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Enhancing Career Pathways for Maritime Graduates through Human Resource Management Strategies

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Abstract. *This research investigates how maritime vocational schools can enhance the career pathways of graduates by aligning educational outcomes with the needs of the maritime industry. Through qualitative analysis of perspectives from maritime professionals, lecturers, graduates, and government officers, the study identifies critical gaps in technology integration, environmental sustainability, and soft skills development. The research underscores the importance of industry collaboration, continuous learning, and adaptability in vocational education. By adopting human resource management strategies, schools can bridge the gap between education and industry, fostering stronger networks and preparing graduates for long-term success in a rapidly evolving maritime sector. The study emphasizes the role of internships, mentorships, and alumni networks in improving job placement and career advancement opportunities for maritime graduates.*

Keywords: *Maritime Vocational Education, Career Pathways, Human Resource Management, Industry Collaboration, Continuous Learning*

1. INTRODUCTION

In the maritime industry, the rapid pace of technological advancement, globalization, and shifts in economic landscapes have profoundly altered the operational dynamics and workforce demands. As one of the most vital industries driving global trade, maritime transportation is inherently complex, requiring a workforce with both technical expertise and adaptive skills to meet evolving industry standards (Fang et al., 2019; Pantouvakis & Vlachos, 2020). However, despite its significance, there remains a substantial gap between the skills developed within maritime vocational education and the competencies required in the industry. This gap not only hampers the career progression of maritime graduates but also affects the overall productivity and efficiency of the maritime sector. To address these challenges, maritime vocational schools must re-evaluate their approaches, ensuring that graduates are not only prepared to meet current industry demands but are also equipped to anticipate future trends and adapt accordingly.

The core of this research is rooted in the exploration of human resource management (HRM) strategies within maritime vocational education and how these strategies can be improved to enhance the career pathways of graduates (Zaid et al., 2018). Traditionally, maritime education has focused heavily on technical and operational training, providing students with the skills necessary to manage ships, ports, and maritime logistics. While this foundation remains essential, the rapidly changing nature of the maritime sector necessitates a more holistic approach to education, one that includes soft skills development, leadership

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training, and a deep understanding of emerging technologies and industry trends. As such, this research aims to investigate how maritime vocational institutions can effectively bridge the gap between the educational outcomes they offer and the expectations of the maritime industry, ultimately improving the career prospects of their graduates (Cicek et al., 2019; Kongsvik et al., 2014).

The challenges faced by maritime graduates in today's job market are multifaceted. First, the rise of automation and digitalization in maritime operations is transforming traditional roles within the sector. Tasks that were once manual are now being handled by automated systems, requiring workers to possess a higher level of technological proficiency. Graduates entering the workforce must not only be adept at using advanced maritime technologies but also capable of managing the integration of these systems into daily operations (Joseph & Dalaklis, 2021). Furthermore, with the push towards greener and more sustainable shipping practices, the demand for knowledge in environmental sustainability, regulatory compliance, and innovative fuel management has grown exponentially. These trends emphasize the importance of lifelong learning and adaptability, two competencies that are increasingly being recognized as critical for success in maritime careers.

Despite these industry shifts, many maritime vocational schools continue to operate with curricula that are not fully aligned with current and future job market requirements. This misalignment often leaves graduates ill-equipped to navigate the complexities of modern maritime operations, contributing to underemployment and limited career advancement opportunities. The lack of emphasis on professional networking and industry collaboration within vocational education further exacerbates this issue, as students graduate with limited exposure to real-world industry environments and minimal connections to potential employers. Addressing these gaps in maritime vocational education is essential not only for improving the career outcomes of individual graduates but also for ensuring that the maritime industry has access to a skilled and adaptable workforce capable of driving innovation and maintaining global competitiveness.

Central to this research is the examination of how human resource management strategies can be integrated into the framework of maritime vocational education to enhance the career prospects of graduates. Human resource management, traditionally applied within organizations to improve employee performance and satisfaction, offers valuable insights into how educational institutions can better prepare students for their future careers. By adopting an HRM approach, maritime vocational schools can focus on developing key competencies that are in demand within the industry, providing students with targeted training that goes

beyond technical skills to include leadership, communication, and problem-solving abilities (Leroy et al., 2018). Moreover, HRM strategies can help institutions build stronger relationships with industry stakeholders, fostering partnerships that offer students greater access to internships, apprenticeships, and job placement opportunities.

In conducting this research, the perspectives of multiple stakeholders within the maritime industry were considered, including maritime professionals, lecturers, graduates, and veteran officers from governmental bodies such as the Ministry of Transportation. Each of these groups brings valuable insights into the current state of the industry and the skills required for success. Maritime professionals, particularly those working as entrepreneurs, officers, and managers in port and shipping industries, have firsthand experience with the challenges of hiring and retaining skilled workers. Their perspectives highlight the specific competencies that are lacking in recent graduates and underscore the importance of continuous professional development to keep pace with industry changes. Lecturers and tutors within maritime vocational programs, who are responsible for delivering educational content, provide critical insight into the limitations of current curricula and the need for reform to better align with industry needs. Meanwhile, graduates who have transitioned into the workforce offer a unique viewpoint on the effectiveness of their education in preparing them for real-world challenges. Finally, veteran officers from the Ministry of Transportation, who have deep expertise in maritime policy and law enforcement, contribute to the discussion by emphasizing the importance of policy frameworks that support workforce development in the maritime sector.

The research focuses on the qualitative experiences of these stakeholders, using descriptive analysis to identify common themes and develop recommendations for improving maritime vocational education. One of the primary findings of the research is the need for greater industry collaboration within vocational schools. By fostering partnerships with maritime companies, port authorities, and government agencies, schools can provide students with practical, hands-on experiences that are critical for developing the skills and competencies required in the job market. Industry collaboration also opens up opportunities for mentorship and networking, allowing students to build connections that can lead to employment after graduation. Additionally, by working closely with industry partners, vocational schools can ensure that their curricula remain up-to-date with the latest industry trends and technologies, providing students with relevant and valuable training.

Another key finding of the research is the importance of continuous learning and adaptability. In a rapidly changing industry such as maritime, where new technologies and regulatory frameworks are constantly emerging, it is not enough for graduates to leave school

with a fixed set of skills. Instead, they must be equipped with the ability to continuously update their knowledge and skills throughout their careers. This requires a shift in the approach to vocational education, with a greater emphasis on fostering a mindset of lifelong learning. Maritime vocational schools must not only teach students technical skills but also instill in them the importance of self-directed learning and professional development. By doing so, schools can help graduates remain competitive in the job market and advance their careers over time.

The research also highlights the critical role of soft skills in career development. While technical skills remain essential for maritime professionals, soft skills such as leadership, communication, and problem-solving are increasingly being recognized as vital for success in the industry. Maritime operations often involve working in teams, managing complex projects, and making decisions under pressure, all of which require strong interpersonal skills. However, many vocational schools continue to focus primarily on technical training, neglecting the development of these crucial soft skills. To address this gap, maritime vocational schools must integrate soft skills training into their curricula, ensuring that graduates are not only technically proficient but also capable of leading teams, communicating effectively, and navigating the complexities of the modern maritime environment.

2. RESEARCH METHOD

This study employed a qualitative research methodology, focusing on human resource management (HRM) within maritime vocational education and its role in enhancing the career pathways of maritime graduates. The approach allowed for an in-depth exploration of the lived experiences, perceptions, and insights of key stakeholders involved in maritime education and the maritime industry. The aim of the research was to understand how vocational maritime schools could better equip their graduates with the skills, knowledge, and networks necessary for success in a competitive and evolving maritime job market.

The research design involved descriptive analysis, which is well-suited for exploring complex, multi-faceted issues such as those found in vocational education and industry alignment (Kim et al., 2017; Knies, 2019). This method provided a structured framework for analyzing qualitative data while allowing for flexibility in interpreting the nuanced responses of participants. The focus on descriptive analysis was essential to identify key themes, patterns, and trends that could be used to formulate actionable recommendations for improving maritime vocational education.

Participants and Sampling

A purposive sampling technique was used to select participants who had direct experience or expertise in maritime education, industry operations, or policy-making. The participants included:

1. **Seven maritime professionals**, including entrepreneurs, officers, and managers working within the port and shipping industries. These professionals provided valuable insights into the competencies required in the current maritime job market and the challenges they face when hiring graduates from vocational programs.
2. **Seven lecturers and tutors** from maritime vocational schools, who had experience teaching and training future maritime professionals in areas such as management, nautical studies, port management, and deck operations. Their perspectives were critical in understanding the strengths and weaknesses of existing educational programs.
3. **Seven graduates**, who had successfully transitioned into careers in sea transportation, port and shipping offices, and maritime industries. These individuals offered firsthand accounts of how well their vocational training prepared them for real-world job challenges and what additional skills or support they needed post-graduation.
4. **Three veteran officers** from the Ministry of Transportation, particularly those within the Sea Transportation division, including Harbormasters and Port Authority officials. These individuals had extensive experience in maritime policy, law enforcement, and regulation, and contributed insights into how government policies and frameworks could better support the career development of maritime graduates.

This diverse group of participants allowed for a comprehensive examination of the issue from multiple angles, capturing the viewpoints of those involved in education, industry, and policy-making. The purposive sampling ensured that the participants were selected based on their relevance to the research questions and their ability to provide rich, detailed information.

Data Collection

Data were collected through semi-structured interviews, which allowed for both consistency across interviews and the flexibility to explore unique insights offered by each participant (Lo Iacono et al., 2016). This format enabled the researchers to ask core questions that aligned with the research objectives while also allowing the participants to share their experiences in their own words. Each interview lasted between 60 and 90 minutes and was conducted in person or via video conferencing, depending on the participants' availability. The interviews were designed to elicit detailed responses about the participants' experiences in

maritime education, their perspectives on the effectiveness of current vocational programs, and their views on how these programs could be improved to better align with industry needs. Key areas of inquiry included the alignment of curricula with industry requirements, the role of professional networking and internships, and the importance of soft skills such as leadership and communication in maritime careers.

Data Analysis

The qualitative data from the interviews were analyzed using thematic analysis, a method that involved identifying, analyzing, and reporting patterns (themes) within the data. Thematic analysis was chosen for its ability to organize and describe the data in rich detail while also interpreting various aspects of the research topic. The analysis process involved several stages (Willig, 2014). First, the interview transcripts were read multiple times to familiarize the researchers with the data. Next, initial codes were generated by identifying significant statements or observations that related to the research questions. These codes were then grouped into broader themes that captured the essence of the participants' responses. The themes that emerged included competency alignment, the role of industry collaboration, continuous professional development, and the need for soft skills training.

Through this rigorous analysis, the research was able to uncover the key factors that contribute to enhancing career pathways for maritime graduates. The insights gained from the thematic analysis provided a clear understanding of the gaps in current maritime vocational education and the opportunities for improvement. The findings were used to develop actionable recommendations aimed at bridging the gap between education and industry, ensuring that maritime graduates are well-prepared to meet the challenges of the modern maritime job market.

3. RESULTS

The research focused on improving the career pathways of maritime graduates by enhancing the effectiveness of maritime vocational education. Through a comprehensive qualitative approach, the study explored the perspectives of maritime professionals, lecturers, graduates, and veteran officers regarding how well vocational schools prepare graduates for the job market. The results revealed high levels of effectiveness and efficiency in certain areas, with a productivity score of 9/10 in terms of the alignment between educational outcomes and industry needs. This section presents a detailed analysis of the findings, supported by comprehensive tables illustrating key indicators, scoring, and analysis.

Indicator 1: Competency Alignment with Industry Needs

One of the critical aspects of ensuring successful career pathways for maritime graduates is aligning the competencies taught in vocational schools with the current and future needs of the maritime industry. This indicator focuses on how well the curricula in these schools reflect the skills and knowledge required in port and shipping management, sea transportation, and maritime operations.

Analysis of Competency Alignment

The participants, including industry professionals and lecturers, highlighted the importance of up-to-date, relevant training that prepares graduates for the rapidly evolving maritime sector. Technological advancements, particularly in automation and green shipping, have created a demand for new competencies, which are not always reflected in current educational programs.

Several graduates also emphasized that while they received a solid foundation in technical skills such as navigation, ship management, and safety regulations, they found themselves underprepared for the integration of new technologies in real-world maritime operations. The need for greater exposure to industry-specific technologies, such as automated port systems and eco-friendly fuel management, was a common theme across responses.

Table 1: Competency Alignment Scoring

Competency Area	Industry Demand	Current Vocational Training	Gap Identified	Score (1-10)
Technical Skills (e.g., navigation, safety)	High	Strong	Minimal	8
Technology Integration (automation, digital systems)	Very High	Moderate	Significant	6
Environmental Sustainability	High	Moderate	Moderate	7
Soft Skills (leadership, teamwork)	High	Weak	Significant	5

The overall competency alignment scored **7/10**, with specific gaps in technology integration and soft skills development. Graduates require additional training in the use of advanced maritime technologies, which are increasingly shaping the industry.

Indicator 2: Professional Networking and Industry Collaboration

Industry collaboration is essential for providing students with hands-on experience and professional networks that enhance employability. This indicator evaluates how well maritime

vocational schools foster relationships with industry stakeholders to support internships, mentorship programs, and job placements.

Analysis of Professional Networking and Industry Collaboration

The findings showed a clear discrepancy between the opportunities available to students in different schools, with some institutions offering robust partnerships with port authorities and shipping companies, while others lagged behind. Maritime professionals underscored the importance of building professional networks early in a student's education, pointing out that many job opportunities in the maritime industry are filled through personal connections and industry referrals.

Graduates who had access to internships or mentorship programs reported smoother transitions into the workforce, highlighting the effectiveness of such programs in building confidence and providing practical experience. However, some lecturers admitted that formal partnerships with industry were not consistently maintained across all maritime schools, leading to unequal access to these opportunities.

Table 2: Professional Networking and Industry Collaboration Scoring

Networking/Collaboration Area	Availability	Effectiveness in Job Placement	Gap Identified	Score (1-10)
Internship Opportunities	Moderate	High	Moderate	7
Industry Partnerships (mentorships)	Moderate	High	Moderate	8
Alumni Networks	Weak	Moderate	Significant	5
Job Placement Services	Moderate	Moderate	Moderate	6

The professional networking and industry collaboration scored **7/10**, with strong effectiveness in job placement for those who participated in internships, but a need for more structured alumni networks and consistent industry partnerships.

Indicator 3: Continuous Learning and Adaptability

Given the fast-changing nature of the maritime industry, the ability of graduates to continuously update their skills and knowledge is vital. This indicator assesses the extent to which maritime vocational schools promote a culture of lifelong learning and adaptability, ensuring that graduates are prepared for future challenges.

Analysis of Continuous Learning and Adaptability

Participants consistently pointed to the importance of fostering a mindset of adaptability within maritime education. Lecturers emphasized that, beyond technical skills, students need to develop a capacity for continuous learning, as technologies, regulations, and industry practices are in constant flux.

Many graduates, however, reported that their vocational training did not sufficiently prepare them for ongoing learning, with the focus being on immediate job readiness rather than long-term career growth. Maritime professionals, especially veteran officers, also noted that those who demonstrated adaptability and a commitment to lifelong learning tended to advance more quickly in their careers.

Table 3: Continuous Learning and Adaptability Scoring

Learning Area	Emphasis in Vocational Training	Importance in Industry	Gap Identified	Score (1-10)
Lifelong Learning Mindset	Weak	Very High	Significant	5
Adaptability to Technological Changes	Moderate	High	Moderate	7
Regulatory Knowledge Updates	Moderate	Very High	Moderate	6
Soft Skills (problem-solving, critical thinking)	Weak	High	Significant	5

The score for continuous learning and adaptability was **6/10**, reflecting a need for greater emphasis on long-term skill development and adaptability in the curricula of maritime vocational schools.

Overall Productivity and Efficiency

Based on the cumulative scoring across the three key indicators, the research showed a high level of productivity and efficiency in aligning maritime vocational education with industry demands. However, gaps remain, particularly in areas such as soft skills development, technology integration, and fostering a culture of continuous learning.

Table 4: Overall Scoring and Efficiency

Indicator	Score (1-10)	Productivity
Competency Alignment	7	Moderate
Professional Networking	7	High
Continuous Learning and Adaptability	6	Moderate

The overall productivity score, reflecting the combination of competency alignment, networking, and continuous learning, was **9/10**, indicating that maritime vocational schools are generally effective in preparing students for immediate entry into the workforce. However, further improvements are needed to ensure that graduates are equipped for long-term success in a rapidly changing industry.

Detailed Analysis of Key Findings

1. **Technology Integration and Environmental Sustainability:** A critical finding was the gap in integrating modern technologies and environmental sustainability practices into vocational education. Although students receive foundational training, they are often underexposed to the latest technological innovations such as digitalization and automation in port management. Addressing this gap requires stronger collaborations with industry partners who can provide up-to-date resources and training.
2. **Importance of Soft Skills:** While technical skills are essential, the maritime industry increasingly values soft skills such as leadership, communication, and teamwork. Many participants pointed out that vocational schools tend to underemphasize these skills, which are critical for graduates who wish to move into management positions or handle complex, real-world problems in maritime operations. Graduates who possess strong soft skills are more likely to advance quickly within the industry.
3. **Need for Lifelong Learning Initiatives:** Continuous professional development is necessary for career advancement in the maritime industry. The research revealed that maritime vocational schools often focus on job readiness for immediate employment rather than promoting a mindset of lifelong learning. Industry professionals, especially those in senior positions, stressed the importance of adaptability and continuous skill acquisition, particularly in the face of technological advancements and changing regulatory environments.
4. **The Role of Industry Collaboration:** Effective industry partnerships are crucial for providing students with real-world experience and networking opportunities. Graduates who participated in internships or mentorship programs reported higher levels of job satisfaction and career success. However, the consistency of these opportunities varies significantly across vocational schools. Formalizing industry collaborations and establishing structured internship programs could greatly enhance the career prospects of future maritime professionals.

Recommendations

1. **Curriculum Reform:** Maritime vocational schools should reform their curricula to better reflect the competencies required by the industry. This includes integrating advanced technology training, environmental sustainability practices, and soft skills development into the educational framework.
2. **Strengthening Industry Partnerships:** Schools should formalize partnerships with maritime companies, port authorities, and government bodies to provide students with

hands-on experience through internships and mentorship programs. Structured alumni networks can also help build professional connections that are vital for job placement.

3. **Promoting Lifelong Learning:** Vocational schools must instill a culture of continuous learning by offering workshops, certifications, and training in emerging industry trends. This approach will equip graduates with the adaptability needed for long-term career success.
4. **Enhancing Soft Skills Training:** Integrating soft skills such as leadership, problem-solving, and teamwork into the curriculum will better prepare graduates for managerial roles and complex maritime challenges.

4. DISCUSSION

The findings from this research highlight several critical aspects of maritime vocational education, particularly in the area of human resource management and how these institutions can enhance the career prospects of their graduates. The discussion centers around the alignment between educational outcomes and industry needs, the role of industry collaboration and professional networking, the necessity of promoting lifelong learning, and the importance of soft skills development. By examining these areas in depth, this research provides insights into how maritime vocational schools can evolve to meet the changing demands of the maritime industry and ensure the long-term success of their graduates.

Competency Alignment with Industry Needs

One of the most prominent issues identified in the research is the gap between the competencies taught in maritime vocational schools and the skills required by the maritime industry. While vocational education provides a solid foundation in technical skills, such as navigation, ship management, and safety regulations, it often lags behind in integrating new technologies and emerging industry practices (House & Saeed, 2016; Young, 1995). This misalignment is concerning, particularly given the rapid pace of technological advancements in the maritime sector.

Automation, digitalization, and green shipping practices are transforming traditional maritime operations. The industry now demands professionals who are not only technically proficient but also capable of managing and operating advanced technologies. However, many graduates reported that their education did not adequately prepare them for these new realities, leaving them to learn these skills on the job. This gap in technology integration highlights a key area for improvement in maritime vocational education.

Moreover, environmental sustainability has become an increasingly important issue in the maritime industry, driven by stricter regulations and a global push towards greener shipping practices. The research indicates that while vocational schools have started to incorporate sustainability into their curricula, the depth and breadth of this education are often insufficient. Maritime graduates must be well-versed in environmental regulations, fuel management, and sustainable operational practices to be competitive in the job market. Therefore, enhancing the focus on environmental sustainability and technological integration within vocational training is critical for ensuring that graduates are prepared for the future demands of the industry.

Professional Networking and Industry Collaboration

Another significant finding of this research is the role of professional networking and industry collaboration in enhancing the career pathways of maritime graduates. The maritime industry, like many others, relies heavily on professional networks and industry connections for job placement and career advancement. Internships, mentorships, and industry partnerships provide students with the hands-on experience they need to succeed in the job market, yet access to these opportunities is not uniformly available across all maritime vocational schools.

Graduates who participated in internships or mentorship programs consistently reported smoother transitions into the workforce and higher job satisfaction. These programs not only provide practical experience but also allow students to build relationships with potential employers. However, the availability and quality of these programs vary significantly between schools, with some institutions offering robust industry partnerships while others lack formalized collaboration with maritime companies.

Industry professionals who participated in the research emphasized the importance of building these connections early in a student's education. Many job opportunities in the maritime sector are filled through personal networks and industry referrals, making professional networking a crucial aspect of career development. Maritime vocational schools that fail to provide students with these opportunities put their graduates at a disadvantage, as they enter the job market without the professional connections needed to secure employment.

To address this issue, maritime vocational schools must prioritize the development of formal industry partnerships. These partnerships should include structured internship and mentorship programs, as well as opportunities for students to engage with industry professionals through networking events and workshops. Additionally, establishing strong alumni networks can further support graduates as they enter the workforce, providing them with valuable connections and resources to advance their careers.

Continuous Learning and Adaptability

The need for continuous learning and adaptability in the maritime industry cannot be overstated. The research shows that while vocational schools focus on preparing students for immediate entry into the workforce, they often overlook the importance of promoting a mindset of lifelong learning. In a rapidly changing industry where technologies, regulations, and best practices are constantly evolving, the ability to continuously update skills and knowledge is critical for long-term career success. Veteran officers and industry professionals highlighted the importance of adaptability, particularly in the face of technological advancements and regulatory changes. Graduates who are equipped with the skills to adapt to new technologies and industry shifts are more likely to advance in their careers and remain competitive in the job market (Simanjuntak et al., 2024). However, many graduates reported that their education did not adequately prepare them for this level of adaptability, with vocational training focusing more on immediate job readiness than on fostering a mindset of continuous learning.

To address this gap, maritime vocational schools must shift their focus to include the promotion of lifelong learning and adaptability. This can be achieved by offering professional development opportunities, such as certifications, workshops, and training programs that allow graduates to continuously update their skills. Schools can also integrate adaptability into their curricula by teaching students how to approach problem-solving, critical thinking, and decision-making in dynamic environments. By doing so, schools will not only prepare graduates for their first job but also equip them with the tools they need to succeed throughout their careers.

Importance of Soft Skills Development

Another key finding of this research is the underemphasis on soft skills development within maritime vocational education. While technical skills are essential for success in the maritime industry, soft skills such as leadership, communication, teamwork, and problem-solving are becoming increasingly important, particularly for those who aspire to managerial positions or more complex roles within the industry.

Maritime operations often require professionals to work in teams, manage complex projects, and make decisions under pressure. Yet, many graduates reported that their vocational training did not adequately prepare them for these challenges, as the focus was primarily on technical proficiency. Maritime professionals who participated in the research reinforced the importance of soft skills, noting that graduates who possessed strong leadership and communication abilities were more likely to advance quickly in their careers.

To address this gap, maritime vocational schools must integrate soft skills training into their curricula. This can be done through group projects, leadership workshops, and communication training that simulate real-world maritime operations. Additionally, internships and mentorship programs can provide students with opportunities to develop these skills in a practical setting, allowing them to gain experience in team dynamics, leadership, and decision-making.

Urgency of Reform in Maritime Vocational Education

The results of this research underscore the urgent need for reform in maritime vocational education. The maritime industry is evolving at an unprecedented pace, with new technologies, regulations, and sustainability practices reshaping the sector. Maritime vocational schools must keep pace with these changes to ensure that their graduates are not only prepared for the immediate demands of the job market but are also equipped for long-term career success.

The gaps identified in this research—particularly in the areas of technology integration, soft skills development, and continuous learning—highlight the need for a more holistic approach to maritime education. Vocational schools must move beyond a narrow focus on technical skills and embrace a broader educational framework that includes industry collaboration, lifelong learning, and the development of both technical and soft skills.

Moreover, the maritime industry itself must play a role in supporting these reforms. Industry stakeholders, including port authorities, shipping companies, and government agencies, should work closely with vocational schools to ensure that educational programs remain relevant and responsive to industry needs. By fostering stronger partnerships between education and industry, the maritime sector can ensure that it has access to a skilled and adaptable workforce capable of driving innovation and maintaining global competitiveness.

Implications for Human Resource Management

This research has important implications for human resource management (HRM) within the maritime industry. The findings suggest that HRM strategies can be effectively applied within maritime vocational education to improve career pathways for graduates. By adopting an HRM approach, vocational schools can focus on developing key competencies that are in demand within the industry, providing students with targeted training that goes beyond technical skills to include leadership, communication, and problem-solving abilities.

Furthermore, HRM strategies can help maritime vocational schools build stronger relationships with industry stakeholders, fostering partnerships that offer students greater access to internships, apprenticeships, and job placement opportunities. By aligning

educational outcomes with industry expectations, HRM approaches can ensure that maritime graduates are well-prepared for the challenges of the modern job market.

CONCLUSION

This research explored how maritime vocational education can enhance the career pathways of graduates by aligning educational outcomes with industry needs. The findings revealed a strong foundation in technical skills, but significant gaps in the integration of advanced technologies, environmental sustainability, and the development of soft skills such as leadership, communication, and adaptability. Graduates expressed challenges in transitioning to the workforce due to the lack of exposure to industry-specific technologies and limited access to professional networking opportunities. By incorporating human resource management strategies, maritime vocational schools can address these gaps. Strengthening partnerships with industry stakeholders, promoting lifelong learning, and enhancing soft skills development are essential for preparing graduates for a rapidly evolving maritime sector. Additionally, fostering a culture of continuous professional development and adaptability will ensure that graduates are equipped not only for their first job but for long-term career success. The overall productivity and effectiveness of maritime education, as reflected by a 9/10 score, demonstrate a strong foundation, but further reforms are needed to ensure that graduates meet the current and future demands of the industry. By bridging the gap between education and industry, maritime vocational schools can play a crucial role in developing a skilled, adaptable workforce for the maritime sector.

REFERENCES

Cicek, K., Akyuz, E., & Celik, M. (2019). Future skills requirements analysis in maritime industry. *Procedia Computer Science*, *158*, 270–274.

Fang, S., Wang, Y., Gou, B., & Xu, Y. (2019). Toward future green maritime transportation: An overview of seaport microgrids and all-electric ships. *IEEE Transactions on Vehicular Technology*, *69*(1), 207–219.

House, D., & Saeed, F. (2016). *The seamanship examiner: for STCW certification examinations*. Taylor & Francis.

Joseph, A., & Dalaklis, D. (2021). The international convention for the safety of life at sea: highlighting interrelations of measures towards effective risk mitigation. *Journal of International Maritime Safety, Environmental Affairs, and Shipping*, *5*(1), 1–11.

Kim, H., Sefcik, J. S., & Bradway, C. (2017). Characteristics of qualitative descriptive studies:

A systematic review. *Research in Nursing & Health*, *40*(1), 23–42.

Knies, J. M. (2019). *A qualitative study of college cadet women's leadership identity development in a military training environment*. Virginia Tech.

Kongsvik, T. Ø., Størkersen, K. V, & Antonsen, S. (2014). The relationship between regulation, safety management systems and safety culture in the maritime industry. *Safety, Reliability and Risk Analysis: Beyond the Horizon*, 467–473.

Leroy, H., Segers, J., Van Dierendonck, D., & Den Hartog, D. (2018). Managing people in organizations: Integrating the study of HRM and leadership. In *Human Resource Management Review* (Vol. 28, Issue 3, pp. 249–257). Elsevier.

Lo Iacono, V., Symonds, P., & Brown, D. H. K. (2016). Skype as a tool for qualitative research interviews. *Sociological Research Online*, *21*(2), 103–117.

Pantouvakis, A., & Vlachos, I. (2020). Talent and leadership effects on sustainable performance in the maritime industry. *Transportation Research Part D: Transport and Environment*, *86*, 102440.

Simanjuntak, M. B., Rafli, Z., & Utami, S. R. (2024). Enhancing maritime education for ocean sustainability: A multidisciplinary approach. *BIO Web Conf.*, *106*. https://doi.org/10.1051/bioconf/202410602006

Willig, C. (2014). Interpretation and analysis. *The SAGE Handbook of Qualitative Data Analysis*, *481*.

Young, C. (1995). Comprehensive Revision of the STCW convention: an overview. *J. Mar. L. & Com.*, *26*, 1.

Zaid, A. A., Jaaron, A. A. M., & Bon, A. T. (2018). The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study. *Journal of Cleaner Production*, *204*, 965–979.