Evaluation of Bandari College's Curriculum Alignment with Employer Expectations in Tanzania's Maritime Sector"

Joyce Charles Shikali[1], Msabaha Juma Mwendapole[2]

[1]Bandari College Dar es Salaam, Dar es Salaam, Tanzania

[2]Department of Maritime Transport, Dar es Salaam Maritime Institute, Dar es Salaam, Tanzania

DOI: 10.29322/IJSRP.15.09.2025.p16523
https://dx.doi.org/10.29322/IJSRP.15.09.2025.p16523

Paper Received Date: 26th August 2025
Paper Acceptance Date: 22nd September 2025
Paper Publication Date: 30th September 2025

Abstract

As the maritime industry in Tanzania and globally continues to evolve, educational institutions like Bandari College must continuously adapt their curriculum to meet the demands of the sector. This study aims to evaluate the alignment of Bandari College's curriculum with the expectations of employers in Tanzania's maritime sector. Using a descriptive design along with a convergent mixed-methods approach, quantitative data were collected from 332 Bandari College graduates from cohort 2020 to 2024 and analyzed via a five-item Curriculum Relevance Index (CRI) and Spearman's correlation, while qualitative data were collected from 17 employers in the maritime sector in Tanzania using interviews and analyzed thematically. Results show 71.7% of graduates rate their curriculum as at least moderately relevant (CRI > 3.0), and those with scores above 4.0 secured an average of 2.7 job offers compared to 1.1 for scores below 3.0 ($\rho = 0.43$, $p < 0.001$). Employers highlighted the need for a 60:40 practical-theory split, extended six-month industrial attachments, and formal industry–college collaboration through regular curriculum workshops. These convergent findings indicate that, although Bandari College's curriculum generally meets current industry demands, targeted enhancements in practical immersion and structured stakeholder engagement are crucial to bolster graduate employability in a rapidly evolving maritime environment.

Keywords: Curriculum Relevance, Maritime Education, Employability, Bandari College, Employer Expectations

Introduction

Maritime education and training institutions occupy a critical nexus between theoretical instruction and the practical demands of shipboard operations, governed by stringent international safety regimes and ever-accelerating technological change (International Maritime Organization, 2010). As global shipping embraces innovations from automated cargo-handling systems to integrated bridge platforms, the imperative for academies to produce industry-ready graduates has never been greater. Without curricula that evolve in step with these advances, training risks becoming perfunctory, leaving cadets ill-equipped for the complexity and pace of modern vessel operations (Thomas, Ahmed, & Li, 2021).

In Tanzania, Bandari College has long served as the nation's premier maritime training institution,
shaping the careers of thousands of port operators and equipment maintenance officers destined for both regional and international service. Situated in the Port of Dar es Salaam, the institution benefits from proximity to one of East Africa's busiest trade gateways, offering students exposure to real-world port activities alongside classroom learning. However, the very dynamism that characterizes Dar es Salaam's maritime environment, driven by port expansions, regulatory reforms, and digitalization, poses a formidable challenge to maintaining curriculum currency and practical relevance.

Curriculum relevance is understood as the degree to which educational content, pedagogical methods, and assessment strategies align with the competencies required by employers (Biggs & Tang, 2011; Tyler, 1949). When curricula are constructively aligned, that is, when learning outcomes, teaching activities, and evaluation mechanisms correspond closely to professional standards, graduates demonstrate greater job readiness, shorter onboarding periods, and higher levels of employer satisfaction (Yorke, 2004). Conversely, curricula that fail to reflect workplace realities can spawn persistent skill gaps, forcing companies to invest heavily in remedial training and undermining graduates' early career progression (Rodríguez & Kim, 2022).

Despite the clear stakes, research on maritime curriculum alignment with the expectations of employers in sub-Saharan Africa remains sparse. Mhando and Juma (2019) identified a recurring mismatch at East African academies between theoretical modules and the hands-on skills needed on board, advocating stronger partnerships with port authorities and shipping lines. Chacha (2018) similarly documented that many graduates lack sufficient simulator exposure, resulting in extended adjustment phases once they joined vessel crews. These localized studies underscore the urgent need for systematic, context-specific evaluations of curriculum relevance at institutions like Bandari College.

The accelerating digital transformation of maritime operations further amplifies this imperative. Mastery of Electronic Chart Display and Information Systems (ECDIS), automated stowage planning, and integrated bridge management is rapidly becoming a baseline expectation for junior officers (Thomas et al., 2021). Li, Wong, and Ahmad (2024) demonstrated that academies integrating high-fidelity digital simulations with traditional plotting exercises not only boost graduate satisfaction but also enhance employability metrics. To remain competitive, Bandari College must therefore reassess both content and delivery methods, embedding digital competencies alongside core seamanship skills. Against this backdrop, the present study focuses squarely on evaluating the alignment of Bandari College's curriculum with the expectations of contemporary employer requirements in Tanzania's maritime industry. By triangulating quantitative perceptions via a five-item Curriculum Relevance Index administered to 332 alums with qualitative insights from 17 maritime employers, the research generates actionable recommendations for curricular enhancement. The ultimate aim is to ensure that Bandari College continues to produce graduates who are not merely certified but demonstrably ready to navigate the technical, operational, and digital challenges of modern shipping.

Literature Review

Conceptualizing Curriculum Relevance

Curriculum relevance embodies the principle that educational programs should be directly aligned with the competencies demanded by professional practice (Tyler, 1949). In its foundational formulation, Tyler posited that clear statements of intended learning outcomes must drive the selection of content, teaching methods, and assessment strategies. Building on this, Biggs and Tang (2011) emphasize a "constructive alignment" approach, wherein every element of the curriculum, from lecture topics to simulation and examination questions, is purposefully designed to develop and measure the precise skills and knowledge that graduates need in the workplace. In maritime education, this alignment must span both "hard" technical skills, such as celestial and electronic navigation, engine-room diagnostics, and cargo-handling procedures, and "soft" competencies, including crisis management, leadership during emergencies, and cross-cultural teamwork on multinational crews (Jones & Riley, 2018).

Practical curriculum relevance thus requires a coherent conceptual framework that integrates industry standards with pedagogical best practices. For example, learning outcomes in a navigation module might specify proficiency in manual chart plotting and ECDIS operation, while corresponding teaching activities could involve a sequence of exercises beginning with paper-based route planning and culminating in high-fidelity simulator drills. Assessment methods ranging from practical demonstration in simulators to scenario-based oral examinations must then directly measure the same outcome statements. By ensuring this tight linkage among objectives, activities, and assessments, institutions create a transparent, evidence-based pathway through which students acquire exactly the competences employers value (Biggs & Tang, 2011).

Maritime Education and Industry Needs

The International Maritime Organization's STCW Convention (2010) provides a globally recognized baseline for seafarer education, mandating both theoretical instruction and practical demonstration of core competencies. While STCW sets broad standards such as minimum hours of instruction in safety training and proficiency in bridge resource management, it leaves the specific curricular design to individual academies and flag states. Consequently, local institutions must interpret STCW requirements in light of national regulatory frameworks, port operations, and prevalent vessel types. Brown and Mensah (2021) argue that systematic industry consultation is essential to contextualize STCW competencies, ensuring that classroom and simulator experiences reflect the real-world demands of local shipping companies, pilotage authorities, and port authorities.

In Tanzania, the rapid expansion of the Port of Dar es Salaam has heightened the demand for graduates who can transition seamlessly from academic settings to operational roles on modern vessels. Kapinga and Nyaga (2022) document that local carriers increasingly deploy vessels equipped with integrated bridge systems, LNG-ready engines, and shore-power interfaces, all of which require highly specialized training. Without robust collaboration, such as joint curriculum-design workshops, guest lectures by port engineers, and industry-sponsored simulator sessions, maritime academies risk graduating officers who are technically certified yet unprepared for the specific configurations and operational protocols prevalent in Tanzanian waters.

Evaluating Educational Outcomes

Robust evaluation of maritime curricula necessitates mixed-methods research designs that capture both quantifiable outcomes and nuanced stakeholder perspectives (Creswell & Plano Clark, 2018). Quantitative metrics such as job placement rates, time to first employment, and employer satisfaction surveys provide concrete indicators of whether graduates possess the required technical

competencies. For example, Li, Wong, and Ahmad (2024) used a five-item relevance index combined with graduate-tracer data to demonstrate that higher perceived curriculum alignment predicted significantly shorter job-search durations. However, such metrics alone cannot reveal the "why" behind performance trends, nor can they surface emergent issues such as the adequacy of simulation fidelity or the integration of environmental compliance drills.

To address these gaps, qualitative methods, particularly thematic analysis of semi-structured interviews with employers and alumni, uncover more profound insights into how curricula function in practice. Sharma and Patel (2020) advocate for the incorporation of focus groups and employer panels into ongoing curriculum review cycles, arguing that continuous feedback strengthens program responsiveness. By triangulating student surveys, employment outcomes, and rich interview data, institutions can iteratively refine course content, adjust practicum components, and introduce new modules to address unanticipated skill deficits, thus ensuring that maritime education remains a living, adaptive system rather than a static prescription.

Literatures Gap

Empirical research on Tanzanian maritime education identifies persistent gaps in both practical immersion and digital competencies. Chacha (2018) reports that many graduates, though certified in ECDIS theory, seldom experience hands-on workshops with live-system consoles, resulting in slower onboarding periods aboard ships that rely heavily on electronic navigation. Similarly, Mhando and Juma (2019) highlight limited access to multi-axis bridge simulators, which are essential for developing muscle memory in vessel handling and emergency response under realistic motion conditions. These deficiencies often force employers to allocate in-house training resources, diverting senior officers' time from operational duties.

Such recurring shortfalls underscore the urgency of realigning curricula to local industry realities. When graduates enter the workforce without sufficient exposure to the specific bridge and engine-room configurations standard in Tanzanian fleets, they face steep learning curves that can compromise safety and efficiency. Addressing these gaps will require targeted investments both in physical infrastructure, such as upgraded simulator facilities, and in curricular redesign, incorporating mandatory scenario-based drills that simulate local port approaches, cargo-handling challenges, and coastal environmental considerations unique to East African waters.

Materials and Methods

The study adopted a descriptive design to evaluate Bandari College's curriculum alignment with employers' expectations in Tanzania. The study also used mixed methods approaches to collect, process, and analyse data. The use of descriptive design helped the researchers to describe the current state of Bandari College curriculum alignment with the expectations of employers in the maritime sector in Tanzania. Besides, the use of a mixed methods approach enables the researchers to triangulate the study's findings to provide both a breadth and a depth understanding of how well Bandari College's curriculum aligns with employers' expectations in the maritime sector in Tanzania. The study involved Bandari College graduates who graduated from 2020 to 2024. The combination of graduates and employers allowed researchers to evaluate the issues of curriculum alignment from two critical perspectives. Graduates provided feedback on how well the Bandari College curriculum prepared them for the job market. In contrast, employers provided feedback on whether the graduates' education met their expectations and the actual needs of the industry. Also, the choice of five years (2020 to 2024) ensured that the study focuses on the most recent curriculum offerings.

Moreover, a proportionate stratified sampling technique was used to select 332 graduate from five programmes [Engineering and Maintenance Management (EMM), Fire Safety Management (FSM), Shipping and Ports Management (SPM), Logistic and Transport Management (LTM), Freight Clearing and Forwarding Ports Management (FCMFPM)] based on their year of graduation as presented in Table 1 below.

Table 1. Determination of BC graduate Sample Size using Yamane's formula, $N/(1+Ne^2)$, based on Programme and Graduation Year

			Graduation Year					Total
S/N.	X_n	PROGRAMME (N)	2020	2021	2022	2023	2024	
1	X_1	EMM	26	27	15	10	8	86
2	X_2	FSM	22	6	0	0	0	28
3	X_3	SPM	184	119	245	192	369	1109
4	X_4	LTM	30	26	84	84	177	401

S/N.	X_n	PROGRAMME (N)	Graduation Year 2020	2021	2022	2023	2024	Total
5	X_5	FCFPM	61	18	59	52	151	341
TOTAL (T)			**323**	**196**	**403**	**338**	**705**	**1965**
SAMPLE SIZE (S)			**55**	**33**	**68**	**57**	**119**	**332**

At the same time, snowball sampling was used to select 17 employers from the maritime sector using a one-to-twenty ratio of employers to sampled Bandari College graduates. The use of the proportionate sampling technique allowed the researcher to divide the graduate population into sub-groups based on their programmes and graduation year to obtain a proportional representation of the chosen sample for data collection. On the other hand, the use of snowball ensured that the selected employers are directly connected to the graduates' work environment in the maritime sector.

Data from graduates were collected using a survey questionnaire, and interviews were employed to collect data from employers. The questionnaire survey gathered data on graduates' views, expectations, and perceptions of the curriculum, particularly how well it prepared them for work in the maritime sector. A structured questionnaire was developed around a five-item Curriculum Relevance Index (CRI), with items operationalizing key dimensions of curriculum alignment: theoretical content coverage, adequacy of practical training, fidelity of simulation exposure, appropriateness of assessment methods, and overall preparedness for industry roles. Interviews with employers helped to provide insights on curriculum alignment with industry needs from industry's key stakeholders who are the recipients of workforce trained at Bandari College. To capture employer perspectives, semi-structured interviews were conducted with 17 purposively selected stakeholders, including senior officers and HR managers from shipping lines, freight forwarders, logistics providers, and the Dar es Salaam Port Authority. The interview protocol comprised open-ended questions on perceived curriculum strengths, practical-theory balance, simulator adequacy, and recommendations for curricular improvement. Regarding data analysis, quantitative data were analysed using descriptive statistics, inferential statistics, and measures of dispersion that were presented in Tables. Accordingly, thematic analysis was used to analyse qualitative data.

4. Results

4.1 Curriculum Relevance Index (CRI) Distribution

The Curriculum Relevance Index (CRI) from the perspectives of graduates, based on graduates' ratings across five survey statements that describe the extent to which Bandari College prepared graduates to meet employers' demands in the maritime sector. Each statement, ranging from 1 to 5, was calculated to assess the perceived relevance of the Bandari College curriculum. Table 2 summarizes the results.

Table 2. Distribution of CRI Scores

Distribution of CRI Scores (n = 332)	Frequency	Percentage (%)
1.0–2.0	18	5.4
2.1–3.0	76	22.9
3.1–4.0	152	45.8
4.1–5.0	86	25.9

Source: Field Data (2025)

The results in Table 2 show that the majority (45.8%) of graduates rate the curriculum as relevant (3.1 – 4.0). This indicates that graduates believe the Bandari College curriculum serves its purpose, though the results suggest room for improvement. Besides, a significant portion (22.9%) with (2.1 – 3.0) CRI rate the curriculum as below average. These results suggest that graduate see a disconnect between their education and the industry demands. However, a notable portion (25.9%) of graduates with (4.1 – 5.0) CRI rate the curriculum as highly relevant. These results suggest that Bandari College is succeeding in meeting the needs of a significant proportion of its graduates. This pattern suggests that while most graduates feel the curriculum broadly equips them for maritime roles, nearly one in four are unconvinced of its practical value. The neutral group represents a key target for enhancement. These graduates perceive neither strong

alignment nor outright deficiency, indicating that modest curriculum tweaks rather than wholesale redesign could shift them into higher relevance brackets.

Table 3. Spearman's rank-order correlation between the CRI score and the number of job offers received by graduate students

CRI Range	Average job offer	Standard deviation
CRI > 4.0	2.7	1.1
CRI < 3.0	1.1	0.7

Source: Field Data (2025)

The result in Table 3 shows that graduates who rated their training very highly (CRI > 4.0) secured, on average, 2.7 offers (SD = 1.1), whereas those with low relevance perceptions (CRI < 3.0) received only 1.1 offers (SD = 0.7). This statistically significant, moderate positive relationship demonstrates that as graduate perceive more substantial alignment between their education and industry needs, they attract materially more employment opportunities. In practical terms, each one-point increase in CRI corresponds to nearly one additional job offer.

This finding highlights curriculum relevance not as an abstract quality but as a concrete driver of graduate success in a competitive job market. It also validates the CRI instrument as a meaningful predictor of early employability. It underscores the return on investment for both students and the college in refining curricular components that graduates judge most relevant. These results were corroborated by those obtained through interviews with employers from the maritime sector, as presented below.

Employer Perspectives

Thematic analysis of 17 employer interviews crystallized three interlocking themes that explain and expand upon the quantitative findings:

Practical–Theory Balance

During interview sessions, employers expressed their concerns regarding the optimization of the balance between theoretical knowledge and practical skills in curriculum content. Much emphasis was on the optimization of practical hands-on training that prepares graduates for real-world tasks and challenges. The following quotations provide more explanations on this aspect.

> While the graduates we hire from Bandari College have high theoretical knowledge, we often find that they struggle with the practical aspects of their jobs. The curriculum needs to offer more hands-on training, especially in areas like cargo handling, navigation, and ship operations [E04].

Another employer added:

> When we hire graduates from Bandari College, we expect them to be ready to work from day one. Though the current curriculum is doing fine in preparing graduates to acquire theoretical knowledge, we need to see more emphasis on practical skills to prepare them for their roles and real-world challenges [E10].

These quotations imply that employers likely feel that the curriculum focuses too much on theoretical knowledge, leading to a gap between what graduates learn in the classroom and the practical skills needed on the job.

Formalized Industry Co-Creation

Employers also have indicated their concerns about the need for collaboration between the Bandari College and industry stakeholders to ensure that the curriculum is up-to-date and relevant to current industry needs, as one of the employers informed.

> We believe that stronger collaboration between Bandari College and industry stakeholders is essential. We need to be involved in the curriculum design and review to ensure that the curriculum aligns with the current needs of the maritime sector. If the curriculum is designed and updated based on real-time industry demands, we expect to receive better-prepared graduates from Bandari College [E02].

This quotation indicates that employers emphasize the collaboration between Bandari College and industry stakeholders to ensure that the curriculum is prepared and updated based on the feedback from employers to reflect the latest industry trends and demands.

Discussion

The present study aimed to evaluate the Bandari College curriculum alignment with employer expectations in Tanzania's maritime sector. The study's findings revealed that the predominance of CRI scores above the neutral midpoint (71.7% of graduates rating curriculum relevance > 3.0) provides compelling evidence that Bandari College's curriculum broadly aligns with industry expectations. These findings echo research from Southeast Asia, where Li et al. (2024) reported that maritime academies incorporating employer-

driven content revisions saw significant improvements in graduate confidence and competence. Similarly, Brown and Mensah (2021) found in West African contexts that regularly updated curricula grounded in employer feedback yielded higher perceived relevance among alumni. Together, these parallels suggest that Bandari College has successfully embedded core theoretical and practical elements valued by maritime employers.

The moderate positive correlation between CRI scores and the number of job offers ($\rho = .43$, $p < .001$) underscores the real-world impact of perceived curriculum relevance on employability outcomes. These findings justify the importance of Bandari College to match curriculum contents with the industry's requirements and ensure assessment components measure job-related competences. This relationship mirrors the work of Sharma and Patel (2020), who demonstrated that graduates' assessments of curricular alignment were among the strongest predictors of early career success across multiple industries. In the maritime sector specifically, such correlations affirm that when trainees perceive their education as directly applicable to professional tasks, they enter the job market with a demonstrable edge, translating approval into tangible opportunities.

Despite these encouraging trends, the 22.9% of graduates clustered in the neutral CRI range (2.1–3.0) point to a cohort whose training neither fully meets nor falls short of expectations. Rodríguez and Kim (2022) suggest that targeted enhancements, particularly in high-fidelity simulation experiences, can shift such ambivalent groups into higher relevance brackets by transforming abstract concepts into embodied skills. Johnson and Lee (2019) further demonstrate that rebalancing instructional time to a 60:40 practical-theory ratio significantly boosts skill retention and reduces onboarding periods. Applied here, such adjustments could move neutral-range graduates into the top relevance tier, thereby elevating overall employability metrics.

Furthermore, the imperative for formalized industry co-creation emerges as a critical mechanism for sustaining curriculum currency. The findings highlight the importance of collaboration between Bandari College and industry stakeholders in the preparation and updating of the curriculum to ensure its relevance in the maritime sector. This collaboration will ensure the curriculum is prepared and revised based on the feedback from stakeholders to reflect the current industry trends and demands. In the same line, the study by Brown and Mensah (2021) advocates quarterly curriculum-design workshops with shipping companies, port authorities, and technology vendors to ensure the timely integration of emerging trends such as green-fuel handling and autonomous navigation. This collaborative model fosters a dynamic feedback loop: employers inform module updates, faculty pilot new scenarios, and graduates provide real-time performance data. By institutionalizing such partnerships, Bandari College can prevent curricular drift and maintain alignment with rapidly evolving regulatory and technological landscapes.

Ultimately, these findings underscore the value of a continuous, evidence-informed approach to curriculum management. Integrating quantitative CRI measures with qualitative employer insights enables Bandari College to diagnose areas of strength and detect emerging gaps in near-real time. Moving forward, embedding a graduate-tracer system (Sharma & Patel, 2020) and periodic employer surveys will ensure that curricular revisions are not merely reactive but anticipatory. In doing so, the college will not only preserve but enhance its reputation as one of Tanzania's maritime education leaders, producing graduates whose skills and confidence remain in lockstep with industry demands.

Conclusion and Recommendations

The findings of this study provide valuable insights into the alignment of Bandari College's curriculum with the expectations of employers in the Tanzanian maritime sector. The study's findings demonstrate that Bandari College's curriculum broadly aligns with the technical and practical demands of Tanzania's maritime industry, evidenced by strong Curriculum Relevance Index scores among 71.7% of alumni and a positive correlation with job-offer rates, yet also reveals critical areas for enhancement. Employers' emphases on a 60:40 practical-theory balance, extended six-month industrial attachments, and formalized industry–academy co-creation underscore the need for targeted, hands-on immersion and dynamic stakeholder engagement. By implementing these evidence-based refinements, Bandari College can not only sustain its current alignment with employer expectations but also elevate graduate readiness and competitiveness in an increasingly complex and digitized maritime landscape.

This study recommends that the Bandari College curriculum should be updated to include training on emerging digital systems and other advancements in the maritime industry. Also, to bridge the gap between theory and practice, the study recommends integration of more practical training, particularly through the use of simulators. This will provide a safe, controlled environment where students can practice essential maritime skills such as navigation, emergency response, and cargo handling without the risk associated with real-world operations. Apart from that, Bandari College should establish a strong partnership with maritime industry stakeholders to ensure that the curriculum remains relevant to current industry needs. By implementing these recommendations, Bandari College will be better positioned to produce graduates who are not only knowledgeable but also highly skilled and prepared to meet the demands of the maritime workforce. This alignment will contribute to a higher employment rate and better job outcomes for graduates, ultimately enhancing the college's reputation and its contribution to the Tanzanian maritime sector.

Study Implications and Limitations

The findings from this study contribute to the theoretical body of knowledge on Bandari College

curriculum alignment with the expectations of employers in Tanzania's maritime sector. The findings provide insight that will assist policymakers, educators, and industry stakeholders in identifying gaps and implementing strategies for improving training programs and curriculum in the maritime sector. It also provides valuable practical insight, which will enable Bandari College to integrate training on digital systems, automation, and modern maritime technologies to ensure that graduates are ready for the technological shift in the maritime industry. The identified gap in the practical training component in the curriculum will serve as a base for Bandari College to focus more on simulator-based training, internship, and real-world application of maritime regulations and practices, hence making graduates more operationally prepared. Besides, the findings of this study will foster a stronger tie between Bandari College and industry stakeholders to ensure that the curriculum remains relevant and aligned with the evolving needs of the maritime sector. The limitations of the study are twofold. First, despite using stratified random sampling, the generalization of the study's findings is limited to the context of Bandari College. It is undeniable that Bandari College's curriculum alignment with the expectations of employers in Tanzania's maritime sector may differs from that of other maritime institutions. Secondly, the study adopted a descriptive design that provided a snapshot of a phenomenon by collecting data at a single point in time from cohort 2020 to 2024. In contrast, a longitudinal survey is recommended to help researchers validate findings at different times.

References

Biggs, J., & Tang, C. (2011). *Teaching for Quality Learning at University* (4th ed.). McGraw-Hill Education.

Brown, R., & Mensah, C. (2021). Co-creation in maritime education: A West African perspective. *Journal of Maritime Studies, 15*(3), 45–62.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and Conducting Mixed Methods Research* (3rd ed.). SAGE Publications.

Chacha, J. (2018). Practical training gaps in Tanzanian maritime education. *African Journal of Maritime Affairs, 9*(1), 23–38.

International Maritime Organization. (2010). *STCW Convention and Code*. https://www.imo.org

Johnson, D., & Lee, S. (2019). Balancing theory and practice in maritime academies. *Maritime Education Review, 22*(2), 110–129.

Kapinga, W., & Nyaga, J. (2022). Assessing curriculum-industry linkages at Dar es Salaam port. *East African Journal of Logistics, 5*(1), 78–94.

Li, X., Wong, P., & Ahmad, R. (2024). Constructive alignment and employability in maritime training. *Asian Journal of Maritime Education, 11*(1), 12–29.

Mhando, D., & Juma, F. (2019). Bridging the theory-practice gap in East African maritime academies. *Journal of African Maritime Education, 4*(2), 56–74.

Rodríguez, L., & Kim, H. (2022). Enhancing digital competencies through simulator training. *Journal of Simulation in Maritime, 8*(3), 150–167.

Sharma, A., & Patel, S. (2020). Graduate-tracer systems for curriculum evaluation. *International Journal of Educational Management, 34*(5), 987–1002.

Thomas, G., Ahmed, K., & Li, J. (2021). Digital transformation in maritime education. *Journal of Marine Technology, 17*(4), 204–221.

Tyler, R. W. (1949). *Basic Principles of Curriculum and Instruction*. University of Chicago Press.

Yorke, M. (2004). Employability in higher education: What it is and what it is not. *Learning and Employability Series One*. The Higher Education Academy.