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The Influence of Human Resource Quality on Crew Ship Performance at Bourbon Offshore Asia Pte., Ltd

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Abstract

This study aims to analyze the influence of Human Resource (HR) quality on crew performance at Bourbon Offshore Asia Pte., Ltd. The primary focus of the research is on how HR quality affects the operational effectiveness of ships, which in turn impacts safety and work efficiency in the maritime environment. This study employs a quantitative method using a questionnaire instrument that has been tested for validity and reliability. The data are analyzed using linear regression to determine the relationship between HR quality and crew performance. The results indicate that the majority of crew members have 0–4 years of work experience, highlighting the need for more effective training strategies to enhance their competencies. In terms of job distribution, 53.75% of the crew consists of deckhands (ABK), who play a crucial role in daily ship operations. The regression test results indicate a positive and significant relationship between HR quality and crew performance, with a correlation coefficient of 0.926. The coefficient of determination ($R^2 = 0.857$) indicates that 85.7% of the variation in crew performance is explained by HR quality, while 14.3% is attributed to other factors. Key factors improving crew performance include individual competence, work productivity, and compliance with safety standards. However, aspects such as work initiative and task completion require further attention.

Keywords: Human Resource Quality, Crew Performance, Maritime Industry, Work Safety

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INTRODUCTION

Technological advances in the maritime sector, such as the implementation of Autonomous Ship Surfaces (ASS) supported by artificial intelligence (AI) and automatic navigation systems, present new challenges in improving crew performance. This technology can indeed enhance shipping efficiency and safety, but it also requires crew members to acquire new skills to remain relevant in an increasingly advanced industry (Aguinis, 2019). In this context, understanding and complying with regulations such as those stipulated in Government Regulation No. 7 of 2000 concerning Maritime Affairs are very important. The regulation outlines the rights, obligations, and competency standards of crew members, which greatly affect the quality of human resources (HR) on board. Additionally, this regulation includes training, certification, and work protection that directly impact crew performance. Although automation can lessen the need for a ship's crew, human resources still play a crucial role in ensuring smooth operations and shipping safety (Hasibuan, 2016). Therefore, enhancing the quality of human resources is a key factor to ensure that the role of the ship's crew remains strategic and is not completely replaced by technology (Sedarmayanti, 2017). The ship's crew must be equipped with skills and knowledge that continuously develop to ensure operational efficiency and shipping safety and to prevent a full replacement by an automated system.

Optimal crew performance also enhances the efficiency of human resource management, particularly as the advancement of automation technology is expected to reduce the number of crew members needed in the future. According to Cascio (2015), performance is an individual's contribution to achieving organizational goals as measured by quality, quantity, and timeliness. Crews with high-quality human resources—including knowledge, skills, and attitudes—tend to demonstrate optimal performance, especially in adhering to safety procedures and facilitating smooth operations. Hasibuan (2016) stated that the quality of human resources, obtained through education and training, has a direct impact on work productivity. Sedarmayanti (2017) also emphasized that high-quality human resources can drive overall organizational efficiency.

Zainuddin's (2021) research at PT. Petrosea Tbk shows a significant influence of HR quality on employee performance, with a correlation coefficient of 0.686 indicating a positive and strong relationship between the two variables. This finding is relevant to the maritime industry, where HR quality also plays a crucial role in determining crew performance. Therefore, companies need to focus on the quality of each individual in their team. If any crew members do not demonstrate optimal performance, the company should assess their performance upon contract completion. This assessment can refer to several indicators, including professional knowledge, compliance with SOPs, work initiative, task completion, organizational skills, safety awareness, teamwork skills, team management, client feedback, and English language proficiency.

No organization can achieve its goals without the contribution of human resources who perform their functions according to their respective roles and responsibilities. While terms such as employees, workers, and laborers are used in different contexts, they all refer to individuals who devote their time and energy to achieving organizational goals (Aljabar, 2020). In this context, the crew is viewed as a professional employee bound by a contract, as stated by Supriyanto B (2020). Bourbon Offshore Asia Pte., Ltd. is a subsidiary of Bourbon based in Asia, engaged in ship ownership (shipowner), operating its own vessels and renting them to clients worldwide. The company provides quality maritime logistics services and adheres to a system of offering vessels and their crews in a single charter package. As shipowners, companies need support not only from capital and equipment but also from quality, responsible, disciplined human resources who demonstrate high loyalty to enhance performance and build client trust—important factors in competing with other shipowners. Hasibuan (2016) noted that the quality of human resources encompasses the physical and mental aspects of individuals that influence

productivity levels. Continuous education, training, and work experience are essential keys to developing quality human resources. Sedarmayanti (2017) added that enhancing the quality of human resources can directly affect an organization's productivity and efficiency. In the shipping industry, quality crews perform their duties effectively, adhere to safety procedures, and are prepared to face various challenges in the field. The relationship between human resource quality and crew performance is mutually reinforcing—crews with high competence tend to make significant contributions to achieving company goals.

However, Bourbon Offshore Asia Pte. Ltd. still faces several challenges related to crew performance, which impact ship operations, company productivity, and client satisfaction and loyalty. These issues include delays in crew changes, demand drops before contract completion, delays in document revalidation, and disciplinary violations such as cruising without permission while the ship is docking, falling asleep during working hours, lack of communication with the crewing team, and insufficient mastery of foreign languages, which hinders the ability to receive instructions. In fact, several work accidents have also occurred due to non-compliance with SOPs. To overcome these challenges, Bourbon Offshore Asia needs to optimize HR management by developing evaluation strategies and improving crew performance. The crewing department and HR management must be responsive in addressing various issues such as document revalidation, regulation violations, and non-compliance with work contracts. This effort will not only minimize the negative impact on the company's operations but also enhance trust and loyalty from clients. Therefore, improving the quality of human resources through the evaluation and development of crew performance is essential. Based on the description above, this research was raised with the title: "The Influence of Human Resource Quality on Crew Performance at Bourbon Offshore Asia Pte., Ltd."

METHOD

This study employs a quantitative approach with a causal associative research type. The quantitative approach was selected because it is well-suited for objectively measuring and analyzing relationships between variables through numerical data. The causal associative research type is used to assess the influence of the independent variable, specifically the quality of human resources, on the dependent variable, namely the performance of the ship's crew at the Bourbon Offshore Asia company.

The research was conducted at Bourbon Offshore Asia, a company involved in offshore oil and gas industry support services. The focus of this study was the ship's crew who worked at the company. The total population in this study comprised 175 ship's crew members. Since the population is relatively small and can still be reached in full, the sampling technique employed was saturated sampling, meaning that all members of the population were used as research samples.

Data collection techniques are conducted by distributing questionnaires. A closed questionnaire is developed based on the indicators of each variable. This questionnaire uses a five-point Likert scale, ranging from “strongly disagree” to “strongly agree.” This scale facilitates respondents in assessing the statements provided and allows the data gathered to be processed statistically.

Before analyzing the data, validity and reliability tests were conducted on the research instrument. The validity test aims to measure how well each item in the questionnaire reflects the construct being measured, accomplished by correlating the score of each item with the total score. Meanwhile, the reliability test assessed the internal consistency of the measuring instrument using the Cronbach's Alpha coefficient, with a minimum accepted value of 0.60.

After the instrument is declared valid and reliable, the collected data are analyzed using simple linear regression to determine the extent to which human resource quality influences ship

crew performance. Before conducting the regression analysis, assumption tests were performed, including the normality test, to ensure that the model met the statistical eligibility requirements. The entire analysis process is conducted with the assistance of statistical software, such as SPSS, to ensure that the results are obtained more accurately and can be scientifically validated.

Table 1. Item Numbers per Indicator of Variable X

No	Indicator	Item Numbers
1	Individual and team competence (Altin, 2024)	1, 2, and 3
2	Work productivity (Dika, 2023)	4, 5, and 6
3	Improved compliance with occupational safety standards (Dewi, 2016)	7, 8, and 9

Source: Researcher, 2025

Table 2. Item Numbers per Indicator of Variable Y

No	Indicator	Item Numbers
1	Initiative at work (Soedarmanto, 2023)	10, 11, and 12
2	Amount of work available and task completion (Syam, 2019)	13, 14, and 15
3	Organizational skills (Research Team, 2024)	16, 17, and 18
4	Awareness of safety, health, security, and environment (Imran, 2020)	19, 20, and 21
5	Minimizing workplace risks (Salas et al., 2001)	22, 23, and 24
6	Sociability and teamwork ability (Aribowo, 2020)	25, 26, and 27
7	Team management (Research Team, 2024)	28, 29, and 30
8	English language proficiency (Listriyawati, 2023)	31, 32, and 33

RESULTS AND DISCUSSION

In accordance with the criteria, an item is considered valid if it has a significance value (p-value) < 0.05 and a value Corrected Item-Total Correlation > 0.3. If the correlation value meets the requirements, it can be concluded that the item has a strong relationship with its variables and can be used in research. The value Corrected Item Total Correlation is greater than rtable with db=80-2, which is 78, so that rtable with 5% significance is 0.2199

Reliability testing is conducted using specific techniques. Cronbach's Alpha is a technique that shows an accurate, fast, and economical internal consistency index. The instruments used meet reliability requirements, as indicated by Cronbach's Alpha, if the value is greater than 0.6. The higher the Cronbach's Alpha, the closer to 1, the higher the internal consistency reliability.

Table 3. Results of Reliability Test of Variable X

Cronbach's Alpha	N of Items
.897	9

Source: Processed SPSS Data, 2025

Based on Table 3, it can be concluded that the value of Cronbach's Alpha is 0.897 > 0.60, then the questionnaire variable X is declared reliable or consistent.

Table 4. Results of Reliability Test of Variable Y

Croanbach's Alpha	N of Items
.940	24

Source: Processed SPSS Data, 2025

Based on Table 4, it can be concluded that the value of Cronbach's Alpha is 0.940, which is greater than 0.60; therefore, the questionnaire variable Y is considered reliable or consistent.

Table 5. Description of HR Quality and Performance Data Crew

		Quality of Human Resources	Crew Performance
N	valid	80	80
	Missing	0	0
Mean		31.46	86.50
Median		35.00	92.50
Std. deviation		7.574	18.202
Variance		57.366	331.316
Minimum		16	44
Maximum		42	120

Source: Processed SPSS Data, 2025

Based on the descriptive results in the previous table, the HR Quality variable shows the highest value of 42, the lowest value of 16, with an average (mean) of 31.46. Based on the data obtained, 47 sailors, or approximately 58.75%, had values above the average for the HR quality variable. Meanwhile, in the crew performance variable, 46 sailors, or 57.5%, showed values above the average. This finding indicates that more than half of the respondents showed relatively good performance. However, there are still some crews with values below the average, which suggests that certain factors contribute to variations in performance levels.

1. Normality Test

Data normality is used to determine whether the data obtained is on a normal scale or not. For determining the normality value of the data, the SPSS computer program, Version 27, was used. Data is declared normal if the significance is 0.2 > 0.05.

Table 6. Description of Human Resource Quality Data

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			80
Normal Parameters[a.b]	Mean		.0000000
	Std. Deviation		6.87469245
Most extreme Differences	Absolute		.072
	Positive		.054
	Negative		-.072
Test Statistic			.072
Asymp. Sig. (2-tailed)[c]			200[d]
Monte Carlo Sig.(2-tailed)	Sig.		.394
	99% Confidence Interval	Lower Bound	.381
		Upper bound	.407

Source: Processed SPSS Data, 2025

The technique used for normality testing is the Kolmogorov-Smirnov Test of Normality. Based on the test of normality, a significance value of 0.2 > 0.05 was obtained, indicating that the data is normally distributed. This is evident in the table above.

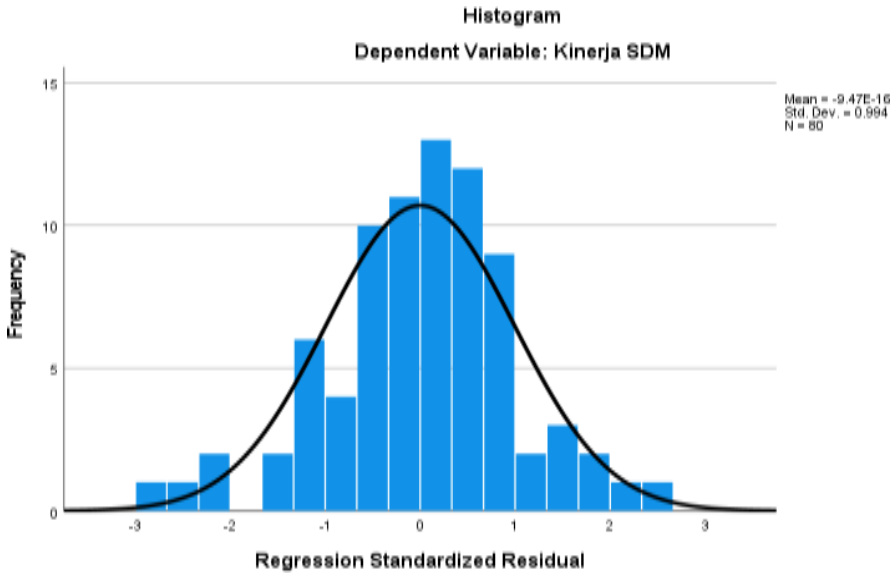

Figure 1. Normality Graph
Source: Processed SPSS Data, 2025

This graph displays a histogram alongside a normal curve, illustrating the distribution of the data. The histogram forms a symmetrical pattern resembling a bell curve, indicating that the data tends to be normally distributed.

2. Linearity Test

The Linearity Test aims to determine whether two variables have a linear or non-linear relationship significant. This test is conducted using SPSS Version 27 with the Test for Linearity method, employing a significance level of≥ 0.05 (Ghozali, 2016).

Table 7. Linearity Test
ANOVA Table

Crew Performance * HR Quality			Sum of Squares	df	Mean Square	F	Sig.
	Between Groups	(Combined)	24122.401	22	1096.473	30.464	7.637
		Linearity	22440.350	1	22440.350	623.465	2.228
		Deviation from Linearity	1682.051	21	80.098	2.225	.090
	Within Groups		2051.599	57	35.993		
	Total		26174.000	79			

Source: Processed SPSS Data, 2025

Based on the table above, the Deviation from Linearity value is 0.09, which is higher than 0.05. Therefore, it can be said that there is a significant linear relationship between HR quality and the performance of crew vessels at Bourbon Offshore Asia Pte., Ltd.

3. Homogeneity Test

Data homogeneity is used to determine whether the data obtained comes from a uniform population. The homogeneity of the research data was analyzed using SPSS Version 27. Data is considered homogeneous if the significance value is greater than 0.05. Based on the table below, it can be seen that the quality of human resources has a significant impact on performance, with

a coefficient of 0.279, which is greater than 0.05. This indicates that the data is homogeneous or uniform.

Table 8. Homogeneity Test

ANOVA

HR Performance

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8415.073	22	382.503	1.208	.279
Within Groups	17728.294	56	316.577		
Total	26143.367	78			

Source: Processed SPSS Data, 2025

Human Resources on Performance Crew Ship on Bourbon Offshore Asia Pte., Ltd. The following are the respondents' responses to variable X (Human Resource Quality) and variable Y (Performance) Crew) based on predetermined dimensions and indicators. The questionnaire was distributed to 80 respondents on a scale. The answers and results are as follows:

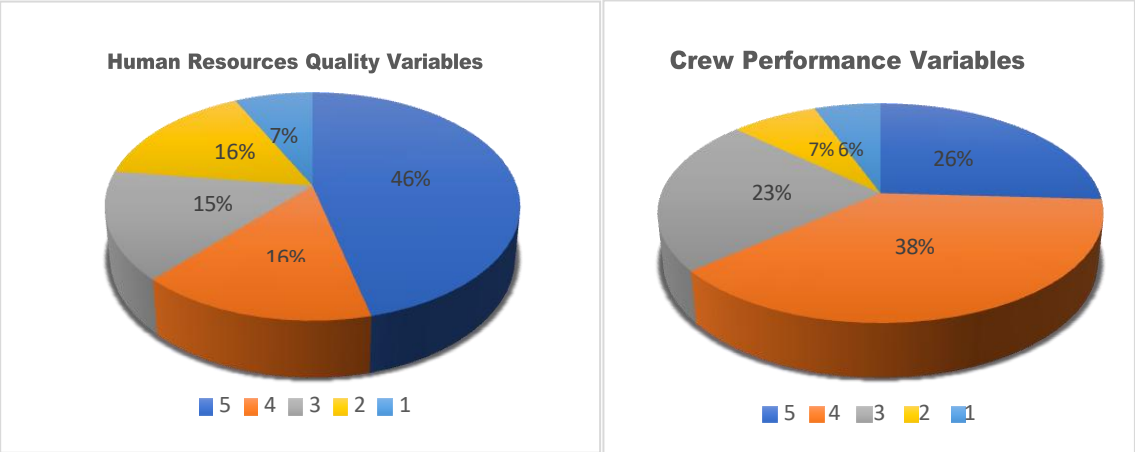

Figure 2. Pie Chart of Results of Analysis of Variables X and Y
Source: Processed primary data

Data Analysis Techniques

1. Hypothesis Testing

Table 9. Hypothesis Testing

Correlations

		Quality of HR	Crew Performance
Quality of HR	Pearson Correlation	1	.926**
	Sig. (2-tailed)		<.001
	N	80	80
Crew Performance	Pearson Correlation	.926**	1
	Sig. (2-tailed)	<.001	
	N	80	80

Source: Processed SPSS Data, 2025

If the value is significant and below 0.05, decisions involve rejecting the Null Hypothesis (Ho) and accepting the Alternative Hypothesis (Ha). Therefore, it can be concluded that the quality of human resources has a significant impact on the performance of the ship's crew at

Bourbon Offshore Asia Pte., Ltd. The correlation magnitude between both variables, which is 0.926, indicates a very strong relationship, as shown in Table 3.2. Additionally, the positive value of the correlation coefficient illustrates that the relationship between the quality of human resources and performance is unidirectional. This implies that if the quality of human resources increases, the crew's performance will also rise, and vice versa.

Table 10. Effective Contributions

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.926[a]	.857	.856	6.919	.857	468.803	1	78	<.001

Source: Processed SPSS Data, 2025

The table above indicates that the magnitude of the correlation value, or the relationship (R), is 0.926. From the output the coefficient of determination (R square) obtained is 0.857 which means that the contribution value or the effective contribution of variable X (Quality of Human Resources Human) on variable Y (Performance)Crew) is amounting to 85.7% while the remainder or 14.3% contributed by variables other than resource quality humans outside of research.

2. Simple Linear Regression Test

The results of the data analysis using simple linear regression are presented in the table below.

Table 11. Regression Test

Coefficients[a]

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	16.489	3.325		4.959	<.001
	Quality of HR	2.225	.103	.926	21.652	<.001

Source: Processed SPSS Data, 2025

Based on the data processed using simple linear regression statistics, the following can be determined: Simple Linear Regression Equation.

From this equation, it is known that:

a. The constant value (a) = 16.489, which means if X = 0, then the Y value is 16,489. In this context, if independent variable X (HR quality) does not exist or has a value of zero, then the dependent variable Y (Performance) remains has a value of 16,489.
b. The regression coefficient value (b) = 2.225, which shows that for every one unit increase in the variable X (quality of human resources), the Y variable (Performance) will increase by 2,225 units.

3. Direction of Variable Relationship

Based on the results of simple linear regression, it is evident that the relationship between variable X (HR quality) and variable Y (crew performance) is positive and unidirectional. This is illustrated by the regression coefficient value of 2.225, indicating that a one-unit increase in HR quality will lead to a 2.225-unit increase in crew performance. Thus, it can be concluded that higher HR quality is proportionally linked to improved performance of the ship's crew.

Conversely, a decline in HR quality directly impacts performance. The conducted research shows that the quality of human resources (HR) significantly affects the performance of ship crews at Bourbon Offshore Asia Pte., Ltd. Crews with high competency levels, optimal productivity, and adherence to work safety standards tend to positively contribute to the operational efficiency of ships. This also enhances the company's competitiveness in the maritime industry. The diversity of work experience among crews presents a challenge in HR management, particularly for those with 0-4 years of experience who require further coaching and training to reach the expected competency level. Meanwhile, crews with ANT/ATT certification play a crucial role in ensuring the safety and smooth operation of the ship. Therefore, the company must continue to implement routine training programs and performance evaluations to enhance the overall quality of human resources.

Data analysis shows that the relationship between HR quality and crew performance is very strong. The correlation coefficient (R) value of 0.926 illustrates a high positive correlation between the two variables. Meanwhile, the determination coefficient (R^2) of 0.857 indicates that 85.7% of the variation in crew performance can be explained by factors related to HR quality, such as technical competence, productivity, and discipline in safety procedures.

The remaining 14.3% is accounted for by external factors beyond the scope of this study, such as leadership on board, working conditions, organizational culture, and environmental influences. This finding aligns with Sari's opinion (2018), which states that although HR quality is a dominant factor, other variables must also be considered to understand the dynamics of crew performance as a whole. Future discussions should explore the reasons for the unexplained 14.3%, as identifying these factors could provide a more comprehensive understanding of crew performance. Potential additional variables to consider include psychological well-being, motivation, reward systems, and the quality of leadership, which may significantly influence performance beyond HR quality alone. The simple linear regression results obtained in this study reinforce the relationship reflected in the equation $Y = 16.489 + 2.225X$. This indicates that for every one-unit increase in HR quality, crew performance will increase by 2.225 units. The constant value of 16.489 shows that even if HR quality is considered zero, crew performance remains at a certain basic level, suggesting that other factors also impact work performance. Practically, this implies that enhancing HR quality will directly and proportionally affect an increase in crew performance in the field.

Furthermore, the quality of human resources, including technical skills, work experience, ongoing training, and communication skills, is a key factor in creating a productive, disciplined, and compliant crew that adheres to work safety standards. Crews with superior human resources can carry out tasks efficiently, reduce the risk of operational errors, and contribute to a safe work environment. In contrast, crews with low-quality human resources tend to face obstacles in completing tasks, decrease productivity, and potentially cause work accidents. This finding aligns with the results of Zainuddin's (2021) research conducted at PT. Petrosea Tbk., which also found that the quality of human resources significantly influences employee performance.

The results of the hypothesis testing in this study indicate that the alternative hypothesis (Ha) is accepted, while the null hypothesis (H0) is rejected. Thus, it has been statistically proven that the quality of human resources has a positive influence on crew performance at Bourbon Offshore Asia Pte., Ltd. This powerful correlation confirms that investment in human resource development through.

CONCLUSION

Based on the results of the study on the effect of HR quality on crew performance at Bourbon Offshore Asia, it can be concluded that there is a significant positive relationship

between HR quality and ship crew performance. The regression results show that every one unit increase in HR quality will increase ship crew performance by 2,225 units. The constant value of 16,489 indicates that even though HR quality does not affect ship crew performance (when the value is zero), the performance still has a base value of 16,489. This means that even though HR quality does not contribute, crew performance is still influenced by other factors that play a role.

Furthermore, based on the calculation of the coefficient of determination (R^2), a value of 0.857 was obtained, indicating that the quality of human resources can explain 85.7% of the variation in crew performance. In comparison, 14.3% is influenced by other factors not covered in this study. This finding confirms that the quality of human resources has a significant influence on the performance of ship crews at Bourbon Offshore Asia Pte., Ltd. It is the main factor influencing work performance. However, other external factors also play a role in creating optimal performance. Therefore, to improve the quality of human resources, managerial policies are needed that take into account various related aspects.

This study has several limitations that should be acknowledged. First, the research was conducted using a quantitative approach with a saturated sample of 80 crew members from a single company, Bourbon Offshore Asia Pte., Ltd., which may limit the generalizability of the findings to other maritime contexts or offshore companies. The reliance on self-reported questionnaire data could also introduce response bias, as participants might answer based on perceived expectations rather than actual performance or competencies. Additionally, the study focused solely on the influence of human resource (HR) quality without considering other potentially significant variables such as leadership style, working conditions, company culture, or external environmental factors, which together might also shape crew performance.

Theoretically, the study reinforces the significant role that HR quality plays in enhancing crew performance within the maritime sector, especially in the context of increasing automation and technological advancements. This highlights the need for continued academic focus on HR development as a strategic tool in maritime management. Practically, the findings emphasize the importance of sustained investment in crew training, certification, and performance evaluations to ensure competitiveness and safety in offshore operations. Maritime companies are encouraged to adopt a holistic HR development strategy that not only improves technical skills but also enhances communication, safety awareness, and team collaboration. Future research could expand on this study by incorporating qualitative methods and examining a broader range of variables across different organizational settings to gain a more comprehensive understanding of crew performance dynamics. Future research could expand on this study by incorporating qualitative methods to gain deeper insights into the individual and organizational behaviors that influence crew performance. Additionally, the inclusion of mediating or moderating variables—such as job satisfaction, leadership style, or organizational support—may help uncover the mechanisms through which HR quality impacts performance, offering a more nuanced understanding of this relationship.

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