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The Effect of Competence, Work Discipline, and Work Environment on Crew Performance at PT Pelayaran Dharma Indah

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Abstract: This study examines the effects of competence, work discipline, and work environment on crew performance at PT Pelayaran Dharma Indah. The study was motivated by a decline in internal crew-performance audit scores from 89% in June 2024 to 79% in December 2025, particularly in operational and safety aspects. An associative quantitative design was applied from April to May 2026. From a population of 92 crew members, 75 respondents were determined using the Slovin formula and selected through convenience sampling. Primary data were collected using a five-point Likert questionnaire and analyzed with Structural Equation Modeling-Partial Least Squares using SmartPLS 4.0. The results show that competence affects crew performance, whereas work discipline and work environment have no statistically significant effect. The model explains 79.7% of the variance in crew performance. The findings emphasize strengthening knowledge, skills, professional attitudes, and technical capability through training, operational and emergency-procedure briefings, and periodic competency evaluation.

Keyword: Competence, Work Discipline, Work Environment, Crew Performance.

INTRODUCTION

The shipping industry relies on crew members as a core operational resource that directly affects the safety, reliability, and continuity of maritime transportation services. Crew performance is reflected not only in the achievement of work targets but also in the accuracy of procedure implementation, work behavior, emergency preparedness, and the ability to maintain navigational safety. From a human resource management perspective, these outcomes result from the interaction of individual capability, work behavior, organizational support, and working conditions (Sukmawati, 2024; Prahendratno et al., 2023; Storey & Wright, 2023). The high-risk nature of shipboard work, limited working space, rotating work schedules, and strict operational requirements make the management of crew quality a strategic necessity

Table 1. Crew Performance Audit Results of PT Pelayaran Dharma Indah (2024-2025)

Audit Period	Operational Aspect	Safety Aspect	Average Score	Category
June 2024	88%	90%	89%	Good
December 2024	85%	87%	86%	Good
June 2025	81%	83%	82%	Adequate
December 2025	78%	80%	79%	Adequate

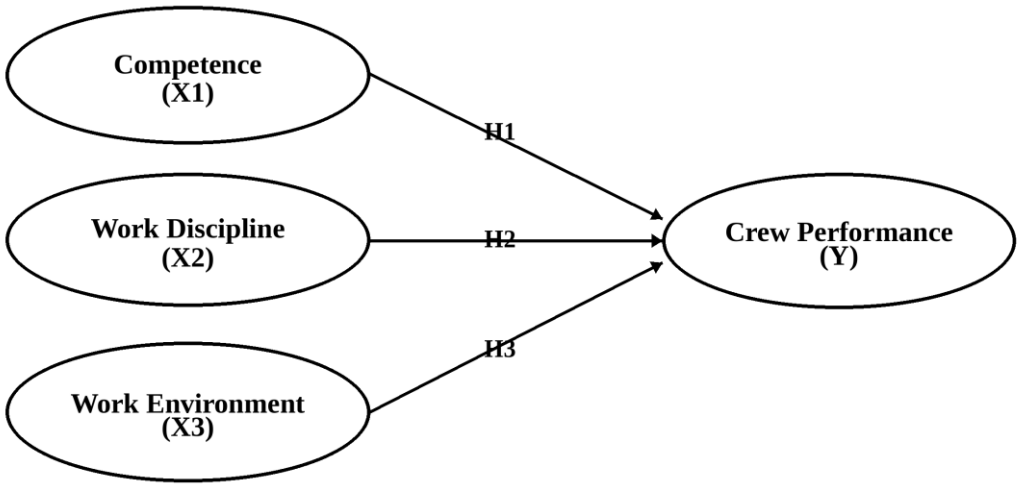
Source: Internal DPA Audit Data of PT Pelayaran Dharma Indah, 2024-2025

PT Pelayaran Dharma Indah has experienced a decline in internal audit results conducted by the Designated Person Ashore (DPA). The average crew-performance audit score decreased gradually from 89% in June 2024 to 86% in December 2024, 82% in June 2025, and 79% in December 2025. The decline occurred in both operational and safety aspects, indicating a persistent rather than incidental issue. The audit highlighted the need to improve consistency in procedure implementation, team coordination, work accuracy, the use of safety equipment, and emergency-response procedures. This condition provides an empirical basis for examining human resource factors that are closely related to the daily activities of ship crews.

Competence represents the integration of knowledge, skills, attitudes, and abilities required to perform work in accordance with established standards (Sofia, 2023; Rosita et al., 2024; Prahendratno et al., 2023). Work discipline reflects compliance with regulations, punctuality, responsibility, adherence to work standards, and awareness of the consequences of violations (Dewi & Basrowi, 2024; Maskur et al., 2024). Meanwhile, the work environment includes physical and non-physical conditions that shape comfort and work support, such as lighting, temperature and air circulation, cleanliness, work relationships, and facilities (Palilingan et al., 2024; Rosita et al., 2024). Theoretically, these three factors may influence the quality of results, behavior, and the continuous development of crew performance (Longuinhos & Reis, 2025).

Previous studies have not produced consistent findings. Competence was found to affect performance by Ariesta (2024) and Fadillah et al. (2017), but was not significant in the studies of Heliyana et al. (2024) and Sundari and Putri (2023). Work discipline was reported to affect performance by Hafiz et al. (2024), Tarigan et al. (2025), and Gwijangge et al. (2025), whereas Hapsari et al. (2022) found no significant effect. The work environment has also produced mixed results; several studies identified an effect on performance (Gwijangge et al., 2025; Nugraha & Noviarti, 2023), while Mindari (2023) and Fadillah et al. (2017) reported non-significant findings. These inconsistencies indicate that sector characteristics and job conditions may shape different relationships among the variables.

The novelty of this study lies in using internal DPA audit data as the empirical basis for the research problem and in testing the three variables within a shipboard context characterized by specific safety requirements and working patterns that differ from land-based employment. This study aims to examine the effects of competence, work discipline, and work environment on crew performance at PT Pelayaran Dharma Indah. Based on the theoretical framework and previous studies, three hypotheses were formulated: competence affects crew performance; work discipline affects crew performance; and work environment affects crew performance.



Source: Mindari (2023), Heliyana et al. (2024), and Tarigan et al. (2025)

Figure 1. Research Model

METHOD

Research Design and Sample

This study employed a quantitative approach with an associative design to examine the relationships between competence, work discipline, work environment, and crew performance. A quantitative approach was selected because the relationships among variables were measured using a structured instrument and analyzed statistically (Creswell, 2014; Sugiyono, 2022). The research was conducted from April to May 2026 at PT Pelayaran Dharma Indah, Jalan Anthony Rhebok, Ambon, Maluku. The population consisted of 92 crew members. The sample size was determined using the Slovin formula with a 5% margin of error, resulting in 75 respondents. Respondents were selected using convenience sampling, taking into account researcher access and the operational condition that crew members were not always located in the same place (Sekaran & Bougie, 2017).

Instrument and Measurement

Primary data were collected using a questionnaire measured on a five-point Likert scale ranging from Strongly Disagree to Strongly Agree. The instrument consisted of 17 indicators: four competence indicators, five work-discipline indicators, five work-environment indicators, and three crew-performance indicators. Each indicator was represented by one statement, allowing the measurement to remain concise and directly focused on the constructs being tested.

Table 2. Operationalization of Research Variables

Variable	Indicators	Source
Competence (X1)	Knowledge; skills; attitude; ability	Sofia (2023)
Work Discipline (X2)	Compliance with rules; punctuality; work responsibility; compliance with work standards; disciplinary awareness	Maskur et al. (2024)
Work Environment (X3)	Lighting; temperature and air circulation; cleanliness and tidiness; work relationships; facilities	Palilingan et al. (2024)
Crew Performance (Y)	Results; behavior; development	Prahendratno et al. (2023)

Source: Adapted from the research instrument, 2026

Data Analysis Technique

Data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with SmartPLS 4.0. The measurement model was evaluated through convergent validity using outer loading > 0.70 and Average Variance Extracted (AVE) > 0.50, discriminant validity using cross loading and the Fornell-Larcker Criterion, and reliability using Cronbach's Alpha, rho_a, and composite reliability > 0.70 (Hair et al., 2021). The structural model evaluation included path coefficients, R-square, effect size (f-square), Q-square predict, model fit through the Standardized Root Mean Square Residual (SRMR), and hypothesis testing through bootstrapping. A hypothesis was accepted when t-statistics > 1.96 and p-values < 0.05 at the 5% significance level.

RESULTS AND DISCUSSION

Respondent Profile and Description of Variables

A total of 75 questionnaires were analyzed. The sample was dominated by respondents aged 25-35 years, Deck Officers, crew members with 1-3 years of work experience, respondents with senior high school or equivalent education, and employees with 1-3 years of service at the company. This composition represents the main operational groups that are relevant for assessing working conditions and crew performance on board.

Table 3. Dominant Respondent Profile

Characteristic	Dominant Category	n	%
Age	25-35 years	34	45.3
Position	Deck Officer	31	41.3
Work experience	1-3 years	28	37.3
Education	Senior High School/Equivalent	42	56.0
Length of service	1-3 years	29	38.7

Source: Primary data processed by the researcher, 2026

Response distributions were generally favorable across all constructs. The highest Strongly Agree responses were recorded for professional attitude within competence (52.0%), work responsibility within work discipline (64.0%), harmonious work relationships within the work environment (46.7%), and efforts to improve capability within crew performance (53.3%). Although respondents' perceptions were generally positive, the effects among variables were determined through structural model testing.

Measurement Model Evaluation

All indicators met convergent-validity requirements with outer loadings above 0.70: competence ranged from 0.944 to 0.971; work discipline from 0.907 to 0.946; work environment from 0.939 to 0.962; and crew performance from 0.953 to 0.968. The AVE values for all constructs exceeded 0.50, while Cronbach's Alpha, rho_a, and rho_c were above 0.90. Cross-loading results and the Fornell-Larcker Criterion also supported discriminant validity. Therefore, the measurement model was considered valid and reliable.

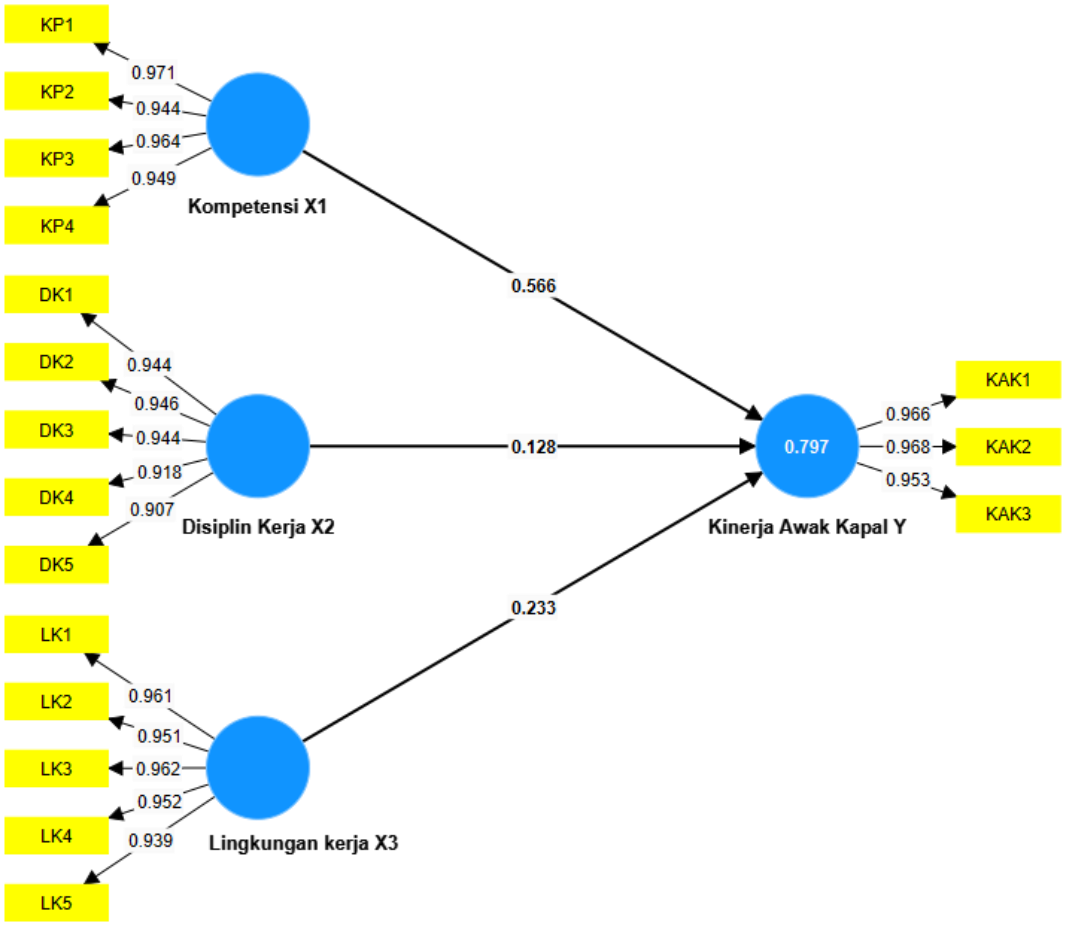
Table 4. Summary of Measurement Model Evaluation

Construct	Outer Loading	AVE	Alpha	rho_a	rho_c
Competence (X1)	0.944-0.971	0.917	0.970	0.970	0.978
Work Discipline (X2)	0.907-0.946	0.868	0.962	0.964	0.971
Work Environment (X3)	0.939-0.962	0.908	0.975	0.977	0.980
Crew Performance (Y)	0.953-0.968	0.926	0.960	0.961	0.974

Source: Primary data processed by the researcher, 2026

Structural Model Evaluation and Hypothesis Testing

The structural model produced an R-square value of 0.797 for crew performance and an adjusted R-square of 0.789. This means that competence, work discipline, and work environment jointly explain 79.7% of the variance in crew performance, while the remaining 20.3% is associated with factors outside the model. The f-square values indicate a medium effect of competence at 0.269, while work discipline at 0.012 and work environment at 0.059 have small effects. Q-square predict values for the crew-performance indicators were 0.745, 0.702, and 0.656, all above zero, indicating predictive relevance. The SRMR value of 0.039 was below 0.08 and indicated good residual fit; NFI was 0.826, while the Chi-square value of 407.015 was used as supporting information.



Source: Primary data processed by the researcher, 2026

Figure 2. Path Coefficients Model

Table 5. Summary of Structural Model and Hypothesis Testing

Hypothesis	Relationship	Coefficient	f^2	t-statistics	p-values	Decision
H1	Competence → Crew Performance	0.566	0.269	2.756	0.006	Accepted
H2	Work Discipline → Crew Performance	0.128	0.012	0.576	0.565	Rejected
H3	Work Environment → Crew Performance	0.233	0.059	1.788	0.074	Rejected

Source: Primary data processed by the researcher, 2026

Effect of Competence on Crew Performance

Competence affects crew performance with a path coefficient of 0.566, t-statistics of 2.756, and a p-value of 0.006. This result shows that differences in competence are able to explain meaningful differences in crew performance. Operationally, crew members must understand work procedures, master skills appropriate to their positions, demonstrate professional attitudes, and complete tasks according to company standards. The high responses on professional attitude and the ability to complete work support the structural findings. These results are consistent with Ariesta (2024), Mindari (2023), and Fadillah et al. (2017), who found that competence is associated with improved performance, but differ from Heliyana et al. (2024) and Sundari and Putri (2023). The difference may be influenced by job characteristics; in shipping operations, errors in understanding procedures, using equipment, or taking action during emergencies can have direct consequences for safety and operational continuity. Therefore, competence is not merely an individual attribute but an operational capability that determines the quality of task execution.

This finding is also consistent with the company's internal audit phenomenon. The decline in the audit score from 89% to 79% was associated with reduced consistency in following procedures, team coordination, work accuracy, use of safety equipment, and emergency-response implementation. Strengthening competence through technical training, operational and emergency-procedure briefings, simulations, and periodic work-capability evaluations is therefore the most direct managerial implication of the findings.

Effect of Work Discipline on Crew Performance

Work discipline does not have a statistically significant effect on crew performance, as indicated by t-statistics of 0.576 and a p-value of 0.565. Although the path coefficient is 0.128, the relationship is not statistically significant. Most respondents gave high ratings for compliance with regulations, punctuality, responsibility, adherence to procedures, and willingness to accept consequences. In shipboard operations, discipline is a minimum requirement embedded in duty and watch schedules, task handovers, safety procedures, and relatively uniform supervision. This relative homogeneity in discipline may prevent the variable from becoming a major differentiator of performance. The finding is consistent with Hapsari et al. (2022), but differs from Hafiz et al. (2024), Heliyana et al. (2024), Tarigan et al. (2025), and Gwijangge et al. (2025).

The non-significant effect of work discipline does not mean that the company can disregard it. Internal audits still identified inconsistencies in certain procedures, the use of safety equipment, coordination, and emergency response. Work discipline therefore remains essential as a foundation for safety and operational order, while improvements in performance appear to depend more strongly on the crew's ability to apply knowledge and skills in actual working situations.

Effect of Work Environment on Crew Performance

The work environment does not have a statistically significant effect on crew performance, with t-statistics of 1.788 and a p-value of 0.074. The coefficient of 0.233 indicates a positive direction, but the statistical evidence is insufficient to establish a direct effect. Respondents generally rated lighting, air circulation, cleanliness, work relationships, and facilities favorably, particularly harmonious relationships between supervisors and colleagues. At the same time, some variation remained in assessments of physical conditions such as lighting, temperature, cleanliness, and facilities. In the shipboard context, crew members are still required to perform their duties according to schedules and safety standards despite limited space, rotating work systems, and physical conditions that may not always be ideal. Strong competence and procedural understanding may help crew members maintain performance under such conditions.

This finding is consistent with Mindari (2023) and Fadillah et al. (2017), but differs from Tarigan et al. (2025), Gwijangge et al. (2025), Nugraha and Noviarti (2023), and Hafiz et al. (2024). These differences support the view that occupational context is important. The shipboard work environment must still be maintained because it is related to comfort, safety, and operational continuity; however, in this study it was not a direct differentiating factor in crew performance.

CONCLUSION

This study concludes that competence affects crew performance at PT Pelayaran Dharma Indah, while work discipline and work environment do not have statistically significant effects. Competence is the primary factor because shipboard duties require procedural knowledge, technical skills, professional attitudes, and the ability to take appropriate action in accordance with established standards. Work discipline remains important, but in this context it has become a basic obligation implemented through duty schedules, task allocation, operational procedures, and relatively uniform safety standards for all crew members. The work environment also supports comfort and operational continuity, but it has not become a major differentiator of performance. The research model explains 79.7% of the variance in crew performance and demonstrates predictive relevance and good residual fit.

In practical terms, PT Pelayaran Dharma Indah should prioritize competence-development programs through technical training, operational and emergency-procedure briefings, simulations, and periodic capability evaluations. Discipline supervision, maintenance of facilities, lighting, air circulation, cleanliness, and the quality of communication among crew members should also be maintained as foundations for safe operations. Future research may expand the model by including motivation, training, leadership, compensation, workload, or safety culture; examining other shipping companies; and combining surveys with interviews to provide a deeper explanation of the factors that shape crew performance.

REFERENCE

Ariesta, E. (2024). The effect of discipline, competence, and work environment on employee performance at the Secretariat of Southwest Aceh Regency. Jurnal Ekonomi Manajemen Akuntansi, 30(2). https://doi.org/10.59725/ema.v30i2.140

Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th ed.). SAGE Publications.

Dewi, W. R., & Basrowi. (2024). Human Resource Management.

Fadillah, R., Sulastini, S., & Hidayati, N. (2017). The effect of competence, work discipline, and work environment on employee performance at the Bank Kalsel Sub-Branch Office in Banjarmasin. Jurnal Bisnis dan Pembangunan, 6(1).

Gwijangge, L., Irawan, A., & Mustajab, D. (2025). The effect of competence, work discipline, and work environment on employee performance. TJBMR, 8(2). https://doi.org/10.55098/tjbmr.v8i2.158

Hafiz, H., Yamilla, A. Y., Syafei, A., Mubina, M. F., Rusliansyah, R., & Sawitri, N. N. (2024). The effect of work competence, work discipline, and work environment on employee performance at Mie Gacoan in Bekasi. Neraca: Jurnal Ekonomi, Manajemen dan Akuntansi, 3(2).

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd ed.). SAGE Publications.

Hapsari, I., Putriana, L., & Ichwani, T. (2022). The effect of competence, work discipline, and work environment on employee performance at the Directorate General of PPKTRANS, Ministry of Villages, Development of Disadvantaged Regions, and Transmigration. Jurnal Ilmiah Manajemen Pancasila (JIMP), 2(2), 81-91.

Heliyana, E., Pramesthi, R. A., & Pramitasari, T. D. (2024). The effect of competence, work discipline, and work environment on teacher performance at SMKN 1 Situbondo through work motivation as an intervening variable. Jurnal Manajemen Ekonomi, 3(6). https://doi.org/10.36841/jme.v3i6.5005

Longuinhos, J. dos S., & Reis, C. (2025). Human Resource Management: Motivation, Discipline, and Performance Satisfaction.

Maskur, A., et al. (2024). Human Resource Management in a Modern Organizational Perspective. Penerbit Akademik.

Mindari, E. (2023). Teacher performance: Discipline, competence, work environment, and motivation. Jurnal Manajemen, 11(2), 110-124. https://doi.org/10.36546/jm.v11i2.885

Nugraha, A., & Noviarti. (2023). The effect of competence, work discipline, and work environment on employee performance at the Juwita Course and Training Institution in Lebak Regency. Jurnal Satya Mandiri: Manajemen & Bisnis, 9(1).

Palilingan, R., et al. (2024). Work Environment and Employee Productivity. Deepublish.

Prahendratno, S., et al. (2023). Competency-Based Performance Management. Rajawali Pers.

Rosita, R., et al. (2024). Human Resource Management.

Sekaran, U., & Bougie, R. (2017). Research Methods for Business: A Skill-Building Approach (7th ed.). Wiley.

Sofia. (2023). Human Resource Competency Development. Alfabeta.

Storey, J., & Wright, P. M. (2023). Strategic Human Resource Management: A Research Overview.

Sugiyono. (2022). Quantitative, Qualitative, and R&D Research Methods. Alfabeta.

Sukmawati. (2024). Human Resource Management: Theory and Application.

Sundari, G. D., & Putri, E. R. (2023). The effect of competence, work discipline, and physical work environment on employee performance with job satisfaction as a mediator. Jurnal Manajemen Mirai, 8(2).

Tarigan, K. A. B., Sembiring, R., & Winarto, W. (2025). The effect of competence, work discipline, and work environment on employee performance. RIGGS: Jurnal Ilmu Manajemen, 4(2). https://doi.org/10.31004/riggs.v4i2.841.