021).

Though this study reveals no significant relationship, the literature suggests that leadership capability will enhance organizational performance. In particular, effective leaders promote a positive organizational culture and improve employee satisfaction, leading to enhanced institutional performance and success through strategic direction and empowerment (Zhang et al., 2021). As maritime-related vocational colleges and institutions, these leadership styles are fundamental in drawing upon the maritime context's operational intricacies and academic pressures. Such as in the studies of Wang et al. (2017) and Zhang et al. (2021) have found that the higher the leadership ability, the greater the managerial ability, which means that excellent leaders would have good managerial qualities that enable them to manage resources effectively. While the relationship may not be considerable in this study, these findings using data up to October 2023 highlight the need for leadership development programs focusing on being both capable and competent in management, as these skills are extremely important for maritime vocational institutions (Elias,2016).

Impact of Leadership capability on perceived leadership performance

The leadership capacity of maritime vocational higher education institutions heavily impacts perceived Leadership Performance. Competent leaders clearly articulate their vision, make sound decisions, and have personally rich relationships, reinforcing positive perceptions of their performance in the aim of employees. This is especially crucial in maritime education, where practical requirements and theoretical knowledge should complement each other. Leaders who can communicate a clear vision and inspire their teams to improvise – innovation, competitiveness, and overall performance. For example, effective administrators know how to craft strategies, allocate resources, and create an organizational culture that promotes academic and operational success. Such leaders provide authority and responsibility to their subordinates by preparing them to be good managers for meeting the challenges of the maritime vocational environment (Yusuf et al., 2023).

Leadership capability also affects the success of managerial development. Inspired by coaches, leaders who empower their teams ensure managers will perform in strategizing, managing, and coercing. Such managers are more likely to embrace innovation, respond well to change, and build organizational resilience. Research suggests that leaders who provide constructive feedback and professional development opportunities create more confident, achievement-oriented managers oriented toward continuous education. Consequently, leadership capability directly contributes to leadership performance and indirectly improves organizational performance by cultivating a strong and adaptive managerial workforce. It emphasizes the need for various training programs in maritime vocational higher education to enhance leadership and managerial effectiveness through strategic vision, interpersonal, and empowerment.

Impact of Leadership excellence on managerial competence

Therefore, one essential strategy to enhance managerial competence in maritime vocational higher education institutions is to strive toward leadership excellence. So, leadership excellence is the leader's ability to inspire performance at the highest levels from all hands to achieve shared organizational goals. This encompasses

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leadership skills such as communication, decision-making, employee empowerment, and motivating teams toward a shared vision. According to Al et al. (2016), excellence in the behavior of leaders has a greater impact on organizational excellence and the satisfaction of employees. For instance, the leader's capacity to establish a succinct vision and rally team members around it fosters alignment with institutional priorities, creating an environment where managers feel empowered and enabling them to perform successfully.

In addition, good leaders help create managerial competence by developing talent and fostering a work environment that rewards creativity and innovation. Great leaders see potential in their employees and provide them with the tools and support they need to grow. It helps improve an individual's competency and enhance the efficacy of managerial functions like planning, organizing, and decision-making. Moreover, excellence in leadership encompassed the ability to adapt to rapidly evolving situations and make effective decisions in complex environments, an essential competency within maritime vocational institutions, where operational and academic pressures often collide (Liao et al., 2021). Leaders lead by example, and as such, by exemplifying leadership excellence, they prepare managers with the skill set and the attitude required to face challenges and lead the organization to success.

Impact of Leadership excellence on perceived leadership performance

Significance of Leadership Excellence on Perceived Leadership Performance in Maritime Vocational Higher Education. Subordinates' satisfaction with leadership relates to key factors that the leader can control, such as direction, the ability to energize employees, and an overall positive culture. Such leaders are often considered more positive by their subordinates when they practice transformational leadership: those who inspire a shared vision, nurture their employees' potential, and encourage innovation (Haricharan, 2022; Wolle, 2023). Leaders with high emotional intelligence, integrity, and effective communication skills are more capable of developing trust and ensuring employee engagement, thus becoming better-performing leaders in the vocational setting of maritime.

While managerial skills are deemed fundamental to all things leadership, the actual effect of management capabilities on perceived leadership performance may be more muted in some settings. Pizzolitto et al. (2023) emphasize that leadership styles, organizational culture, and employee characteristics mediate subordinates' perceptions of their leader's performance. For example, transcendent leaders focusing on empowering and developing employees receive higher performance ratings than transactional leaders for their managerial ability. Similarly, this indicates that the excellence of leadership is attached to perceived performance, the perception agency of emotional intelligence in leading subordinates, and the effectiveness of the distinctive leadership style by multinational organizations within a more comprehensive and organized context. Managerial competence should balance transformational leadership, and the leaders with these qualities are more closely related to higher perceived leadership performance and, ultimately, institutional success in maritime education.

Impact of managerial competence on perceived leadership performance

Figure 2 illustrates the culture-construct paths and their coefficients. The blue circles represent latent constructs, while the yellow boxes denote the indicators and their loadings. Arrows between constructs signify direct paths, with the numbers indicating the strength of these relationships. For example, the Leader Effectiveness Model is strongly associated with the Perceived Leadership Performance variable, with a path coefficient 2.548. Similarly, Leadership Adaptability shows a statistically significant relationship with Perceived Leadership Performance, with a coefficient of 2.119. In contrast, Interpersonal Communication Skills and Managerial Competence relationships exhibit lower beta values, indicating weaker associations.

Although managerial competence is critical for effective leadership, research shows it does not often translate directly into perceived leadership performance, especially in maritime vocational higher education institutions. Managerial competence is the leader’s ability to effectively plan, organize, and control resources. Nonetheless, leadership performance is frequently impacted by cognitive abilities, social skills, motivation, and

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leadership style (Hua et al., 2018). In stable and structured environments, like maritime vocational institutions with defined operational frameworks, managerial competence may not carry the same impact on perceived leadership performance. On the other hand, we may need to consider less about how leaders motivate, inspire, and empower their followers in thematic maritime operations involving dynamic and complicated environments that require more flexibility and sophistication. These results imply that manager performance does not solely translate to perceived leader performance; additional traits and insights at the leadership level may be necessary to situate competent managers as leading the way.

Additionally, organizational context and staff-student characteristics of maritime vocational higher education institutions moderate the relationship between managerial competence and perceived leadership performance. One example of how relevant our research is lies in the concept of congruence, as in how the leadership style matches up to the expectations of followers, whose perceptions of leadership performance then were found to be significantly correlated with the match-up of leadership style and expectation for followers (Ibrahim & Daniel, 2019). In other words, this is a clear sign that a C-Suite manager can not rely solely on their managerial competence and cannot expect emotional intelligence or transformational leadership traits to be recognized by their subordinates. A leader's perceived leadership performance is primarily determined by their ability to instill confidence, create an enthusiastic work environment, and promote innovation. The gap between managerial efficiency and leadership effectiveness reflects the importance of a well-rounded strategy for developing key facets of leadership beyond just managerial skills but also interpersonal skills, the ability to motivate and inspire, and adaptive leaders with transformational capabilities.

5. CONCLUSION

The results highlight the substantial impact of leadership style—particularly transformational versus transactional leadership—on perceived leadership performance as evaluated by subordinates. Leaders demonstrating consideration and fostering favorable perceptions achieve higher organizational performance and employee satisfaction. Interestingly, the study reveals that while managerial competence is essential for effective management, it does not always translate directly into perceived leadership performance. Personal attributes, emotional intelligence, and the organizational environment can influence this discrepancy. This finding suggests that high technical ability alone does not guarantee a strong leadership image, emphasizing the importance of developing technical and interpersonal skills. Additionally, the organizational context moderates, as competent leaders exhibit varying behaviors in dynamic versus stable environments. Organizations must consider these complexities when assessing leadership effectiveness and designing development programs. This study contributes a deeper understanding of maritime vocational higher education leadership dynamics. It provides a foundation for further research into the interplay between perceived leadership performance, managerial competence, and their antecedents. These insights are vital for fostering effective leadership practices that enhance organizational performance while ensuring employee well-being.

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