Assessment of the Role of Maritime Education Institute in Enhancing Maritime Education Standards in Tanzania. A Case of Dar es Salaam Maritime Institute

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Abstract

Purpose: This study assessed the role of maritime education institutions in enhancing education standards in Tanzania, focusing on the Dar es Salaam Maritime Institute (DMI). It examined the effectiveness of DMI's training programs, their alignment with international standards, key challenges, and proposed improvements.

Methodology: Using a descriptive mixed-methods design, data were collected from 115 students and alumni through questionnaires, and 21 faculty members through interviews.

Findings: Analysis showed that while DMI's curriculum aligns well with STCW standards and delivers strong theoretical knowledge, gaps remain in practical training, technology access, and internship opportunities.

Unique Contribution to Theory, Policy and Practice: The study supports the Competency-Based Education (CBE) theory, highlights the need for policy support and infrastructure investment, and offers practical recommendations to strengthen DMI's capacity to produce industry-ready maritime professionals.

Keywords: *Maritime education, DMI, Tanzania, Curriculum, Industry standards, Competency-based training*

1.0 Introduction

Maritime education and training are essential for developing skilled professionals in a sector that handles over 80% of global trade (IMO, 2023). As the maritime industry evolves through technological innovation, regulatory changes, and increased trade demands, institutions must continuously update their curricula to meet modern industry standards (World Maritime University, 2023). Tanzania, with its 1,424 km coastline and major ports like Dar es Salaam, Tanga, and Mtwara, depends heavily on maritime activities, which handle over 95% of its international trade (Tanzania Ports Authority, 2023). However, the country faces challenges such as outdated infrastructure, skill shortages, and limited research in emerging maritime technologies, issues common in many developing nations (Mashauri & Johnson, 2023).

To address these gaps, the Dar es Salaam Maritime Institute (DMI) was established under Act No. 22 of 1991, evolving from the earlier Dar es Salaam Maritime Training Unit (DMTU) of 1978. As a member of the International Association of Maritime Universities (IAMU), DMI adheres to international standards, particularly the STCW Convention, to ensure graduates are globally competitive (IMO, 2024).

Despite these efforts, Tanzania still faces a significant shortage of maritime professionals, especially in marine engineering, navigation, and port operations (East African Community, 2023). Globally, there's a shortfall of over 89,000 officers, disproportionately affecting developing nations (IMO, 2023). Countries like the Philippines and Greece have tackled similar issues through investment in training and industry collaboration, offering models Tanzania can learn from (Becker-Heins, 2024). Technological change has reshaped maritime training, requiring digital navigation, automation, and environmental sustainability to be part of modern curricula (World Maritime University, 2023). Yet, in Tanzania, limited access to simulators and funding restricts progress. Advanced training tools are vital for bridging skill gaps (International Chamber of Shipping, 2023), as shown in countries like Norway and South Korea that have excelled through simulation technologies and academic-industry partnerships (Kraska, 2021).

Additionally, many maritime curricula in developing nations remain misaligned with current industry demands, leading to poor graduate employability. Successful institutions like the Australian Maritime College have overcome this by collaborating with industry to revise training approaches (Johnson et al., 2022). Gender inclusivity is another global concern, with women comprising only 2% of the seafaring workforce (ILO, 2023). Countries like Canada and the Netherlands are improving participation through gender-sensitive policies and scholarships (Kitada & Bhirugnath-Bhookhun, 2024), offering strategies that Tanzania could emulate. Given these global and local trends, DMI's role in closing the maritime skills gap in Tanzania is more important than ever. However, its ability to meet international standards, adopt new technologies, and respond to labor market needs requires closer evaluation (Mkono, 2024).

1.2 Statement of the Problem

The maritime industry is vital to Tanzania's economy, handling over 90% of the country's international trade via sea transport (Tanzania Ports Authority, 2023). Despite the establishment of the Dar es Salaam Maritime Institute (DMI) to address the shortage of qualified maritime professionals, the sector continues to face major challenges impacting its efficiency and global competitiveness (IMO, 2023).

One of the key issues is the misalignment between DMI's training programs and industry demands. Graduates often lack practical skills, leading to underemployment and persistent workforce gaps. This is further worsened by outdated training facilities, limited access to modern simulation tools, and insufficient hands-on training resources (International Chamber of Shipping, 2023). In contrast, countries like Norway and South Korea have overcome similar issues through investment in advanced simulators and robust industry-academic partnerships (Kraska, 2021). Although efforts such as curriculum reforms and international collaborations have been initiated by the government and stakeholders to improve maritime education (Daily News, 2023), these measures have not fully addressed existing skill gaps (Mashauri & Johnson, 2023). Therefore, this study seeks to assess the effectiveness of DMI in enhancing maritime education standards in Tanzania, addressing both the theoretical and practical dimensions required by the industry.

1.3 Objective of the Study

1.3.1 Main Objective

The main objective of this study was be to assess the role of maritime education institutions in enhancing maritime education standards in Tanzania, with a specific focus on the Dar es Salaam Maritime Institute (DMI).

1.4.2 Specific Objective

Specifically, the study aims to achieve the following specific objectives;

i.   To evaluate the effectiveness of maritime education and training programs offered by DMI in meeting industry standards.

ii. To examine the extent to which DMI's programs align with maritime industry standards and professional requirements, ensuring that graduates are well prepared for the workforce.

iii. To identify and analyze the challenges faced by DMI in providing quality maritime education.

iv. To propose solutions and strategies for addressing the challenges faced by DMI in the provision of maritime education.

Literature Review

2.1 Theoretical Framework

Competency-Based Education (CBE) Theory, developed by John Dewey and later expanded by David McClelland, emphasizes mastery of practical skills over traditional academic achievement (Açıkgöz & Babadoğan, 2021). At Dar es Salaam Maritime Institute (DMI), CBE offers a flexible, outcome-driven model where student progression is based on demonstrated competencies. This ensures training is directly aligned with industry demands and global maritime standards. Given the hands-on nature of maritime careers in navigation, marine engineering, and port management, CBE is highly relevant to DMI's training approach (World Maritime University, 2023). This study used CBE to evaluate whether DMI's curriculum imparts essential skills and complies with international standards, particularly the IMO's Standards of Training, Certification, and Watchkeeping (IMO, 2024). Ultimately, the theory supports assessing how well DMI prepares students for real-world roles and enhances their global employability.

2.2 Empirical Literature Review

An empirical literature review systematically examines previous studies that align with the specific objectives of a research study. It focuses on analyzing data, methodologies, and findings from existing empirical research to identify trends, gaps, and best practices in the field (Creswell, 2018).

2.2.1 Effectiveness of Maritime Education and Training Programs Offered by DMI

The Dar es Salaam Maritime Institute (DMI) plays a crucial role in producing skilled maritime professionals through programs that meet both national and international standards. Its curriculum is structured around the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), offering a combination of theoretical and practical training in areas such as navigation, engineering, and maritime law (Kiplimo & Ikua, 2017). DMI has also established strong partnerships with maritime organizations, shipping firms, and port authorities, which enhance student learning by providing internships, guest lectures, and exposure to real-world practices (Massami & Manyasi, 2019; Ojode, 2021). These collaborations not only improve student readiness but also help build professional networks that support career development. The global recognition of DMI qualifications, driven by international accreditation, active alumni networks, and strong career support services, has made its graduates highly employable both locally and internationally (Kamuhabwa, 2019; DMI, n.d.). However, limited access to modern facilities and funding constraints continue to affect the effectiveness of practical training at the institution (Massami & Manyasi, 2019).

2.2.2 Contribution of DMI Programs in Alignment with Maritime Education Standards

DMI's programs are well-aligned with both national education frameworks and international maritime standards. The courses follow the National Technical Awards (NTA) system, allowing progressive skills development from certificate to postgraduate levels (NACTVET, n.d.). The

institution maintains strict compliance with STCW guidelines, and its certification by NACTVET ensures adherence to national benchmarks while regular curriculum updates maintain global relevance. These updates are essential in a rapidly evolving maritime industry where outdated knowledge can quickly become obsolete (NACTVET, n.d.). Through international collaborations—such as with the Korea Institute of Maritime and Fisheries Technology (KIMFT)—students gain exposure to global maritime operations and receive hands-on training that strengthens their professional competencies (DMI News, 2024). DMI's investment in simulation labs and the use of alumni feedback loops also support the continuous refinement of its training programs to ensure they remain responsive to current and future industry demands (DMI, 2022; DMI Alumni, n.d.).

2.2.3 Challenges Facing DMI in Provision of Maritime Education

Despite its achievements, DMI faces multiple challenges that affect the quality of its maritime training. Infrastructure limitations, such as overcrowded classrooms, inadequate office space, and the lack of a dedicated training vessel, restrict the effectiveness of practical education—an essential component of maritime instruction (Daily News, 2022; Massami & Manyasi, 2019). Technological constraints are also prevalent, as the institute lacks advanced maritime simulators necessary for modern training in areas like ship maneuvering and emergency procedures (Massami & Manyasi, 2019). These shortages hinder student preparedness, especially as the maritime industry shifts toward automation, digital systems, and smart navigation. Additionally, DMI struggles with talent retention, as many qualified instructors and maritime professionals seek better opportunities abroad, resulting in a brain drain that affects academic quality (Ally et al., 2024). Gender disparities also remain a concern, with female students facing institutional and societal barriers that limit access and progression in maritime careers (Justesen et al., 2024). These multifaceted issues highlight the need for targeted reforms in infrastructure, faculty development, gender inclusivity, and funding mechanisms.

2.2.4 Solutions to the Challenges Facing DMI in Provision of Maritime Education

To address existing challenges and improve the quality of maritime education, DMI must prioritize investment in modern simulation technologies such as engine room and navigation simulators. These tools provide students with realistic training environments that cannot be replicated in traditional classrooms (IMO, 2017). Additionally, the curriculum should be regularly updated to maintain alignment with IMO-STCW standards and global maritime trends, including topics like automation, green shipping, and digital navigation systems (IMO, 2018; Kraska, 2011). This requires forming a dedicated review team that engages industry stakeholders and academic experts. Strengthening faculty capacity is equally essential; offering competitive salaries, professional development opportunities, and research grants can help attract and retain experienced instructors (World Bank, 2019; Glen, 2015). Expanding digital infrastructure, promoting gender inclusion through policy and training access, and forging international partnerships will further enhance

DMI's global competitiveness and institutional resilience (Shepard, 2014; Baatz, 2014; Gurses, 2015).

Research Methodology

3.1 Research Design and Approach

The study uses a descriptive and mixed-methods approach, combining structured surveys for quantitative data from students and alumni with interviews for qualitative insights from faculty members to provide a comprehensive evaluation of DMI's training programs.

3.2 Study Area

The study is conducted at the Dar es Salaam Maritime Institute (DMI), a leading institution offering specialized maritime training near the Port of Dar es Salaam, selected for its strategic importance and adherence to international standards.

3.3 Population of the Study

The target population includes 300 participants: current students, alumni, faculty members, and industry stakeholders, providing diverse perspectives on DMI's effectiveness in delivering relevant maritime education.

3.4 Sample Size

Using Slovin's formula with a 5% margin of error, the sample size was determined as 171 respondents to represent the views of the total population of 300 participants.

3.5 Sampling Techniques

A combination of proportional stratified, random, and purposive sampling was used, ensuring balanced representation across stakeholder groups, with specific focus on expertise for faculty selection.

3.5.1 Simple Random Sampling

Simple random sampling was applied to select students and alumni, giving each participant an equal chance of inclusion to minimize bias and ensure reliable findings.

3.5.2 Purposive Sampling

Purposive sampling was used to identify faculty members based on their direct involvement in teaching and curriculum development, capturing expert insights relevant to the study objectives.

3.6 Data Collection Methods

Data was collected using questionnaires for students and alumni and semi-structured interviews with faculty members, allowing both quantitative and qualitative insights into DMI's educational impact.

3.6.1 Questionnaires

Questionnaires gathered structured data from students and alumni, including both closed-ended and open-ended questions to assess program relevance and effectiveness.

3.6.2 Interview

Semi-structured interviews were conducted with faculty to explore complex issues and gather detailed insights on curriculum delivery and alignment with industry needs.

3.6.3 Justification of Methods

Combining questionnaires and interviews ensured comprehensive coverage of perspectives, with questionnaires providing broad quantitative data and interviews offering deeper qualitative understanding.

3.7 Data Analysis

Both quantitative and qualitative analysis techniques were used to interpret data, employing statistical tools for numerical responses and thematic analysis for interview transcripts.

3.7.1 Quantitative Data Analysis

Quantitative data was analyzed using tools like SPSS or Excel to generate descriptive statistics, frequencies, percentages, and visual representations of trends.

3.7.2 Qualitative Data Analysis

Thematic analysis was used to code interview data, identifying recurring themes to capture nuanced perspectives from faculty and industry experts.

Findings

4.1 Effectiveness of DMI's Maritime Education and Training Programs

This section presents findings related to the effectiveness of the Dar es Salaam Maritime Institute's (DMI) education and training programs. The analysis was guided by the objective of evaluating how well DMI prepares students for professional maritime roles through theoretical instruction, practical training, and skills development.

4.1.1 Usage of Teaching Approaches in Maritime Training at DMI

This section presents findings on how frequently various teaching methods are used in the delivery of maritime education at the Dar es Salaam Maritime Institute (DMI). The results are summarized in Table 1.

Table 1: Frequency of Use of Teaching Approaches in Maritime Training at DMI (N = 115)

Training Methodology	Very Frequently	Frequently	Occasionally	Rarely	Never
Classroom Lectures	70 (61%)	30 (26%)	10 (9%)	5 (4%)	0 (0%)
Practical Sessions	40 (35%)	45 (39%)	20 (17%)	7 (6%)	3 (3%)
Simulation Training	25 (22%)	35 (30%)	30 (26%)	15 (13%)	10 (9%)
Shipboard Training	10 (9%)	20 (17%)	35 (30%)	30 (26%)	20(17%)
Industry Attachments	15 (13%)	28 (24%)	37 (32%)	25 (22%)	10 (9%)
Research Projects	50 (43%)	40 (35%)	15 (13%)	10 (9%)	0 (0%)

Source: Field Data (2025)

As shown in Table 1, classroom lectures were the most frequently used instructional method, with 61% of respondents indicating they were used very frequently and 26% frequently, reflecting DMI's strong theoretical foundation. Practical sessions were also widely utilized, with 74% reporting regular use, reinforcing the role of hands-on learning in maritime education. Simulation training was moderately applied, with 52% indicating frequent use, though 22% reported it was rarely or never used, pointing to limitations in resource availability.

Shipboard training had the lowest application, with only 26% of respondents reporting frequent use and 43% indicating rare or no use, highlighting limited real-world maritime exposure. This suggests a gap in access to sea-time training, which is essential for skill development. Meanwhile, research projects were highly integrated into the curriculum, with 78% of respondents indicating frequent or very frequent engagement, demonstrating strong academic involvement.

4.1.2 Student Satisfaction with Core Elements of Maritime Education at DMI

The researcher further examined respondents' satisfaction levels with specific components of the Dar es Salaam Maritime Institute's (DMI) education programs. Respondents rated their satisfaction using a five-point Likert scale: Very Satisfied, Satisfied, Neutral, Dissatisfied, and Very Dissatisfied. The results are presented in Table 2 below.

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Table 2: Satisfaction Ratings on Key Components of Maritime Education at DMI (N = 115)

Aspect	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Curriculum relevance to industry	50 (43%)	42 (37%)	12(10%)	8 (7%)	3 (3%)
Quality of instructors	65 (57%)	35 (30%)	10 (9%)	4 (3%)	1 (1%)
Training facilities & equipment	28 (24%)	40 (35%)	22(19%)	15 (13%)	10 (9%)
Practical training opportunities	35 (30%)	38 (33%)	20(17%)	15 (13%)	7 (6%)
Access to modern maritime tech	20 (17%)	30 (26%)	25(22%)	25 (22%)	15 (13%)
Internship/sea-time opportunities	15 (13%)	25 (22%)	35(30%)	25 (22%)	15 (13%)
Assessment methods	40 (35%)	48 (42%)	17(15%)	8 (7%)	2 (2%)

Source: Field Data (2025)

The findings from Table 2 reveal varied satisfaction levels with key aspects of DMI's maritime education programs. Curriculum relevance and instructor quality were highly rated, with 80% and 87% satisfaction respectively, showing alignment with industry standards. Additionally, 77% of respondents were satisfied with assessment methods, indicating effective evaluation of skills. These results highlight DMI's strong academic foundation in course content and teaching.

However, satisfaction was lower in areas related to practical training and facilities. Only 59% were satisfied with training facilities and equipment, while 22% were dissatisfied, suggesting infrastructure gaps. Practical training received mixed feedback with 63% satisfied and 19% dissatisfied, and access to modern maritime technologies was notably low at 43% satisfaction and 35% dissatisfaction. Internship and sea-time opportunities also raised concerns, with just 35% satisfied and 35% dissatisfied, indicating challenges in securing adequate hands-on experience.

4.1.3 Students' Preparedness in Key Maritime Skills

The researcher also sought to assess the extent to which the academic and practical training offered at the Dar es Salaam Maritime Institute (DMI) contributed to the development of key maritime competencies among students. Their responses were categorized as Strongly Agree, Agree, Neutral, Disagree, or Strongly Disagree. The results are presented in Table 3 below.

Table 3: Students Preparedness for Maritime Competencies (N = 115)

Competency	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Technical knowledge	50 (43%)	45 (39%)	12 (10%)	6 (5%)	2 (2%)
Practical skills	40 (35%)	38 (33%)	18 (16%)	12 (10%)	7 (6%)
Problem-solving abilities	45 (39%)	42 (37%)	15 (13%)	10 (9%)	3 (2%)
Communication skills	38 (33%)	50 (43%)	14 (12%)	9 (8%)	4 (4%)
Leadership capabilities	32 (28%)	48 (42%)	20 (17%)	10 (9%)	5 (4%)
Environmental awareness	30 (26%)	42 (37%)	24 (21%)	12 (10%)	7 (6%)
Digital/technological proficiency	28 (24%)	40 (35%)	22 (19%)	15 (13%)	10 (9%)

Source: Field Data (2025)

The findings suggest that DMI's programs effectively support student competency development, particularly in technical knowledge, where 82% of respondents agreed the training met STCW standards. Problem-solving and communication skills also received positive feedback, with 76% satisfaction, showing alignment with soft skill demands. Leadership readiness was noted by 70%, though 13% expressed dissatisfaction, indicating the need for more focused instruction in this area.

However, gaps remain in practical skills, with only 68% feeling prepared and 32% expressing neutral or negative views, reflecting limited hands-on training. Environmental awareness scored just 63%, with 16% disagreement, pointing to shortfalls in sustainability education. Digital proficiency was the lowest-rated area, with only 59% feeling adequately trained, emphasizing the need for enhanced digital skills training in e-navigation and smart maritime systems.

4.2 Alignment of DMI's Maritime Education with Industry and Regulatory Standards

This section presents findings related to the extent to which the education and training programs at the Dar es Salaam Maritime Institute (DMI) are aligned with recognized maritime industry standards and professional requirements.

4.2.1 Evaluation of DMI's Training Programs against Key Maritime Industry Needs

The researcher sought to assess the extent to which the education and training programs at the Dar es Salaam Maritime Institute (DMI) align with critical components of the modern maritime industry. Respondents were asked to rate DMI's alignment with each aspect using a five-point scale ranging from Excellent to Very Poor. The results are summarized in Table 4 below.

Table 4: Student Ratings on DMI's Alignment with Key Areas of the Maritime Industry (N = 115)

Aspect	Excellent	Good	Average	Poor	Very Poor
Current maritime technologies	20 (17%)	35 (30%)	30 (26%)	20 (17%)	10 (9%)
International maritime regulations	45 (39%)	50 (43%)	12 (10%)	5 (4%)	3 (3%)
Industry best practices	40 (35%)	48 (42%)	15 (13%)	8 (7%)	4 (3%)
Emerging maritime trends	22 (19%)	37 (32%)	28 (24%)	18 (16%)	10 (9%)
Environmental and sustainability standards	25 (22%)	40 (35%)	26 (23%)	15 (13%)	9 (7%)
Digital maritime systems	5 (4%)	10 (9%)	30 (26%)	35 (30%)	35 (30%)

Source: Field Data (2025)

The results revealed that DMI's academic offerings align well with some key industry expectations, particularly in international maritime regulations (82% positive) and industry best practices (77% positive), reflecting strong adherence to IMO, STCW, and competency-based training standards. However, alignment was weaker in areas involving advanced maritime technologies, with only 47% satisfied and 26% dissatisfied, indicating limited exposure to tools like ECDIS and integrated bridge systems. Similarly, emerging trends such as green shipping and automation received only 51% positive ratings, with 25% dissatisfied, suggesting the curriculum is slow to adapt to evolving global demands.

Environmental and sustainability content showed mixed feedback, with 57% rating alignment positively and 43% either neutral or dissatisfied, pointing to insufficient focus on marine pollution, energy efficiency, and climate adaptation. The most critical gap emerged in digital maritime systems, where 60% rated alignment as poor or very poor. This significant dissatisfaction underscores a serious shortfall in training for digital platforms and automation, threatening graduate employability and institutional relevance. Addressing this will require targeted investments in simulation tools, digital systems training, and stronger ties with maritime technology providers.

4.2.2 Assessment of DMI's Industry Partnerships and Collaborative Engagements

The researcher also sought to assess the quality of DMI's partnerships and collaborations with the maritime industry. Respondents were asked to rate DMI's industry partnerships using a five-point scale. In this case, all respondents selected either "Excellent" or "Good," reflecting a uniformly positive perception of the institution's collaboration with industry stakeholders. As a data presented on Figure 1 below;
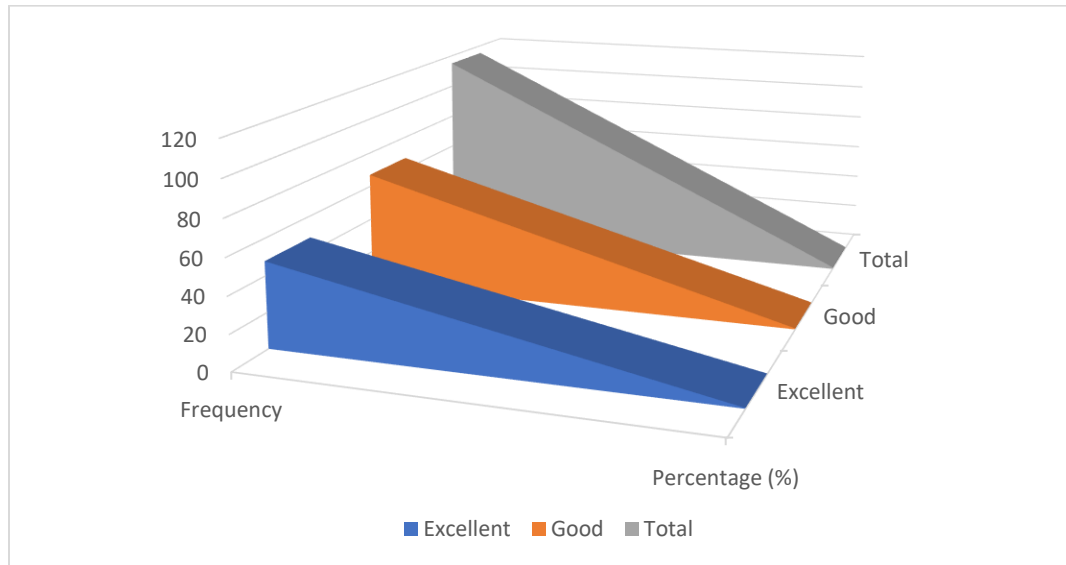
Figure 1: Respondent Ratings on the Strength of DMI's Industry Partnerships (N = 115)

Source: Field Data (2025)

As shown in Figure 4, all 115 respondents rated DMI's industry partnerships positively, with 42% rating them as excellent and 58% as good. This unanimous approval suggests that DMI maintains active collaborations with the maritime sector, likely supporting internships, guest lectures, and practical training.

The data suggests that DMI's strategy of engaging the industry is yielding tangible benefits and should be sustained and expanded. Strengthening these partnerships further could lead to improved access to sea-time opportunities, more industry-funded training programs, and enhanced job placements for graduates.

4.3 Challenges Affecting the Delivery of Maritime Education at DMI

This question presents findings on the key challenges that hinder the effective delivery of maritime education at the Dar es Salaam Maritime Institute (DMI). The results are summarized in Table 5 below.

Table 5: Respondent Ratings on the Severity of Maritime Education Challenges at DMI (N = 115)

Challenge	Very Severe	Severe	Moderate	Minor	Not a Challenge
Inadequate physical infrastructure	40 (35%)	38 (33%)	20 (17%)	12 (10%)	5 (5%)
Lack of dedicated training vessel	58 (50%)	32 (28%)	15 (13%)	7 (6%)	3 (3%)
Limited simulation technology	42 (37%)	34 (30%)	22 (19%)	10 (9%)	7 (5%)
Insufficient qualified instructors	–	–	8 (7%)	18 (16%)	89 (77%)
Limited sea-time opportunities	7 (6%)	5 (4%)	8 (7%)	28 (24%)	67 (58%)
Outdated curriculum	–	–	–	–	115 (100%)
Language barriers	15 (13%)	20 (17%)	30 (26%)	30 (26%)	20 (17%)
Limited industry collaboration	–	–	7 (6%)	10 (9%)	98 (85%)
Gender-specific challenges	12 (10%)	18 (16%)	32 (28%)	30 (26%)	23 (20%)
Digital infrastructure limitations	47 (41%)	34 (30%)	20 (17%)	10 (9%)	4 (3%)

Source: Field Data (2025)

The findings in Table 5 highlight major challenges affecting maritime education at DMI, particularly in practical training infrastructure. Inadequate physical facilities were rated severe or very severe by 68% of respondents, while the absence of a training vessel, essential for meeting STCW sea-time requirements, was cited as the most critical issue (78%). Limited simulation technology (67%) and poor digital infrastructure (71%) further hinder students' ability to gain real-world competence. Despite these challenges, faculty qualifications (77% "not a challenge"), curriculum relevance, and access to external sea-time placements (58%) were seen as strengths, indicating solid instructional quality and industry alignment.

Faculty interviews reinforced these concerns, citing limited funding, gender imbalance, and students' weak maritime English as barriers to effective learning. Instructors also noted a lack of student preparedness for the rigor of maritime training. While the academic framework at DMI is strong, these structural and contextual challenges, especially those related to infrastructure and inclusivity, must be addressed to ensure students are fully prepared for industry demands.

4.4 Proposed Solutions and Strategies for Improving Maritime Education at DMI

This question was designed to identify stakeholder priorities and determine which areas require immediate intervention for educational enhancement. The result presented on table below;

Table 6: Respondents Ratings on Improvement Strategies for Maritime Education at DMI (N = 115)

Strategy	Very Important	Important	Moderately Important	Slightly Important	Not Important
Investment in modern training facilities	94 (82%)	17 (15%)	3 (3%)	1 (1%)	0 (0%)
Curriculum modernization	85 (74%)	25 (22%)	4 (3%)	1 (1%)	0 (0%)
Enhanced funding mechanisms	88 (77%)	20 (17%)	5 (4%)	2 (2%)	0 (0%)
Faculty development programs	80 (70%)	28 (24%)	5 (4%)	2 (2%)	0 (0%)
Stronger industry partnerships	86 (75%)	22 (19%)	6 (5%)	1 (1%)	0 (0%)
Acquiring a dedicated training vessel	92 (80%)	19 (17%)	3 (3%)	1 (1%)	0 (0%)
Improving digital infrastructure	90 (78%)	21 (18%)	3 (3%)	1 (1%)	0 (0%)
Enhanced language support programs	75 (65%)	30 (26%)	7 (6%)	3 (3%)	0 (0%)
Focus on environmental/geopoli tical training	68 (59%)	33 (29%)	10 (9%)	4 (3%)	0 (0%)

Source: Field Data (2025)

The results in Table 6 show strong consensus among respondents on the urgency of proposed improvements at DMI, with all strategies rated "very important" or "important" by over 80% of participants. Top priorities included investment in modern training facilities (97%), acquisition of a training vessel (97%), and improved digital infrastructure (96%), all reflecting a clear need to enhance hands-on training, sea-time compliance, and digital access. Other highly rated strategies, such as curriculum modernization, increased funding, and stronger industry partnerships, also emphasize the need for alignment with global maritime trends and improved student readiness for the workforce. Although rated slightly lower, support for faculty development, language training, and inclusion of environmental and geopolitical topics remains strong, signaling recognition of their long-term value. Faculty interviews reinforced these priorities, citing urgent needs in vessel

access, digital transformation, industry exposure, and ongoing instructor training. These findings reflect a shared institutional commitment to reform and provide a clear roadmap for DMI to modernize its maritime education, improve student outcomes, and align with both national needs and international standards.
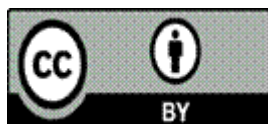
5 Conclusion

The study involved 115 respondents, current students, alumni, and 21 faculty members, revealing a male-dominated demographic consistent with maritime industry trends. Most participants held at least a bachelor's degree and had over three years of experience at DMI. Training quality was rated positively by all respondents (75% excellent, 25% very good), with high approval for curriculum relevance (80%), instructor quality (87%), and assessment methods (77%). However, concerns emerged over inadequate facilities, lack of a training vessel (78% saw this as a serious issue), limited simulators (67%), and underdeveloped digital infrastructure (71%). Instruction mainly relied on lectures and limited practical sessions, with low integration of simulation and shipboard training. Only 13% rated digital system alignment positively, despite 82% agreeing the curriculum met STCW standards. Industry partnerships were a strength, supporting internships and exposure, yet faculty and students stressed the need for investment in simulators, a training vessel, updated curricula reflecting automation and sustainability, and expanded use of modern teaching methods such as e-learning and field visits.

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