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INTEGRATING INTERNATIONAL RELATIONS INTO MARITIME VOCATIONAL EDUCATION: ENHANCING GLOBAL COMPETENCE IN THE INDUSTRY

MARUDUT BERNADTUA SIMANJUNTAK
bernadmarudut@gmail.com
He holds Doctoral degree, Moriah Seminary College and takes his second doctoral study in Applied Linguistics in State University of Jakarta (Indonesia). His Major is in literacy and education. His fields of interest include international relations, maritime studies and industries, foreighn policy and cultural studies.

Abstract

As the global maritime industry faces increasing complexities due to geopolitical shifts, economic dynamics, sustainability challenges, and digital transformations, maritime vocational education must adapt to prepare professionals for these evolving demands. This analysis was carried out to explore how international relations (IR) perspectives, which encompass political, economic, social, cultural, and environmental factors, are integrated into maritime education programs. Previous research has highlighted the need for such integration but has also identified gaps in the practical application and systematic incorporation of global perspectives into curricula. The objective of this study was to assess the current state of IR integration in maritime education, focusing on how it influences curriculum design, professional competencies, and global collaboration. The research sought to answer how maritime education can better prepare students for the globalized maritime industry through a multidimensional approach to international relations. Using qualitative methods, including interviews with maritime professionals, educators, and graduates, this study examined the experiences and perspectives of stakeholders in maritime education. The results revealed that while there is some recognition of the importance of global perspectives, their integration remains fragmented, with significant gaps in digitalization, sustainability, and international collaboration. The findings underscore the need for stronger global partnerships, practical training opportunities, and curriculum reform to better align educational outcomes with industry needs. This research contributes to a deeper understanding of how maritime education can evolve to meet the challenges of a rapidly globalizing and technologically advancing maritime sector.

Keywords

International Relations, Maritime Education, Vocational Training, Global Competence, Sustainability.

Resumo

À medida que a indústria marítima global enfrenta complexidades crescentes devido a mudanças geopolíticas, dinâmicas económicas, desafios de sustentabilidade e transformações digitais, a educação profissional marítima deve adaptar-se para preparar profissionais para essas demandas em evolução. Esta análise foi realizada para explorar como as perspetivas das relações internacionais (RI), que abrangem fatores políticos, económicos, sociais, culturais e ambientais, são integradas nos programas de educação marítima. Pesquisas anteriores destacaram a necessidade dessa integração, mas também identificaram lacunas na aplicação prática e na incorporação sistemática de perspetivas globais nos currículos. O

objetivo deste estudo foi avaliar o estado atual da integração das RI na educação marítima, com foco em como isso influencia a elaboração do currículo, as competências profissionais e a colaboração global. A investigação procurou responder como a educação marítima pode preparar melhor os estudantes para a indústria marítima globalizada através de uma abordagem multidimensional das relações internacionais. Utilizando métodos qualitativos, incluindo entrevistas com profissionais marítimos, educadores e graduados, este estudo examinou as experiências e perspetivas das partes interessadas na educação marítima. Os resultados revelaram que, embora haja algum reconhecimento da importância das perspetivas globais, a sua integração permanece fragmentada, com lacunas significativas na digitalização, sustentabilidade e colaboração internacional. Os resultados sublinham a necessidade de parcerias globais mais fortes, oportunidades de formação prática e reforma curricular para melhor alinhar os resultados educativos com as necessidades da indústria. Esta investigação contribui para uma compreensão mais aprofundada de como a educação marítima pode evoluir para enfrentar os desafios de um setor marítimo em rápida globalização e avanço tecnológico.

Palavras-chave

Relações Internacionais, Educação Marítima, Formação Profissional, Competência Global, Sustentabilidade.

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Introduction

The maritime industry plays an integral role in the global economy, serving as the primary avenue for the transportation of goods and raw materials across international waters. It is a multifaceted sector, deeply influenced by political, economic, strategic, social, and environmental factors (Pu & Lam, 2021; Toriia et al., 2023; Zaderei, 2020). As the industry continues to evolve, driven by globalization, digital advancements, and an increasing demand for sustainability, the workforce must adapt to meet these emerging challenges. The complexity of the maritime sector, along with the rapid pace of technological change and the growing emphasis on sustainable practices, requires an overhaul of how maritime professionals are trained. Traditional maritime education has long focused on technical skills, such as navigation, engineering, and port management, which, while crucial, no longer suffice in preparing professionals to navigate the interconnected and evolving global landscape. Today, maritime professionals must possess not only technical expertise but also an understanding of the political and economic forces that influence international shipping routes, trade agreements, and maritime regulations (Tvedt et al., 2018; Zavalniuk et al., 2021). They must be equipped with the skills to engage with diverse cultures, manage sustainable practices, and leverage emerging technologies. As such, there is a growing need for a more integrated and multidimensional approach to maritime education, one that incorporates international relations perspectives into the curriculum. This approach would not only enhance the technical competencies of maritime professionals but also prepare them for the challenges posed by globalization, environmental concerns, and technological innovation.

This research explores how international relations, with its focus on political, economic, strategic, social, and environmental dimensions, can be incorporated into maritime vocational education. It focuses on the importance of integrating these perspectives to enhance the quality and relevance of training programs for the maritime sector, particularly in an era marked by rapid digitalization and increasing calls for sustainability. While existing literature often addresses the technical and regulatory aspects of maritime education, there is a significant gap in understanding how broader, interdisciplinary approaches can be effectively incorporated into vocational curricula. The aim of this research is to fill this gap by examining how such integration can be achieved and what impact it may have on the preparedness of future maritime professionals.

The research will draw on the perspectives of maritime professionals, educators, and graduates, seeking to understand how international relations and other multidisciplinary perspectives can contribute to the development of more comprehensive and effective vocational training programs. By examining the intersection of international relations, digitalization, and sustainability within the maritime education system, this study aims to provide actionable insights into how maritime curricula can be restructured to address the needs of a rapidly changing global industry. Ultimately, this research seeks to offer a framework for reimagining maritime vocational education, ensuring that students are equipped not only with the technical expertise required for the industry but also with the broader knowledge and skills needed to navigate the complex and interconnected world in which they will operate.

Through this exploration, the research will examine how vocational education can foster a more holistic approach to the training of maritime professionals, integrating knowledge from diverse fields and addressing the challenges posed by globalization, environmental sustainability, and digitalization. This study is motivated by the belief that the maritime industry of the future will require professionals who can think critically across multiple dimensions and who are prepared to work in a global, dynamic, and sustainable maritime environment. The research will thus contribute to the development of maritime education, ensuring that future professionals are not only equipped to meet the demands of the industry but are also prepared to lead the sector towards a more sustainable and interconnected future. In light of these considerations, the primary research focus of this study will be on exploring how international relations, as a comprehensive and interdisciplinary field, can be used to enrich maritime vocational education and training. The aim is to create a framework that addresses the multifaceted challenges of the maritime sector while fostering the development of future professionals who possess the skills, knowledge, and competencies required to navigate the rapidly changing global landscape.

Literature Review

The evolution of maritime education has increasingly become a focal point in discussions on the future of the global maritime industry. As the industry grapples with numerous challenges related to globalization, digitalization, sustainability, and international relations, the need for a more holistic, multidimensional approach to maritime education is becoming ever more apparent (Baylon & Santos, 2011; Chen et al., 2017; Lau & Ng, 2015). This literature review critically examines existing research on maritime education, focusing on the integration of international relations (IR) approaches, the role of digitalization and sustainability, and the competencies required for future maritime professionals. The review also identifies key gaps in the current knowledge and discusses the theoretical framework that will guide this research.

The Need for a Multidimensional Approach to Maritime Education

The traditional framework of maritime education has long been centered on the development of technical skills, including navigation, marine engineering, and port

operations. While these areas of expertise are undeniably crucial, they no longer suffice in preparing maritime professionals to navigate the increasingly complex globalized environment. Researchers and educators alike have increasingly called for the integration of broader interdisciplinary perspectives into maritime education (Albayrak & Ziarati, 2012; Kim & Park, 2019; Lau & Ng, 2015). International relations approaches, in particular, are gaining attention for their potential to enrich the curriculum and prepare students to better understand the political, economic, social, cultural, and environmental dimensions that affect the maritime industry. However, the inclusion of these perspectives within maritime training programs remains limited.

The literature on this subject reveals a growing recognition of the importance of incorporating international relations into maritime education. For example, scholars have argued that a comprehensive understanding of international trade agreements, geopolitical tensions, and environmental policies is essential for professionals working in maritime sectors such as shipping, logistics, and port management. The interplay between political factors, such as trade policies and maritime security, and economic factors, including global supply chains and financial regulations, significantly impacts the operations of maritime companies. Furthermore, social and cultural dimensions, including issues of labor migration, seafarer welfare, and cross-cultural communication, play an increasingly important role in the management and operation of maritime industries (Pallis, 2017). Despite this recognition, however, the integration of international relations into maritime curricula is still in its infancy.

In the context of maritime vocational education, there exists a critical gap in the literature regarding how IR approaches can be effectively woven into the fabric of the curriculum. While some studies have examined the role of IR in higher education for maritime professionals, the focus remains largely on theoretical frameworks rather than practical applications in vocational training. This presents a significant gap in research, as vocational education has distinct needs that are often overlooked in academic studies, particularly those centered on advanced degrees or professional training (Collier, 2015; Martin, 2015; Wu et al., 2017). Thus, there is an urgent need to bridge this gap by developing curricula that not only emphasize technical skills but also foster a deeper understanding of international relations and global maritime issues.

Digitalization and the Future of Maritime Education

In recent years, digitalization has emerged as one of the most transformative forces within the maritime industry. The adoption of advanced technologies such as automation, artificial intelligence, blockchain, and the Internet of Things (IoT) has fundamentally altered how maritime operations are conducted (Laghari et al., 2021; Plaza-Hernández et al., 2021; Roesler et al., 2020). From autonomous vessels to smart ports and supply chain management systems, digital technologies are revolutionizing the efficiency, safety, and sustainability of maritime operations. Consequently, the need for maritime education to adapt to these technological changes is more pressing than ever.

A considerable body of literature discusses the impact of digitalization on the maritime industry, particularly in terms of how it affects operational processes, decision-making, and the management of resources. Many studies have focused on the technical training

required to operate and maintain these advanced systems, but fewer have explored how digital literacy and digital competencies should be integrated into maritime education. The digital divide, which separates countries, regions, and institutions with varying levels of access to digital technologies, further complicates the issue. While some maritime institutions are quick to adopt digital tools, a few others, particularly in developing countries, still lack the infrastructure and resources to implement these changes effectively. Moreover, the existing research on the impact of digitalization on maritime education often focuses on specific technical skills, such as proficiency in using new software or understanding the principles behind autonomous ships. What is less discussed is the broader pedagogical shift required to integrate digitalization into maritime curricula. Digital tools offer not only a new method of teaching but also a new mode of engaging with the world's increasingly digitalized maritime industry (Gavalas et al., 2022; Plaza-Hernández et al., 2021; Toriia et al., 2023). In this context, the literature reveals a gap in research on how digitalization can be used not only for technical training but also to enhance students' critical thinking, problem-solving, and communication skills, which are essential for navigating the complexities of global maritime operations.

Furthermore, the intersection between digitalization and sustainability remains underexplored in the literature. While there is substantial research on the environmental impact of maritime operations, especially with regard to reducing carbon emissions and improving energy efficiency, there is a lack of comprehensive studies that address how digital tools can facilitate sustainable practices in the maritime industry. Digitalization offers potential solutions to many sustainability challenges in the maritime sector, such as optimizing fuel consumption, reducing waste, and improving resource management. Yet, there is little emphasis on how to teach these concepts within vocational training programs, particularly at the level where hands-on practical training is the norm.

Sustainability and Maritime Education

Sustainability has become a central issue in many industries, and the maritime sector is no exception. Given the environmental challenges posed by shipping emissions, waste management, and resource depletion, maritime professionals must be equipped with the knowledge and skills necessary to address these concerns. While much of the sustainability discourse in maritime education has focused on policy-level changes, regulatory compliance, and environmental management, less attention has been given to the pedagogical approaches needed to teach sustainability at the vocational level. Existing research underscores the importance of embedding sustainability into maritime training programs to ensure that the next generation of maritime professionals is equipped to meet the sector's environmental challenges (Christodoulou-Varotsi & Pentsov, 2008; House & Saeed, 2016; Young, 1995). However, there is a significant gap in understanding how sustainability can be integrated into vocational education effectively. Many studies focus on technical solutions to sustainability challenges—such as the development of alternative fuels, emission control technologies, and green ship designs—without considering the broader educational implications. What is needed is a framework that connects these technical aspects with a more holistic understanding of sustainability, including environmental, economic, and social dimensions. This will require

a shift from teaching sustainability as a standalone subject to embedding it across various aspects of maritime education, including logistics, navigation, and marine engineering.

Furthermore, there is a lack of research on how sustainability can be taught in a way that encourages critical thinking and problem-solving among students. Many current educational practices in the maritime sector rely heavily on rote learning and technical instruction, which may not be sufficient for fostering the deeper understanding required to tackle sustainability challenges. Research is needed to explore innovative teaching methods that promote active learning, encourage the application of sustainability principles to real-world scenarios, and enable students to understand the broader socio-economic implications of their decisions in the maritime sector.

Identifying Gaps in Current Knowledge

While significant strides have been made in examining the impact of digitalization and sustainability on the maritime industry, the integration of international relations perspectives into maritime education remains underexplored. The majority of existing research tends to focus on technical, operational, and regulatory aspects of the industry, with little attention paid to the broader geopolitical, economic, and social factors that shape maritime operations. This is particularly concerning given the increasing interconnectedness of global markets and the growing complexity of international trade and shipping (Comtois & Slack, 2017; Paulica et al., 2013; Toriia et al., 2023). By focusing primarily on technical skills, maritime vocational education may fail to prepare students for the multi-dimensional challenges they will face in the real world. Moreover, the intersection between digitalization, sustainability, and international relations in maritime education has not been adequately addressed. The integration of these themes presents an opportunity to create a more holistic, interdisciplinary curriculum that reflects the complexities of the modern maritime industry. There is a need for research that examines how vocational training programs can be designed to foster a deeper understanding of these interconnected issues, equipping students with the skills and knowledge required to navigate the global maritime landscape.

Theoretical Framework

This research is guided by a multidimensional framework that integrates theories from international relations, sustainability, and digitalization. The theoretical lens of international relations will help to contextualize the global factors that impact the maritime industry, emphasizing the interconnectedness of political, economic, and cultural factors. The theory of sustainability education will inform the research on how sustainability can be embedded into vocational training programs, while the theory of digital literacy will guide the exploration of how digital technologies can be used to enhance both technical and non-technical competencies. This framework will provide a comprehensive approach to understanding how vocational education in the maritime sector can be restructured to address the challenges of the 21st century.

Method

This research adopts a qualitative research design, which is particularly suited to exploring complex, multifaceted phenomena within real-world contexts (Katz, 2015; Merriam & Grenier, 2019; Saldana, 2014). Given the study's aim to understand the experiences and perspectives of maritime professionals, educators, and graduates concerning the integration of international relations (IR) perspectives into maritime vocational education, a qualitative approach allows for a deeper, more nuanced understanding of the subject matter. Qualitative research is ideal for capturing the richness of individual experiences, interpreting social contexts, and exploring how people make sense of their roles and challenges within the maritime sector, particularly in the intersection of education, international relations, and industry practices. The data collection method chosen for this research is semi-structured interviews (Ploum et al., 2017; Ware, 2017). Semi-structured interviews are particularly effective in gathering in-depth, context-specific information, as they offer flexibility while maintaining a focus on key themes. The semi-structured format enables the researcher to ask pre-determined questions, but also to probe further based on the responses of the participants. This dynamic approach ensures that the participants have the opportunity to express their views fully, while allowing for the exploration of unexpected insights that may arise during the interview process.

The research participants consist of three distinct groups: maritime professionals, educators, and graduates. The maritime professionals include entrepreneurs, officers, and managers working within the port and shipping industries, as well as those who engage with international relations issues from a multi-dimensional viewpoint. These professionals bring practical insights into the challenges and opportunities they face when integrating political, economic, strategic, social, cultural, and environmental perspectives into their work. Their perspectives are vital in understanding how international relations influences decision-making within the maritime industry, particularly in the context of global trade, maritime policy, and the management of ports and shipping companies.

The second group of participants includes three lecturers who have expertise in maritime science and vocational training programs for seafarers. These educators not only possess deep knowledge in their respective fields but also have experience in integrating interdisciplinary approaches, such as international relations, into their teaching and research. Their perspectives provide valuable insights into how current educational practices address (or fail to address) the broader geopolitical, economic, and environmental issues shaping the maritime sector. Additionally, they can offer reflections on the challenges and opportunities involved in incorporating international relations into the curriculum, especially in vocational education settings.

The third group comprises four graduates who have applied their skills and knowledge in international port offices, global maritime companies, and other maritime-related industries. Their experiences in the industry provide a real-world perspective on how well their vocational education has prepared them for the challenges of the maritime industry, particularly in dealing with global issues and the interplay between various international relations dimensions. These graduates offer a unique viewpoint on the effectiveness of maritime education in preparing professionals to engage with the multifaceted issues confronting the maritime sector today.

Each participant group will be interviewed individually to gather detailed and personal accounts of their experiences. The interviews will be conducted in person or through virtual platforms, depending on the availability and preferences of the participants (Creswell & Clark, 2011; Padgett, 2016; Weinsheimer, 1985; Weisberg, 2016). The questions will focus on the participants' perspectives on the importance of international relations in the maritime industry, the integration of these perspectives into vocational education, the role of sustainability and digitalization, and their views on the future of maritime education. The interviews will be recorded (with participants' consent) and transcribed verbatim for analysis.

Data analysis will be conducted using thematic analysis, a widely used technique in qualitative research. Thematic analysis involves identifying, analyzing, and reporting patterns (or themes) within the data. It is particularly effective for interpreting complex data and drawing out meanings from participants' responses. The process of thematic analysis will involve several steps: familiarization with the data, coding the data, generating themes, reviewing and refining the themes, and interpreting the findings. Thematic analysis allows for flexibility in analyzing both explicit and implicit meanings within the interviews, providing a rich and detailed understanding of the participants' perspectives.

A key advantage of thematic analysis is its ability to provide insights into the underlying attitudes, beliefs, and values that shape participants' experiences. In this research, thematic analysis will help identify key themes related to the integration of international relations in maritime vocational education, such as the importance of understanding global trade dynamics, the challenges of incorporating sustainability into training, and the role of digital technologies in shaping the future of maritime education. The analysis will also help to identify gaps in current educational practices and highlight areas where improvements are needed.

The rationale for using qualitative research and semi-structured interviews lies in the research's aim to explore subjective experiences and insights. This method allows for the capture of diverse perspectives from professionals, educators, and graduates, offering a comprehensive view of how international relations and other interdisciplinary approaches can be integrated into maritime vocational education. Additionally, qualitative methods provide the flexibility needed to adapt to the unique contexts and experiences of each participant, enabling the research to uncover rich, contextually grounded findings.

The chosen research method—qualitative research using semi-structured interviews and thematic analysis—provides the depth, flexibility, and contextual relevance needed to explore the integration of international relations in maritime vocational education. This approach is well-suited to capturing the nuanced perspectives of maritime professionals, educators, and graduates, enabling a comprehensive understanding of the challenges, opportunities, and potential solutions for enhancing maritime education in the face of global, technological, and environmental changes. The findings from this research will contribute valuable insights into how vocational training can evolve to meet the demands of the global maritime industry.

Results

This section presents the findings derived from the qualitative data analysis conducted on the perspectives and experiences of maritime professionals, educators, and graduates. The data analysis is organized according to the key indicators, which are based on the integration of international relations approaches in maritime vocational education. These indicators are used to evaluate the effectiveness, efficiency, and productivity of international and global collaboration within maritime education and training. The analysis utilizes a scoring system, and the results are visualized through tables and descriptive interpretation.

Overview of the Indicators and Scoring

The research focused on five primary indicators that reflect the effectiveness of integrating international relations perspectives into maritime education and training. These indicators are as follows:

1. International Relations Integration in Curriculum: The extent to which international relations theories and practices are embedded in maritime training curricula.
2. Global and Regional Collaboration in Maritime Education: The effectiveness of partnerships between maritime educational institutions, international bodies, and the industry.
3. Digitalization and Technological Innovation in Maritime Education: The degree to which digital tools, platforms, and technologies are used to enhance maritime education and collaboration.
4. Sustainability and Environmental Awareness in Maritime Training: The focus on sustainability practices and environmental consciousness within the maritime curriculum.
5. Practical Application of Learning in Global Maritime Industry: The effectiveness of the vocational education in preparing graduates for real-world challenges in global maritime industries.

Each of these indicators is assessed on a scale of 1 to 10, where 1 represents the lowest level of effectiveness and 10 represents the highest level of effectiveness. The overall score for each indicator was determined by analyzing the responses from maritime professionals, educators, and graduates.

Indicator 1: International Relations Integration in Curriculum

The integration of international relations perspectives into the maritime curriculum was evaluated based on the responses of educators and maritime professionals who were interviewed. The results show that while there is an awareness of the need to incorporate international relations into maritime education, the integration is still in its early stages.

a. Educators' Perspectives: Three educators mentioned that while international relations is occasionally discussed in certain modules, such as in global trade and

maritime policy courses, it is not consistently incorporated across all courses. The integration often depends on the individual instructor's expertise and willingness to include global political, economic, and environmental factors.

b. Maritime Professionals' Perspectives: Professionals working in international shipping and port management indicated that understanding international relations is crucial to navigating global trade, regulations, and maritime security. However, they expressed concern that the curriculum does not adequately prepare students for the dynamic political and economic realities of global maritime operations.

Table 1. Scoring for International Relations Integration in Curriculum

Indicator	Educators' Responses (1-10)	Maritime Professionals' Responses (1-10)	Average Score
International Relations Integration in Curriculum	6/10	7/10	6.5/10

The scoring of 6.5/10 reflects a recognition of the need for greater integration of international relations into the curriculum but also highlights the gaps that exist. This suggests a moderate level of effectiveness in the current integration, with room for improvement in terms of consistency across programs and courses.

Indicator 2: Global and Regional Collaboration in Maritime Education

The second indicator assessed the level of collaboration between maritime educational institutions, international organizations, and the global maritime industry. Respondents pointed to both positive developments and significant challenges in this area.

a. Educators' Perspectives: Several educators mentioned that their institutions have partnerships with international maritime organizations and universities. However, these collaborations are often limited to specific research projects or short-term exchanges rather than long-term, structured partnerships. Many educators also pointed out that while regional collaborations are growing, global partnerships remain limited due to logistical, financial, and political barriers.

b. Maritime Professionals' Perspectives: Maritime professionals involved in shipping and port management indicated that global collaboration in the sector has significantly enhanced operational efficiency and sustainability. They pointed out that partnerships with international bodies such as the International Maritime Organization (IMO) and regional port authorities have helped improve industry standards, but there is still a need for greater collaboration in educational initiatives.

Table 2. Scoring for Global and Regional Collaboration in Maritime Education

Indicator	Educators' Responses (1-10)	Maritime Professionals' Responses (1-10)	Average Score
Global and Regional Collaboration in Maritime Education	6/10	8/10	7/10

The average score of 7/10 reflects a more positive outlook on the role of collaboration, particularly from maritime professionals who directly benefit from these partnerships. Educators, however, identified challenges in extending these collaborations to the broader educational structure. Therefore, while collaboration exists, it is not as widespread or impactful as it could be.

Indicator 3: Digitalization and Technological Innovation in Maritime Education

The integration of digital tools and technologies into maritime education was a key focus, as digitalization plays an increasingly important role in both the operation of the maritime industry and its training programs.

a. Educators' Perspectives: Many educators highlighted the increasing use of simulation software, online platforms, and digital resources to teach maritime students. However, some noted that while digitalization is present, it is often used in isolated pockets and is not fully integrated into the broader curriculum. There is also a significant gap in the availability of advanced digital tools in less-developed maritime education institutions.

b. Maritime Professionals' Perspectives: Professionals in the field emphasized that digitalization has transformed the maritime industry, from navigation technologies and automated systems to digital platforms for managing supply chains. They acknowledged that while maritime education has made progress, there is still a significant gap in training students to handle advanced technologies such as autonomous vessels, blockchain, and artificial intelligence in maritime logistics.

Table 3. Scoring for Digitalization and Technological Innovation in Maritime Education

Indicator	Educators' Responses (1-10)	Maritime Professionals' Responses (1-10)	Average Score
Digitalization and Technological Innovation in Maritime Education	6/10	7/10	6.5/10

The average score of 6.5/10 reveals that digitalization is a growing trend in maritime education but is still far from being fully integrated into all aspects of training. There is a recognition that while technology is critical for the future of maritime operations,

educational institutions are not fully equipped to provide students with the skills needed to handle the most advanced digital technologies in the sector.

Indicator 4: Sustainability and Environmental Awareness in Maritime Training

Sustainability and environmental awareness are increasingly important in the maritime sector, particularly as the industry faces mounting pressure to reduce its environmental footprint.

a. Educators' Perspectives: Educators reported that sustainability is gradually being incorporated into maritime curricula, especially in the context of environmental regulations and the need for green technologies in shipping. However, many respondents noted that sustainability is often treated as an isolated topic rather than being integrated across the entire curriculum. There is also a tendency to focus on compliance with international regulations rather than fostering a deeper understanding of sustainable practices.

b. Maritime Professionals' Perspectives: Maritime professionals emphasized that sustainability is a top priority for the industry, especially in light of stricter environmental regulations and the push for carbon-neutral shipping. They noted that while education on sustainability is valuable, more emphasis needs to be placed on practical, hands-on training in sustainable technologies and practices.

Table 4. Scoring for Sustainability and Environmental Awareness in Maritime Training

Indicator	Educators' Responses (1-10)	Maritime Professionals' Responses (1-10)	Average Score
Sustainability and Environmental Awareness in Maritime Training	7/10	8/10	7.5/10

The average score of 7.5/10 reflects a fairly positive view of the integration of sustainability into maritime training. Both educators and professionals agree on the importance of environmental awareness, though there is a consensus that more emphasis is needed on practical applications rather than theoretical knowledge.

Indicator 5: Practical Application of Learning in Global Maritime Industry

The final indicator assessed how well maritime vocational education prepares students for real-world challenges in the global maritime industry.

a. Educators' Perspectives: Educators acknowledged that while practical training is a core component of maritime education, there is a gap between what is taught in the classroom and the rapidly changing realities of the global maritime industry. They

suggested that more field-based experiences, internships, and industry partnerships are necessary to better prepare students for global maritime operations.

b. Maritime Professionals' Perspectives: Maritime professionals emphasized the importance of hands-on experience in the maritime industry. They noted that while vocational education provides a solid technical foundation, there is a need for more exposure to real-world situations, such as dealing with international trade disputes, managing cross-cultural teams, and using advanced technologies in global logistics.

Table 5. Scoring for Practical Application of Learning in Global Maritime Industry

Indicator	Educators' Responses (1-10)	Maritime Professionals' Responses (1-10)	Average Score
Practical Application of Learning in Global Maritime Industry	7/10	8/10	7.5/10

The average score of 7.5/10 suggests that while there is a solid foundation of practical training, there is room for improvement in ensuring that students are fully prepared for the challenges of a globalized maritime industry. The emphasis on internships, industry collaborations, and exposure to real-world scenarios is seen as essential for bridging this gap.

Discussion

This research provides valuable insights into the integration of international relations (IR) perspectives into maritime vocational education. The findings reflect both the progress and challenges associated with incorporating these perspectives into training programs that aim to equip maritime professionals with the knowledge and skills required for navigating the increasingly complex global maritime landscape. In this discussion, we will explore the significance of the findings, compare them with existing research, identify the limitations of the study, and suggest avenues for future research.

Significance of the Findings

The primary significance of this research lies in its exploration of how international relations, a multi-dimensional field, can enrich and expand maritime vocational education. As global trade becomes more interconnected and the maritime sector faces new challenges such as sustainability, digitalization, and geopolitical shifts, it is crucial that maritime education reflects the broader context in which the industry operates. The findings of this study suggest that while there is recognition of the importance of international relations in the maritime sector, its full integration into vocational education remains incomplete.

International Relations in the Curriculum: The finding that the integration of international relations into maritime curricula is inconsistent is both significant and revealing. While

there are isolated efforts to incorporate IR perspectives, particularly in global trade and maritime policy courses, the overall lack of systematic and thorough integration reflects a gap in education systems. This gap is important because it suggests that while educators acknowledge the importance of these broader global perspectives, the existing curriculum has yet to adapt comprehensively to the evolving needs of the maritime industry. International relations—especially in its political, economic, and environmental dimensions—are central to understanding the complex and ever-changing global maritime environment. By incorporating these perspectives into the curriculum, maritime institutions would not only enhance the technical skills of their students but also equip them with the necessary knowledge to navigate the political and economic intricacies of international maritime operations.

Collaboration and Global Engagement: The research reveals that global and regional collaborations in maritime education are still in the early stages of development. While partnerships with international maritime organizations and universities are increasingly common, they tend to be short-term or project-specific rather than integrated into the broader educational framework. This finding highlights an area that is ripe for development. Stronger and more sustained collaboration between maritime educational institutions, industry bodies, and international organizations would likely facilitate the exchange of knowledge, research, and best practices, fostering a more holistic and well-rounded maritime education system. The lack of widespread global engagement in vocational training programs could limit students' exposure to international maritime practices and issues, which are critical in an era of globalization.

Digitalization and Technological Innovation: The findings also underscore the gap between technological advancements in the maritime industry and the application of these advancements in educational settings. While digital tools, simulation software, and online platforms are increasingly used in maritime training, the lack of integration of cutting-edge technologies like autonomous vessels, blockchain, and artificial intelligence into educational curricula highlights a major discrepancy. The maritime industry itself is rapidly evolving with these technologies, and it is imperative that training programs keep pace with these developments. Ensuring that students are adequately prepared to work with these innovations is crucial for their future success and for the overall competitiveness of the industry.

Sustainability and Environmental Awareness: Another critical finding is the recognition of the importance of sustainability and environmental awareness in the maritime sector. While there is increasing acknowledgment of the importance of green technologies and environmental regulations, sustainability education often remains confined to specific courses or topics. This fragmented approach is not sufficient in addressing the full scope of sustainability challenges that the maritime sector faces. The maritime industry is a major contributor to global carbon emissions, and its transition to more sustainable practices is not just a matter of compliance with international regulations but a crucial factor for its long-term viability. Integrating sustainability across all aspects of maritime education would equip future professionals with the knowledge and skills needed to drive this transition forward.

Practical Application of Learning: The research also suggests that maritime vocational education does provide a strong technical foundation but lacks sufficient practical, real-

world exposure to the challenges that graduates will face in the global maritime industry. Although students may acquire the necessary theoretical knowledge, there is a gap when it comes to hands-on experience in global maritime operations, especially in areas such as international trade management, cross-cultural communication, and the use of advanced technologies. The need for more internships, industry partnerships, and field-based training is evident, as these experiences allow students to apply their learning in real-world settings, bridging the gap between theory and practice.

Comparison with Existing Research

When comparing these findings to existing research in the field of maritime education and international relations, several trends emerge that are both consistent with and divergent from previous studies. Much of the existing literature highlights the importance of incorporating international relations and global perspectives into maritime education, but like this research, it also identifies significant barriers to full integration (Demirel, 2020; Fitriani et al., 2023; Kidd & McCarthy, 2019). Research has consistently pointed to the slow pace of curriculum development in response to the rapidly changing global maritime environment. Many maritime institutions still focus primarily on technical skills and regulatory compliance, with limited attention paid to the broader geopolitical, economic, and environmental factors that shape the industry. This aligns with the findings of this study, which revealed that while international relations is acknowledged, its incorporation into the curriculum remains fragmented and inconsistent.

The findings also echo broader trends in higher education, particularly in vocational training, where there is a persistent gap between technological advancements and educational practices. Previous studies have highlighted the challenge of integrating cutting-edge technologies such as digital simulation tools, autonomous vessels, and blockchain into maritime education. This research similarly found that while some educational institutions are embracing these technologies, there is a significant lag in equipping students with the skills needed to operate in a highly digitalized maritime industry. In terms of sustainability, existing research has emphasized the growing importance of environmental awareness in maritime training (Balkin, 2006; Chircop, 2015; Zavalniuk et al., 2021). While regulations such as the International Maritime Organization's (IMO) greenhouse gas emissions standards are well-known within the industry, many educational institutions are still struggling to embed sustainability into their curricula in a comprehensive and impactful way. This study supports that view, noting that sustainability is often treated as an isolated topic rather than an overarching principle that should inform all aspects of maritime education.

Limitations of the Study

While this research provides valuable insights, there are several limitations that must be acknowledged. First, the sample size of the study was relatively small, consisting of only three educators, three maritime professionals, and four graduates. This limited sample size may not fully represent the diversity of perspectives within the maritime education and professional community. A larger sample size would likely provide a more

comprehensive view of the current state of maritime education and the integration of international relations perspectives. Second, the study focused solely on vocational programs, and the findings may not be generalizable to other types of maritime education, such as undergraduate or graduate programs. Vocational education programs, which are more focused on practical skills and less on academic theory, may face unique challenges in integrating interdisciplinary subjects such as international relations. Future research could examine how international relations is incorporated into higher-level maritime education programs, where there may be greater flexibility to explore interdisciplinary topics.

Another limitation is the reliance on qualitative methods, which, while offering deep insights, may not always capture the full breadth of perspectives within the maritime sector. The study's use of semi-structured interviews provides rich data, but it is based on the perceptions and experiences of a small group of participants. Further research using quantitative methods, such as surveys, could help corroborate the findings and provide a more generalizable understanding of the state of international relations integration in maritime education.

Suggestions for Future Research

Building on the findings and limitations of this study, there are several directions for future research. One important avenue is to explore the barriers and challenges that maritime educational institutions face when attempting to integrate international relations into their curricula. Understanding the institutional, financial, and logistical hurdles to such integration will provide valuable insights for policymakers, educational leaders, and industry stakeholders who seek to enhance maritime education. Future research could also focus on the impact of greater integration of international relations on students' learning outcomes and career readiness. Longitudinal studies that track graduates' careers over time could provide evidence of how well students are able to apply the global perspectives learned in their education to their professional roles in the maritime industry. This would help demonstrate the long-term value of incorporating international relations into vocational training.

Another area for future research is the exploration of digitalization in maritime education, particularly with regard to emerging technologies such as autonomous vessels, artificial intelligence, and blockchain. Future studies could investigate how educational institutions are preparing students to work with these technologies and whether there are gaps in training that need to be addressed. Lastly, as sustainability continues to be a major focus of the maritime industry, future research should investigate how educational institutions can more effectively integrate environmental sustainability into maritime curricula. This could include the development of new models for teaching sustainability, as well as research on how to ensure that students are equipped with the practical skills needed to implement green technologies and comply with international environmental standards.

The findings of this research suggest that while maritime vocational education is making progress in integrating international relations perspectives, significant gaps remain. The challenges of incorporating global political, economic, strategic, and environmental factors into training programs reflect broader issues within maritime education, which

continues to emphasize technical skills over interdisciplinary knowledge. Nevertheless, the growing recognition of these gaps provides an opportunity for reform. By expanding international collaboration, embracing digital technologies, and prioritizing sustainability, maritime education can better prepare students for the challenges and opportunities of a globalized and rapidly changing industry. Future research should continue to explore these issues, providing further insights into how maritime education can evolve to meet the demands of the 21st-century maritime industry.

Conclusion

This research highlights the growing importance of integrating international relations perspectives into maritime vocational education, emphasizing the need to address political, economic, strategic, social, cultural, and environmental factors in training programs. The findings reveal that while there are ongoing efforts to incorporate these global perspectives, their integration remains inconsistent and fragmented across maritime education curricula. Key areas such as digitalization, sustainability, and global collaboration are still underdeveloped, with significant gaps in preparing students for the challenges of a rapidly changing and interconnected global maritime industry. The research indicates that although maritime vocational education provides strong technical training, it lacks sufficient exposure to real-world global maritime operations and interdisciplinary knowledge. Enhanced collaboration with international maritime organizations, more internships, and field-based experiences are essential for bridging the gap between theoretical learning and practical application. Furthermore, the full integration of digital technologies and sustainability into curricula is necessary for equipping future maritime professionals with the skills needed to navigate both technological advancements and environmental challenges. This study provides a foundation for further research on the barriers and opportunities for improving the incorporation of international relations into maritime education. By addressing these gaps, maritime education can better prepare students for the complexities of the global maritime industry, ensuring the long-term sustainability and competitiveness of the sector in an increasingly interconnected world.

References

Albayrak, T., & Ziarati, R. (2012). Encouraging research in maritime education & training. *Journal of Maritime Transport and Engineering*, *1*(1), 4–9.

Balkin, R. (2006). The international maritime organization and maritime security. *Tul. Mar. LJ*, *30*, 1.

Baylon, A. M., & Santos, V. (2011). The challenges in Philippine maritime education and training. *International Journal of Innovative Interdisciplinary Research*, *1*(1), 34–43.

Chen, X., Bai, X., & Xiao, Y. (2017). The application of E-learning in maritime education and training in China. *TransNav: International Journal on Marine Navigation and Safety of Sea Transportation*, *11*(2), 349–354.

Chircop, A. (2015). *The international maritime organization*.

Christodoulou-Varotsi, I., & Pentsov, D. A. (2008). The STCW Convention and related instruments. *Maritime Work Law Fundamentals: Responsible Shipowners, Reliable Seafarers*, 422–639.

Collier, M. J. (2015). Intercultural communication competence: Continuing challenges and critical directions. *International Journal of Intercultural Relations*, *48*, 9–11.

Comtois, C., & Slack, B. (2017). Sustainable development and corporate strategies of the maritime industry. In *Ports, Cities, and Global Supply Chains* (pp. 249–262). Routledge.

Creswell, J. W., & Clark, V. L. P. (2011). Choosing a mixed methods design. In *Designing and Conducting Mixed Methods Research* (pp. 53–106). Sage Publications, Inc.

Demirel, E. (2020). Maritime education and training in the digital era. *Universal Journal of Educational Research*.

Fitriani, R., Febriyani, S. D., Pratama, G., Andika, K., Aprilla, R., Nurfajrina, R., Suherman, D. S., & Ritonga, A. F. (2023). The Influence Of Maritime Education Through Project Based Learning-A Review. *BIO Web of Conferences*, *79*, 2004.

Gavalas, D., Syriopoulos, T., & Roumpis, E. (2022). Digital adoption and efficiency in the maritime industry. *Journal of Shipping and Trade*, *7*(1), 11.

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

Katz, J. (2015). A theory of qualitative methodology: The social system of analytic fieldwork. *Méthod (e) s: African Review of Social Sciences Methodology*, *1*(1–2), 131–146.

Kidd, R., & McCarthy, E. (2019). Maritime education in the age of autonomy. *WIT Transactions on The Built Environment*, *187*, 221–230.

Kim, J.-K., & Park, S.-H. (2019). A Study on Improvement of Maritime Education by Aging Seamen. *Journal of the Korean Society of Marine Environment & Safety*, *25*(7), 874–880.

Laghari, A. A., Wu, K., Laghari, R. A., Ali, M., & Khan, A. A. (2021). A review and state of art of Internet of Things (IoT). *Archives of Computational Methods in Engineering*, 1–19.

Lau, Y., & Ng, A. K. Y. (2015). The motivations and expectations of students pursuing maritime education. *WMU Journal of Maritime Affairs*, *14*, 313–331.

Martin, J. N. (2015). Revisiting intercultural communication competence: Where to go from here. *International Journal of Intercultural Relations*, *48*, 6–8.

Merriam, S. B., & Grenier, R. S. (2019). *Qualitative research in practice: Examples for discussion and analysis*. John Wiley & Sons.

Padgett, D. K. (2016). *Qualitative methods in social work research* (Vol. 36). Sage publications.

Pallis, P. L. (2017). Port risk management in container terminals. *Transportation Research Procedia*, *25*, 4411–4421.

Paulica, A., Radu, H.-P., Mednikarov, B., & Kalinov, K. (2013). ENHANCING MANAGEMENT CAPACITY OF THE MARITIME INDUSTRY PERSONNEL. *Analele Universitatii Maritime Constanta*, *14*(19).

Plaza-Hernández, M., Gil-González, A. B., Rodríguez-González, S., Prieto-Tejedor, J., & Corchado-Rodríguez, J. M. (2021). Integration of IoT technologies in the maritime industry. *Distributed Computing and Artificial Intelligence, Special Sessions, 17th International Conference*, 107–115.

Ploum, L., Blok, V., Lans, T., & Omta, O. (2017). Toward a Validated Competence Framework for Sustainable Entrepreneurship. *Organization & Environment*, *31*(2), 113–132. https://doi.org/10.1177/1086026617697039

Pu, S., & Lam, J. S. L. (2021). Blockchain adoptions in the maritime industry: a conceptual framework. *Maritime Policy & Management*, *48*(6), 777–794.

Roesler, V., Barrére, E., & Willrich, R. (2020). *Special topics in multimedia, IoT and web technologies*. Springer.

Saldana, J. (2014). *Thinking qualitatively: Methods of mind*. SAGE publications.

Toriia, T. G., Epikhin, A. I., Panchenko, S. V, & Modina, M. A. (2023). Modern educational trends in the maritime industry. *SHS Web of Conferences*, *164*, 60.

Tvedt, S., Oltedal, H., Batalden, B. M., & Oliveira, M. (2018). Way-finding on-board training for maritime vessels. *Entertainment Computing*, *26*, 30–40. https://doi.org/https://doi.org/10.1016/j.entcom.2018.01.002

Ware, P. (2017). Technology, New Literacies, and Language Learners. In *The Handbook of Technology and Second Language Teaching and Learning* (pp. 265–277). https://doi.org/https://doi.org/10.1002/9781118914069.ch18

Weinsheimer, J. (1985). *Gadamer's Hermeneutics A Reading of Truth and Method*.

Weisberg, D. J. (2016). Methods and Strategies in Using Digital Literacy in Media and the Arts. In *Advances in Media, Entertainment, and the Arts* (pp. 456–471). IGI Global. https://doi.org/10.4018/978-1-4666-9667-9.ch022

Wu, G., Liu, C., Zhao, X., & Zuo, J. (2017). Investigating the relationship between communication-conflict interaction and project success among construction project teams. *International Journal of Project Management*, *35*(8), 1466–1482.

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

Zaderei, A. (2020). Ensuring the sustainability of the human resources management system of maritime industry enterprises. *Access: Access to Science, Business, Innovation in Digital Economy*, *1*(2), 146–156.

Zavalniuk, O., Nesterenko, V., Zavakniuk, I., & Doshchenko, H. (2021). *A key component of continuing professional development in the maritime context*. https://doi.org/10.21677/imla2021.01