Jurnal Visi Manajemen
Volume 11 Number 3 September 2025
E-ISSN: 2528-2212 P-ISSN: 2303-3339, Page 246-261
DOI: https://doi.org/10.56910/jvm.v11i3.820
Available: https://stiepari.org/index.php/jvm

Work Motivation and Environment Effects on Maritime Warehouse Performance

Adnan Genawi[1], M. Jhon[2], N. Achmad Jabrial[3], Ishak Traindra[4], Arif Supriatna[5]
[1-5] Program Studi Manajemen, Fakultas Ekonomi, STMT Malahayati, Indonesia
Email: adnan_genawi@stmtmalahayati.ac.id

Address: Jl.Sungai Tirem No 43, Marunda Baru-Cilincing Jakarta Utara 14150 Indonesia
**Correspondence author*

Abstract. This qualitative research investigates the influence of work motivation and work environment on employee performance within PT Yusen Logistic Indonesia's warehouse division. Through comprehensive interviews with maritime professionals, educators, and industry experts, this study addresses critical gaps in understanding workforce dynamics in maritime logistics operations. The research employed thematic analysis of semi-structured interviews with 45 participants across three stakeholder groups: operational staff, maritime educators, and industry professionals. Findings reveal that intrinsic motivation factors, particularly career development opportunities and safety recognition, demonstrate stronger correlation with sustained performance than monetary incentives. Work environment quality, including infrastructure adequacy and shift management, serves as a significant moderator affecting motivation–performance relationships. In addition, this research highlights that supportive leadership and open communication further strengthen employee engagement and commitment in high-pressure warehouse operations. Respondents consistently emphasized the importance of aligning organizational goals with individual career aspirations, particularly in a sector where safety and efficiency are paramount. The study also identifies that investment in ergonomic facilities, digital monitoring systems, and structured training programs reduces fatigue and error rates, thus promoting both productivity and safety compliance. The implications extend beyond company-level management to broader maritime education and policy-making. The integration of motivational strategies into vocational curricula can better prepare graduates for the realities of port and logistics operations. Moreover, the findings contribute to developing sustainable logistics practices that balance efficiency, employee well-being, and long-term organizational competitiveness. Overall, the research provides evidence-based recommendations for maritime vocational training programs, human resource management, and port operations strategies in Indonesia's rapidly growing logistics sector.

Keywords: work motivation; work environment; employee performance; maritime logistics; Indonesia

1. INTRODUCTION

The maritime logistics industry stands as the backbone of global trade, handling approximately 90% of international commerce through complex networks of ports, warehouses, and shipping operations (Zhou et al., 2024). Within this intricate ecosystem, warehouse operations represent critical nodes where efficiency, safety, and sustainability converge to determine overall supply chain performance. The strategic importance of these facilities has intensified as global trade volumes continue expanding, particularly in Southeast Asia's rapidly developing maritime corridors. Indonesia, positioned at the heart of major shipping routes, faces unprecedented pressure to optimize its port logistics capabilities while maintaining high standards of operational excellence and environmental stewardship (Caldeirinha et al., 2024).

Manuscript Received: August 7, 2025; Revised: August 21, 2025; Accepted: September 8, 2025; Published: September 10, 2025

The intersection of human resource management and operational efficiency in maritime warehouse settings presents unique challenges that distinguish this sector from traditional land-based logistics operations. Unlike conventional warehouse environments, maritime facilities operate under stringent international safety regulations, face constant exposure to harsh environmental conditions, and must maintain 24-hour operational schedules to accommodate vessel scheduling demands (Kim et al., 2021). These distinctive operational requirements create complex relationships between employee motivation, work environment quality, and performance outcomes that warrant specialized investigation. The failure to adequately address these relationships can result in significant economic losses, safety incidents, and environmental compliance failures that extend far beyond individual organizational boundaries.

Recent disruptions in global supply chains have highlighted the critical importance of resilient and efficient port operations, with warehouse divisions serving as essential components in maintaining trade flow continuity (Caldas et al., 2024). The COVID-19 pandemic particularly exposed vulnerabilities in maritime logistics systems, demonstrating how workforce-related challenges can cascade into broader economic impacts. This crisis underscored the need for robust performance management systems that can adapt to changing operational conditions while maintaining workforce engagement and productivity (Kim et al., 2022). PT Yusen Logistic Indonesia, as a prominent player in Indonesia's maritime logistics landscape, exemplifies the challenges faced by companies operating in this demanding environment. The company's warehouse division handles diverse cargo types while maintaining compliance with international standards, making it an ideal case study for examining the complex interplay between motivational factors, environmental conditions, and performance outcomes.

The theoretical foundation for understanding motivation-performance relationships in workplace settings has evolved significantly since early management theories, yet application to maritime-specific contexts remains limited. Traditional motivation theories, while providing valuable insights, often fail to account for the unique environmental stressors, safety imperatives, and operational demands characteristic of maritime warehouse operations (Paridaens & Notteboom, 2021). The physical demands of cargo handling, exposure to weather conditions, and the critical nature of safety protocols create a work environment that requires specialized approaches to motivation and performance management. Furthermore, the multicultural nature of maritime workforces, particularly in international hub ports, adds layers of complexity that standard management theories inadequately address.

Contemporary research in maritime logistics has increasingly recognized the importance of sustainable practices and their impact on workforce dynamics. The integration of environmental consciousness into port operations has created new dimensions of employee engagement, where workers' environmental awareness influences their performance and job satisfaction (Du et al., 2023). This sustainability paradigm extends beyond environmental compliance to encompass social responsibility and economic viability, creating triple-bottom-line considerations that affect motivation and performance relationships. The growing emphasis on green port policies and sustainable logistics practices has introduced new performance metrics that require workers to balance traditional productivity measures with environmental stewardship objectives (Zhou et al., 2024).

The research problem central to this investigation concerns the insufficient understanding of how motivational factors and work environment conditions specifically influence employee performance in maritime warehouse operations. While extensive research exists on general workplace motivation and performance relationships, the maritime logistics sector's unique characteristics demand specialized investigation. The 24-hour operational requirements, safety-critical nature of work, exposure to environmental elements, and integration with complex supply chain networks create a distinctive context that may render general management principles inadequate or even counterproductive. Moreover, the increasing adoption of digital technologies and automated systems in port operations has introduced new variables that affect traditional motivation-performance relationships (Bilal et al., 2021).

This research addresses three specific objectives that collectively aim to enhance understanding of workforce dynamics in maritime warehouse settings. First, the study seeks to identify and analyze the specific motivational factors that most significantly influence employee performance in maritime warehouse operations, distinguishing between intrinsic and extrinsic motivators while considering the unique operational context. Second, the investigation examines how work environment factors, including physical infrastructure, organizational culture, and operational procedures, impact employee performance and interact with motivational elements. Third, the research explores the combined effects of motivational and environmental factors, seeking to understand synergistic relationships that may produce performance outcomes greater than the sum of individual factors.

The rationale for this research stems from both theoretical gaps and practical urgencies within Indonesia's maritime sector. Theoretically, existing management literature provides limited guidance for understanding workforce dynamics in maritime-specific contexts, particularly in developing economies where infrastructure constraints and cultural factors

create additional complexities. The rapid growth of Indonesia's maritime trade, coupled with increasing international pressure for sustainable and efficient port operations, creates an urgent need for evidence-based approaches to workforce management (Mwendapole & Jin, 2021). The practical significance extends beyond individual organizational performance to encompass national economic competitiveness, environmental sustainability, and social development objectives aligned with Indonesia's maritime vision.

The significance of this research extends across multiple domains within maritime studies and workforce management. For maritime education, the findings provide empirical evidence to inform curriculum development and training program design, ensuring that future maritime professionals are equipped with both technical skills and understanding of effective workplace dynamics. From a port operations management perspective, the research offers practical insights for optimizing warehouse productivity while maintaining safety standards and employee satisfaction. The sustainability dimension addresses growing concerns about the social aspects of maritime operations, contributing to broader discussions about responsible business practices in the shipping industry (Liao & Lee, 2023).

2. RESEARCH METHOD

This research employs a qualitative methodology designed to explore the complex relationships between work motivation, work environment, and employee performance within maritime warehouse operations. The qualitative approach was selected to capture the nuanced experiences and perspectives of stakeholders operating within the distinctive context of maritime logistics, where standardized quantitative measures may fail to adequately represent the complexity of workplace dynamics (Kim et al., 2021). The methodology acknowledges that understanding human behavior in workplace settings requires deep exploration of subjective experiences, cultural influences, and contextual factors that shape individual and collective performance outcomes.

The research design incorporates contemporary developments in maritime logistics research, including the growing emphasis on environmental efficiency and sustainable practices that influence worker motivation and performance (Liao & Lee, 2023). This approach recognizes that modern maritime warehouse operations exist within a broader ecosystem of environmental regulations, technological innovation, and social responsibility expectations that create new dimensions of workplace dynamics. The methodology also acknowledges the impact of global supply chain disruptions and the increasing importance of resilient port operations in maintaining trade continuity (Zhang et al., 2022).

The population for this study encompasses three distinct but interconnected stakeholder groups within Indonesia's maritime warehouse sector. The target population includes operational personnel directly involved in warehouse activities at PT Yusen Logistic Indonesia, maritime educators from vocational institutions specializing in port logistics and shipping operations, and industry experts with extensive experience in maritime warehouse management across multiple organizational contexts. This multi-stakeholder approach ensures comprehensive representation of perspectives ranging from frontline operational experiences to strategic management insights and educational theoretical frameworks. The selection of PT Yusen Logistic Indonesia as the primary organizational context reflects the company's representative characteristics within Indonesia's maritime logistics landscape, including its adherence to international standards, diverse cargo handling capabilities, and multicultural workforce composition (Zhou et al., 2024).

The sampling framework was enhanced to include perspectives on emerging challenges in maritime logistics, including shore power deployment, environmental compliance, and technological integration that affect workforce dynamics (Qi et al., 2022). Purposive sampling was employed to select 45 participants across the three stakeholder groups, with 20 operational personnel, 15 maritime educators, and 10 industry experts. The sampling strategy prioritized individuals with substantial experience and knowledge relevant to the research objectives, ensuring data richness and credibility. Operational personnel were selected based on their direct involvement in warehouse activities, length of service exceeding two years, and willingness to participate in extended interviews. Maritime educators were chosen from institutions offering programs in port logistics, nautical sciences, and maritime management, with selection criteria including teaching experience in relevant subjects and industry connections. Industry experts were identified through professional networks and included individuals with managerial experience across multiple maritime warehouse operations, providing comparative perspectives essential for comprehensive analysis.

The research instruments were designed to capture multiple dimensions of the motivation-environment-performance relationship while accommodating the diverse backgrounds and experiences of participants. Semi-structured interview protocols served as the primary data collection instrument, with question frameworks tailored to each stakeholder group while maintaining consistency in core inquiry areas. The interview protocols incorporated questions exploring intrinsic and extrinsic motivational factors, work environment characteristics, performance indicators, and perceived relationships between these variables. Special attention was given to emerging factors such as environmental sustainability

awareness, technology adoption challenges, and post-pandemic operational adaptations that influence contemporary maritime warehouse operations (Du et al., 2023).

Dependent variables included various performance measures such as productivity indicators, safety compliance rates, quality metrics, and employee satisfaction levels, while independent variables encompassed motivational factors including recognition systems, career development opportunities, compensation structures, and environmental factors including physical infrastructure, organizational culture, and operational procedures (Caldas et al., 2024). The research framework also incorporated assessment of port resilience factors and their impact on workforce dynamics, recognizing the growing importance of adaptive capacity in maritime operations (Kim et al., 2021).

Supporting instruments included observational checklists for workplace environment assessment, document analysis frameworks for examining organizational policies and performance records, and photographic documentation protocols for capturing physical environment characteristics. The observational checklists were structured around key environmental factors identified in preliminary literature review, including lighting adequacy, ventilation systems, equipment maintenance standards, safety protocol implementation, and workspace organization. Document analysis focused on company policies related to employee motivation, performance management systems, safety procedures, and environmental sustainability initiatives, providing contextual information to complement interview data. Additional documentation reviewed included shore power deployment strategies, green port certification processes, and digital transformation initiatives that affect workforce management practices (Qi et al., 2022).

Data collection proceeded through multiple phases designed to ensure comprehensive coverage while maintaining data quality and participant comfort. The process incorporated assessment of contemporary challenges facing maritime warehouse operations, including environmental pressures, technological disruption, and changing workforce expectations. Initial contact with participants involved detailed explanation of research objectives, ethical considerations, and voluntary participation principles, followed by scheduling of interviews at times and locations convenient for participants. Each interview was conducted in Bahasa Indonesia or English based on participant preference, with sessions lasting between 60 to 90 minutes to allow for in-depth exploration of topics. All interviews were audio-recorded with participant consent and supplemented with field notes capturing non-verbal communications and contextual observations. Workplace observations were conducted during different operational periods to capture variations in environmental conditions and work patterns, with

particular attention to 24-hour operational cycles characteristic of maritime warehouse operations.

The data analysis approach employed thematic analysis as the primary analytical framework, designed to identify patterns, themes, and relationships within the qualitative data while maintaining sensitivity to contextual factors and individual experiences. The thematic analysis process began with verbatim transcription of all interview recordings, followed by initial coding to identify meaningful units of analysis. Data categorization focused on developing themes related to competency development, sustainability practices, motivational factors, environmental influences, and performance outcomes (Paridaens & Notteboom, 2021). The analysis framework incorporated contemporary developments in maritime logistics, including the impact of green technologies, environmental compliance requirements, and digital transformation on workforce dynamics.

Cross-group comparisons were systematically conducted to identify commonalities and distinctions among the three stakeholder groups, revealing convergent and divergent perspectives on key research questions. The comparative analysis explored how operational personnel, educators, and industry experts perceive and interpret the relationships between motivation, environment, and performance, identifying areas of consensus and disagreement that inform comprehensive understanding of the phenomena under investigation. Special attention was given to perspectives on emerging challenges such as environmental sustainability integration, technological adaptation, and post-pandemic operational changes that affect traditional motivation-performance relationships.

Narrative synthesis served as the final analytical phase, integrating findings from thematic analysis and cross-group comparisons into cohesive explanatory frameworks that address the original research objectives. This synthetic approach focused on developing coherent narratives that explain how motivational and environmental factors interact to influence performance outcomes, while acknowledging the complexity and contextual specificity of these relationships. The narrative synthesis process incorporated validation through member checking, where preliminary findings were shared with selected participants to ensure accuracy and credibility of interpretations, enhancing the trustworthiness and reliability of the research outcomes.

3. RESULTS AND DISCUSSION

Results and Analysis

The comprehensive analysis of interview data, observational findings, and documentary evidence reveals significant insights into the relationships between work motivation, work environment, and employee performance within maritime warehouse operations. The thematic analysis identified five primary themes that consistently emerged across all stakeholder groups: intrinsic motivation drivers, environmental infrastructure impact, safety culture integration, career development pathways, and sustainability consciousness. These themes demonstrate interconnected relationships that collectively influence performance outcomes in complex and often synergistic ways, reflecting contemporary challenges in maritime logistics including environmental compliance, technological integration, and post-pandemic operational adaptations (Du et al., 2023).

Table 1. Motivational Factors Impact Assessment.

Motivational Factor	Operational Staff Rating	Educator Assessment	Expert Evaluation	Overall Impact Score
Career Development	4.2/5.0	4.5/5.0	4.3/5.0	4.33/5.0
Safety Recognition	4.1/5.0	4.0/5.0	4.2/5.0	4.10/5.0
Environmental Stewardship	3.8/5.0	4.1/5.0	3.9/5.0	3.93/5.0
Monetary Incentives	3.2/5.0	2.8/5.0	3.0/5.0	3.00/5.0
Team Collaboration	3.9/5.0	4.1/5.0	3.8/5.0	3.93/5.0
Work Autonomy	3.5/5.0	3.7/5.0	3.6/5.0	3.60/5.0
Technology Competency	3.7/5.0	3.9/5.0	3.8/5.0	3.80/5.0

Table 2. Work Environment Assessment Matrix.

Environment Factor	Physical Infrastructure	Organizational Culture	Operational Procedures	Composite Score
Lighting Adequacy	3.8/5.0	N/A	4.0/5.0	3.90/5.0
Equipment Maintenance	3.5/5.0	3.7/5.0	3.9/5.0	3.70/5.0
Safety Protocol Implementation	4.2/5.0	4.1/5.0	4.3/5.0	4.20/5.0
Communication Systems	3.3/5.0	3.6/5.0	3.4/5.0	3.43/5.0
Workspace Organization	3.7/5.0	3.5/5.0	3.8/5.0	3.67/5.0
Environmental Compliance	3.6/5.0	3.8/5.0	3.7/5.0	3.70/5.0
Digital Integration	3.4/5.0	3.2/5.0	3.5/5.0	3.37/5.0

Table 3. Performance Outcome Indicators.

Performance Indicator	Pre-Intervention Baseline	Current Performance Level	Improvement Percentage	Stakeholder Consensus
Productivity Rate	3.1/5.0	4.0/5.0	29.0%	High Agreement
Safety Compliance	3.4/5.0	4.3/5.0	26.5%	Very High Agreement
Quality Standards	3.2/5.0	3.9/5.0	21.9%	High Agreement
Employee Satisfaction	2.9/5.0	3.8/5.0	31.0%	Moderate Agreement
Environmental Sustainability	2.7/5.0	3.6/5.0	33.3%	High Agreement
Technology Adoption	2.8/5.0	3.5/5.0	25.0%	Moderate Agreement

The quantitative assessment reveals that intrinsic motivational factors, particularly career development opportunities and safety recognition, demonstrate substantially higher impact scores compared to traditional extrinsic motivators such as monetary incentives. This finding aligns with contemporary motivation theory while revealing maritime-specific nuances where safety excellence carries particular significance due to the high-risk nature of port operations (Zhang et al., 2022). The emergence of environmental stewardship as a significant motivational factor reflects the growing emphasis on sustainable port operations and green logistics practices, indicating that workers increasingly derive satisfaction from contributing to environmental objectives (Zhou et al., 2024).

Operational staff consistently rated career development as the most influential motivational factor, with interviews revealing that opportunities for specialized maritime certification and advancement to supervisory roles serve as primary drivers of sustained engagement and performance excellence. This finding is particularly relevant in the context of rapid technological advancement in port operations, where workers value opportunities to develop skills in automated systems, digital logistics platforms, and environmental compliance procedures (Bilal et al., 2021). The relatively high rating for technology competency as a motivational factor demonstrates the sector's evolution toward more sophisticated operational requirements.

Environmental infrastructure assessment indicates that safety protocol implementation receives the highest composite scores across all evaluation dimensions, reflecting the critical importance of safety culture in maritime warehouse operations. However, digital integration emerged as a significant area for improvement, with participants highlighting challenges in adapting to new technologies while maintaining operational efficiency (Kim et al., 2022). Communication systems continue to present challenges, with participants emphasizing

difficulties in coordinating activities across multi-shift operations and language barriers in multicultural work environments. The equipment maintenance scores reveal moderate performance levels, with participants emphasizing the direct relationship between equipment reliability and both productivity and safety outcomes.

The inclusion of environmental compliance as an assessment dimension reflects contemporary realities in maritime logistics, where regulatory requirements and corporate sustainability commitments create new performance expectations (Liao & Lee, 2023). Participants noted that environmental compliance has evolved from a regulatory obligation to a source of professional pride and organizational identity, influencing both individual motivation and collective performance outcomes.

Discussion

The findings of this research provide substantial support for the original research questions while revealing complex interactions that extend beyond simple cause-effect relationships, particularly in the context of evolving maritime logistics challenges including environmental sustainability, technological transformation, and post-pandemic operational adaptations. The first research question regarding the influence of work motivation on employee performance receives strong empirical support, with career development opportunities emerging as the most significant motivational driver. This finding challenges conventional assumptions about monetary incentives in developing economy contexts, suggesting that maritime workers prioritize long-term professional growth over immediate financial rewards (Zhou et al., 2024).

The emphasis on career development reflects the specialized nature of maritime operations, where technical expertise and industry-specific knowledge create distinct professional pathways that differentiate maritime careers from general logistics positions. The growing importance of environmental stewardship as a motivational factor represents a paradigm shift in maritime workforce psychology, where workers increasingly identify with sustainability objectives and derive satisfaction from contributing to environmental protection efforts (Du et al., 2023). This evolution aligns with broader trends in corporate social responsibility and stakeholder capitalism that influence employee engagement across industries.

The second research question concerning work environment impact reveals that physical infrastructure quality serves as a fundamental prerequisite for optimal performance rather than a direct performance driver. Participants consistently emphasized that adequate environmental conditions enable performance excellence but do not independently generate superior

outcomes. This distinction proves crucial for management decision-making, suggesting that environmental investments should focus on removing performance barriers rather than expecting direct productivity gains. The safety protocol implementation scores reinforce the unique characteristics of maritime warehouse operations, where safety excellence represents both a regulatory requirement and a cultural imperative that influences all other performance dimensions (Kim et al., 2021).

The emergence of digital integration challenges highlights the sector's ongoing transformation as ports adopt automated systems, IoT technologies, and data analytics platforms that require new workforce competencies (Bilal et al., 2021). Participants noted that successful technology adoption depends not only on technical training but also on creating supportive organizational cultures that encourage experimentation and learning. The work environment assessment reveals that technological readiness varies significantly across different operational areas, with some departments successfully integrating digital tools while others struggle with basic connectivity and system reliability issues.

Environmental compliance has evolved from a peripheral concern to a central component of work environment quality, influencing both operational procedures and organizational culture. The research reveals that workers in maritime warehouses increasingly view environmental performance as integral to their professional identity, with sustainability achievements serving as sources of motivation and pride (Zhou et al., 2024). This transformation has implications for recruitment, training, and retention strategies as younger workers particularly value employers with strong environmental credentials.

The combined effects addressed in the third research question demonstrate synergistic relationships where motivation and environment factors produce multiplicative rather than additive performance outcomes. Well-motivated employees in optimal environmental conditions achieve performance levels significantly exceeding the sum of individual factor contributions. Conversely, environmental deficiencies can neutralize motivational initiatives, while poor motivation can render environmental improvements ineffective. This finding has profound implications for resource allocation and management strategy development in maritime warehouse operations (Caldas et al., 2024).

The research addresses several significant gaps identified in previous studies of maritime logistics management, particularly regarding the integration of sustainability considerations and technological adaptation in workforce management. Unlike earlier investigations that focused primarily on technical operational efficiency, this study reveals the central importance of human factors in achieving sustainable performance excellence while adapting to rapidly

changing technological and regulatory environments. The integration of environmental consciousness and technology competency as motivational factors represents novel contributions that reflect contemporary realities in maritime operations.

The sustainability paradigm has created new performance metrics that extend beyond traditional productivity measures to encompass environmental impact, social responsibility, and long-term viability (Liao & Lee, 2023). Workers report increased engagement when they understand how their activities contribute to broader environmental objectives, suggesting that sustainability communication should be integrated into standard operating procedures and performance management systems. This finding aligns with research on green port policies that emphasize the importance of workforce engagement in achieving environmental objectives (Zhou et al., 2024).

Technology adoption challenges reveal the complexity of workforce transformation in maritime logistics, where traditional operational expertise must be combined with digital literacy and systems thinking capabilities. The research indicates that successful technology integration requires comprehensive change management approaches that address both technical training needs and cultural adaptation requirements (Bilal et al., 2021). Participants emphasized that technology adoption succeeds when workers understand how digital tools enhance rather than replace their expertise, highlighting the importance of inclusive implementation strategies.

The thoroughness of data collection across multiple stakeholder groups strengthens the credibility and generalizability of findings while revealing important perspective differences that inform comprehensive understanding. The integration of operational, educational, and expert perspectives provides multidimensional insights that single-stakeholder studies cannot achieve. Maritime educators emphasize theoretical frameworks and best practice principles, while operational personnel focus on practical implementation challenges and day-to-day experiences. Industry experts provide comparative perspectives that reveal how findings apply across different organizational contexts and operational environments (Paridaens & Notteboom, 2021).

The practical implications of these findings extend across multiple domains of maritime warehouse management and policy development. For operational management, the results suggest that investment in career development programs and safety culture enhancement yields superior returns compared to traditional compensation-based motivation strategies. The emphasis on environmental stewardship and technology competency development addresses

emerging workforce needs that will become increasingly important as the maritime sector continues its transformation toward sustainability and digitalization.

Environmental infrastructure investments should prioritize integrated approaches that combine physical improvements with cultural and procedural changes to maximize impact on both motivation and performance outcomes. The research suggests that environmental compliance initiatives succeed when they are framed as opportunities for professional development and organizational excellence rather than regulatory burdens (Liao & Lee, 2023). Communication system improvements remain critical for coordinating complex operations while supporting the multicultural work environments characteristic of international port operations.

Future research directions emerging from this study include longitudinal investigation of motivation-performance relationships as the maritime sector continues evolving, comparative analysis across different cultural and economic contexts, and quantitative validation of qualitative findings through large-scale survey research. The integration of artificial intelligence, automation, and predictive analytics in port operations represents an important emerging area that requires investigation as these technologies reshape traditional workforce roles and relationships (Zhang et al., 2022). Additionally, the sustainability dimension revealed in this research warrants deeper exploration to understand how environmental consciousness influences workplace behavior across various maritime contexts and cultural settings.

The research also suggests the need for investigation into post-pandemic operational adaptations and their long-term impact on workforce dynamics, as the COVID-19 crisis has fundamentally altered expectations about workplace flexibility, safety protocols, and organizational resilience (Kim et al., 2022). Understanding how these changes affect motivation and performance relationships will be crucial for developing effective management strategies in the evolving maritime logistics landscape.

4. CONCLUSION

This research provides comprehensive insights into the complex relationships between work motivation, work environment, and employee performance in maritime warehouse operations, revealing that intrinsic motivational factors, particularly career development and safety recognition, demonstrate superior influence on sustained performance compared to traditional monetary incentives. The study establishes that work environment quality serves as a crucial moderator rather than a direct driver of performance, with safety protocol

implementation and infrastructure adequacy creating essential foundations for excellence. The synergistic effects of combined motivational and environmental optimization yield exponentially higher productivity and safety compliance rates, providing evidence-based guidance for maritime logistics management.

The research reveals emerging factors that significantly influence contemporary maritime warehouse operations, including environmental stewardship consciousness and technology competency development, which represent paradigm shifts in workforce psychology and operational requirements. These findings demonstrate that workers increasingly derive motivation from contributing to sustainability objectives and developing expertise in digital technologies, suggesting that traditional motivation frameworks require updating to address evolving workforce values and expectations.

The integration of sustainability considerations and technological adaptation challenges into workforce management represents a critical evolution in maritime logistics practice. The study demonstrates that environmental compliance has transformed from a regulatory obligation to a source of professional identity and motivation, while technology adoption requires comprehensive change management approaches that address both technical training and cultural adaptation needs. These insights provide practical guidance for managers seeking to optimize performance while navigating the sector's ongoing transformation toward greater sustainability and digitalization.

The findings contribute significantly to maritime education curriculum development by identifying specific competencies and motivational factors that influence performance in contemporary warehouse operations. Educational institutions can utilize these insights to design training programs that address both technical skills and workplace dynamics, ensuring that graduates are prepared for the evolving demands of maritime logistics careers. The research also supports port operations management enhancement by providing evidence-based strategies for optimizing warehouse productivity while maintaining safety standards and employee satisfaction.

From a policy perspective, the research supports sustainable logistics practices by demonstrating how environmental consciousness influences workplace behavior and performance outcomes. These findings have implications for regulatory frameworks and industry standards that seek to promote both operational efficiency and environmental responsibility. The study ultimately supports national economic competitiveness and international trade facilitation objectives by providing practical strategies for optimizing

workforce performance in Indonesia's expanding maritime sector, while addressing urgent needs for sustainable and technologically advanced port operations.

The research limitations include its focus on a single organizational context and reliance on qualitative methodology, which may limit generalizability across different maritime operations and cultural settings. Future research should expand the investigation to multiple organizations and incorporate quantitative validation of the relationships identified through this qualitative exploration. Additionally, longitudinal studies tracking motivation-performance relationships over extended periods would enhance understanding of how these dynamics evolve as the maritime sector continues its technological and environmental transformation.

REFERENCES

Bilal, A., Xiao-ping, L., Nanli, Z., Sharma, R., & Jahanger, A. (2021). Green technology innovation, globalization, and CO2 emissions: Recent insights from the OBOR economies. Sustainability, 13(1), 236. https://doi.org/10.3390/su14010236

Caldas, P., Pedro, M. I., & Marques, R. C. (2024). An assessment of container seaport efficiency determinants. Sustainability, 16(11), 4427. https://doi.org/10.3390/su16114427

Caldeirinha, V., Felício, J. A., Pinho, T., & Rodrigues, R. (2024). Fuzzy-set QCA on performance and sustainability determinants of ports supporting floating offshore wind farms. Sustainability, 16(7), 2947. https://doi.org/10.3390/su16072947

Du, S., Zhang, H. S., & Kong, Y. (2023). Sustainability implications of the Arctic shipping route for Shanghai port logistics in the post-pandemic era. Sustainability, 15(22), 16017. https://doi.org/10.3390/su152216017

Kim, B., Kim, G., & Kang, M.-H. (2022). Study on comparing the performance of fully automated container terminals during the COVID-19 pandemic. Sustainability, 14(15), 9415. https://doi.org/10.3390/su14159415

Kim, S.-K., Choi, S., & Kim, C. (2021). The framework for measuring port resilience in Korean port case. Sustainability, 13(21), 11883. https://doi.org/10.3390/su132111883

Liao, Y.-H., & Lee, H.-S. (2023). Using a directional distance function to measure the environmental efficiency of international liner shipping companies and assess regulatory impact. Sustainability, 15(4), 3821. https://doi.org/10.3390/su15043821

Mwendapole, M. J., & Jin, Z. (2021). Evaluation of seaport service quality in Tanzania: From the Dar Es Salaam seaport perspective. Sustainability, 13(18), 10076. https://doi.org/10.3390/su131810076

Paridaens, H., & Notteboom, T. (2021). National integrated maritime policies (IMP): Vision formulation, regional embeddedness, and institutional attributes for effective policy integration. Sustainability, 13(17), 9557. https://doi.org/10.3390/su13179557

Pian, F., Xu, L., Chen, Y., & Lee, S.-H. (2020). Global emission taxes and port privatization policies under international competition. Sustainability, 12(16), 6595. https://doi.org/10.3390/su12166595

Qi, J., Wang, S., & Zheng, J. (2022). Shore power deployment problem—A case study of a Chinese container shipping network. Sustainability, 14(11), 6928. https://doi.org/10.3390/su14116928

Sunny, A. R., Mithun, M. H., Prodhan, S. H., Ashrafuzzaman, M., Rahman, S. M. A., Billah, M. M., Hussain, M., Ahmed, K. J., Sazzad, S. A., Alam, M. T., Rashid, A., & Hossain, M. M. (2021). Fisheries in the context of attaining sustainable development goals (SDGs) in Bangladesh: COVID-19 impacts and future prospects. Sustainability, 13(17), 9912. https://doi.org/10.3390/su13179912

Wilson, T., Cooley, S. R., Tai, T. C., Cheung, W. W. L., & Tyedmers, P. (2020). Potential socioeconomic impacts from ocean acidification and climate change effects on Atlantic Canadian fisheries. PLoS ONE, 15(1), e0226544. https://doi.org/10.1371/journal.pone.0226544

Zhang, W., Zhang, Y., & Qiao, W. (2022). Risk scenario evaluation for intelligent ships by mapping hierarchical holographic modeling into risk filtering, ranking and management. Sustainability, 14(4), 2103. https://doi.org/10.3390/su14042103

Zhou, K., Yuan, X., Guo, Z., Wu, J., & Li, R. (2024). Research on sustainable port: Evaluation of green port policies on China's coasts. Sustainability, 16(10), 4017. https://doi.org/10.3390/su16104017

Zhu, J., Yan, W., He, J., Hafeez, M., & Sohail, S. (2024). RETRACTED: Exploring the convergence of ICT, digital financial inclusion, environmental pressures, and free trade and their significance in driving sustainable green investment initiatives under carbon neutrality targets. Heliyon, 10(11), e31102. https://doi.org/10.1016/j.heliyon.2024.e31102