

Global Competence at Sea: International Relations, Intercultural Understanding, and English Proficiency in Maritime Vocational Training

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Abstract— Internationally trading vessels require deck officers to operate simultaneously within international maritime governance, multicultural professional environments, and English-mediated communication. However, these competencies are commonly taught as separate curriculum components, with limited integration in maritime vocational education. This study examined global maritime competence among 180 Nautika cadets from AMANJAYA, AMD, and STMT Malahayati between April and September 2025. A concurrent mixed-methods design was employed using the Maritime International Relations Knowledge Scale, Intercultural Communication Competency Scale, and English Communication Proficiency Test, complemented by focus group discussions with 12 senior lecturers and interviews with 45 maritime industry professionals. Structural equation modelling demonstrated that international relations knowledge, intercultural competency, and English communication proficiency constituted an integrated competency construct (CFI=0.93; RMSEA=0.063; SRMR=0.071). Intercultural competency recorded the lowest mean score (M=3.18/5.00) and was identified by 64.4% of industry professionals as a frequent or persistent factor affecting early career performance. Only 31.1% considered recent Indonesian graduates adequately prepared for multinational crew coordination. Qualitative analysis identified three curriculum barriers: the Neutral Language Myth, Governance Without Context, and Contact Without Competency. The findings indicate that global maritime competence should be addressed through integrated curriculum design rather than isolated courses. Practical reform should contextualize English communication materials culturally, incorporate governance and geopolitical contexts into maritime regulation instruction, and explicitly process multicultural exposure through intercultural competency activities without requiring additional contact hours.

Keywords: global maritime competence; intercultural communication; maritime education; English communication; Nautika

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1. Introduction

International maritime transportation requires deck officers to operate within complex professional environments involving international regulations, multicultural crews, port authorities, shipping companies, charterers, classification societies, and other maritime stakeholders. A deck officer may simultaneously interact with a master from one country, officers and ratings from several cultural backgrounds, port authority personnel from another country, and commercial representatives from different institutional and cultural contexts. English is generally used as the principal medium of professional communication across these interactions. Consequently, effective performance depends

not only on technical and regulatory knowledge but also on the ability to communicate appropriately across cultural and institutional boundaries.

The increasing complexity of maritime operations has strengthened the importance of competency-based maritime education and training. International maritime education is increasingly expected to prepare cadets for technological, organizational, and operational changes in the maritime sector. Research on autonomous shipping, for example, indicates that maritime education and training must continuously reconsider the competencies required by future seafarers and the changing nature of professional responsibilities [1]. Competency development is particularly important because maritime safety depends not only on technical skills but also on human factors, communication, decision-making, and organizational coordination. Research on seafarer competency has similarly demonstrated the importance of integrating multiple competency dimensions within operational contexts [2].

Global competence in education generally refers to the knowledge, skills, attitudes, and values required to interact effectively and appropriately across cultural and international contexts [3]. In maritime transportation, however, global competence has specific characteristics arising from the international regulatory structure and the multicultural nature of seafaring. Deck officers must understand international maritime governance, communicate with individuals from different cultural backgrounds, and use English appropriately in operational and institutional contexts.

Three dimensions are particularly important. The first is international relations knowledge, which encompasses the structure and functioning of international maritime governance, including the roles of the International Maritime Organization (IMO), flag states, port states, classification societies, and other maritime institutions. International maritime regulations are developed through international governance processes involving multiple institutional and national interests. The regulatory framework established through instruments such as the Standards of Training, Certification and Watchkeeping for Seafarers (STCW) therefore provides not only technical requirements but also the institutional basis for professional competence [4].

The second dimension is intercultural communication competency. Deardorff conceptualizes intercultural competence as the ability to communicate effectively and appropriately in intercultural situations based on relevant knowledge, skills, attitudes, and reflection [5]. Byram's framework further emphasizes cultural knowledge, skills of interpreting and relating, skills of discovery and interaction, attitudes, and critical cultural awareness [6]. These dimensions are particularly relevant in maritime environments because professional interactions occur within multinational crews and hierarchical bridge teams.

The third dimension is English communication proficiency. English in maritime transportation is not simply a neutral linguistic code. Deck officers use English to interpret regulatory documents, communicate with port authorities, coordinate multinational crews, prepare operational reports, and interact with charterers and other stakeholders. English for Specific Purposes therefore needs to address the institutional and cultural contexts in which professional communication occurs. Research concerning World Englishes and ESP emphasizes that professional English cannot be separated entirely from the social and institutional contexts in which it is used [7].

The maritime sector also requires communication competency to be considered alongside broader safety-management practices. Research on sea transportation safety has demonstrated the importance of systematic indicators, organizational processes, and human competencies in supporting safe maritime operations [8]. Consequently, global competence should not be treated simply as an additional language or soft-skill requirement but as part of the broader competency architecture supporting safe and effective maritime operations. Despite the importance of these dimensions, maritime vocational curricula frequently organize them into separate courses. English communication may be taught by language

lecturers, maritime law by regulatory specialists, and port operations by nautical or operational lecturers. Such separation can create a gap between classroom learning and the integrated demands of actual professional encounters. A cadet may understand an international regulation but be unable to communicate effectively with a foreign authority. Similarly, a cadet may possess adequate English proficiency but lack awareness of the institutional authority structure governing a port state inspection.

Competency-based education provides a relevant framework for addressing this problem because occupational competence requires the integration of knowledge, skills, judgment, and contextual performance rather than isolated subject mastery. Evidence from competency-based education in other professional training environments indicates that educators need to connect learning activities with authentic occupational demands [9]. This principle is particularly relevant to maritime vocational education, where professional decisions frequently require simultaneous technical, communicative, and contextual judgments.

The problem is also relevant to Indonesian vocational education because the competencies demanded by contemporary industry extend beyond technical knowledge. Studies of Indonesian vocational education have emphasized the growing need for integrated technical, digital, environmental, and occupational competencies [10]. Similar evidence from other technical and vocational contexts indicates that curriculum development needs to respond to changing workplace expectations rather than relying exclusively on conventional disciplinary boundaries [11].

However, limited empirical attention has been given to the integration of international relations knowledge, intercultural communication competency, and English communication proficiency as a unified competency domain within Indonesian maritime vocational education. This represents an important research gap because maritime officers increasingly work in multinational environments where these competencies operate simultaneously.

Therefore, this study investigates global maritime competence among Nautika cadets at three maritime vocational institutions in Jakarta. The study aims to measure cadets' competency across international relations knowledge, intercultural communication, and English communication proficiency; examine whether the three dimensions constitute an integrated global maritime competence construct; identify curriculum barriers to integrated competency development; and examine how maritime industry professionals perceive competency gaps among recent Indonesian deck officer graduates. The study contributes an empirically informed curriculum framework for integrating global competence into maritime vocational education without necessarily increasing instructional contact hours.

2. Method

This study employed a concurrent mixed-methods design in which quantitative and qualitative data were collected during the same study period and subsequently integrated during interpretation. The mixed-methods approach was selected because the study required both measurement of competency levels and an understanding of how lecturers and industry professionals interpreted the curriculum and professional competency gaps. The overall research procedure is presented in Figure 1.

Data collection was conducted from April to September 2025 at AMANJAYA, AMD, and STMT Malahayati. The quantitative component involved 180 Level 2 and Level 3 Nautika cadets, with 60 participants from each institution. These levels were selected because the cadets had received sufficient exposure to English communication, maritime law, port operations, and watchkeeping instruction to allow meaningful assessment of global maritime competence.

The industry sample consisted of 45 maritime professionals, comprising 15 professionals from the regional industry partner network associated with each institution. Participants included shipping

company operations managers (n=15), port authority officers (n=12), classification society surveyors (n=10), and maritime insurance representatives (n=8). They completed a structured questionnaire and participated in brief structured interviews concerning competency gaps observed among Indonesian deck officer graduates.

The qualitative component involved 12 senior lecturers, with four lecturers representing each institution. The participants represented English communication, international maritime law, and port operations or watchkeeping. Three focus group discussions were conducted, one at each institution, with each session lasting approximately 90 minutes.

Three principal instruments were used to assess the cadets. The Maritime International Relations Knowledge Scale (MIRKS) consisted of 24 items assessing knowledge of IMO regulatory architecture and development processes, flag state and port state authority distribution, the UNCLOS framework, and MLC 2006 governance. Each item used a five-point scale ranging from 1 (no knowledge) to 5 (expert level). The instrument demonstrated acceptable content validity (content validity index=0.88) and internal consistency (Cronbach's α =0.83).

The Intercultural Communication Competency Scale (ICCS) consisted of 20 items adapted from Byram's intercultural communicative competence framework [6] for maritime professional contexts. The instrument assessed cultural knowledge, interpretation and interaction skills, intercultural attitudes, and critical cultural awareness. Each component consisted of five items and used a five-point scale. The instrument demonstrated acceptable internal consistency (Cronbach's α =0.81).

The English Communication Proficiency Test (ECPT) consisted of 30 items covering three professional communication contexts: regulatory document reading, professional report writing, and authority interaction. The reading component included Port State Control checklists, SOLAS provisions, and MLC inspection documents. The writing component was assessed using a 10-point rubric, while the authority interaction component used scenario-based responses assessing register and communicative appropriateness. The total score was converted into a percentage. Inter-rater reliability for the writing component was acceptable (κ =0.82).

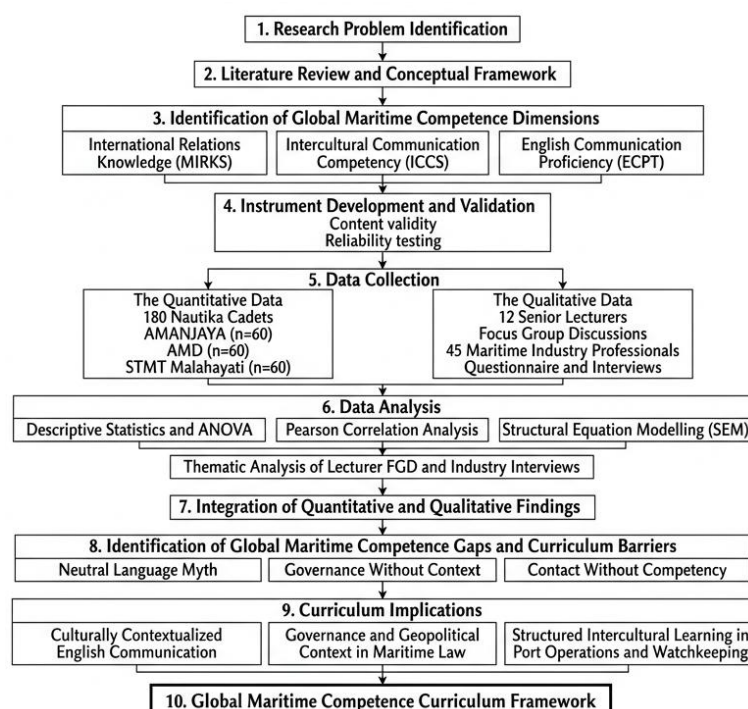


Figure 1. Research Flowchart of the Global Maritime Competence Study

The Global Maritime Competence Composite (GMCC) was calculated as an equally weighted standardized composite of MIRKS, ICCS, and ECPT scores. The composite was used to describe overall competency and as an indicator in structural equation modelling.

The industry professional questionnaire consisted of 20 structured items assessing the frequency with which specific competency gaps affected early career performance, the perceived preparedness of recent Indonesian graduates across the three competency dimensions, and the relative professional consequences of each dimension.

Quantitative assessments were administered to cadets under standardized conditions at each institution. Industry professionals completed the questionnaire and participated in structured interviews. FGDs were conducted separately at each institution. The qualitative discussions were documented, organized, coded, and subsequently analyzed thematically.

Descriptive statistics were used to calculate means and standard deviations for the three competency dimensions. Pearson correlation coefficients were calculated to examine relationships among MIRKS, ICCS, ECPT, and GMCC. One-way analysis of variance (ANOVA) was used to compare competency scores among the three institutions. Statistical analysis followed established procedures for educational and behavioral research [12].

Structural equation modelling (SEM) was used to test whether MIRKS, ICCS, and ECPT represented indicators of a single latent Global Maritime Competence construct. Model adequacy was evaluated using the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Acceptable model fit was defined as $CFI \geq 0.90$, $RMSEA \leq 0.08$, and $SRMR \leq 0.08$.

Qualitative FGD and interview data were analyzed using thematic analysis following the established six-phase procedure of familiarization, initial coding, theme development, theme review, theme definition, and interpretation [13]. The quantitative and qualitative results were subsequently integrated to identify areas of convergence and to develop curriculum implications.

3. Results and Discussion

The competency scores obtained by cadets across the three institutions are presented in Table 1. Intercultural competency produced the lowest combined mean score ($M=3.18$), followed by international relations knowledge ($M=3.42$). English communication proficiency produced a combined score of 63.5%. The results indicate that cadets possessed comparatively stronger knowledge of international maritime regulatory structures than their ability to navigate culturally complex professional interactions. This pattern is important because contemporary maritime education increasingly emphasizes competencies that extend beyond technical knowledge. The changing maritime environment requires cadets to combine technical knowledge with communication, decision-making, and adaptive competencies [1], [2]. The lower intercultural competency score therefore suggests that conventional classroom instruction may be more successful in transmitting explicit regulatory knowledge than in developing the interpersonal and contextual competencies required in multinational professional environments.

Table 1. Global Maritime Competence Scores by Dimension and Institution (n=180)

Competency Dimension	AMANJAYA (n=60) M (SD)	AMD (n=60) M (SD)	STMT Malahayati (n=60) M (SD)	Combined M (SD)
Maritime International Relations (MIRKS/5)	3.58 (0.74)	3.26 (0.81)	3.42 (0.77)	3.42 (0.78)

Competency Dimension	AMANJAYA (n=60) M (SD)	AMD (n=60) M (SD)	STMT Malahayati (n=60) M (SD)	Combined M (SD)
Intercultural Competency (ICCS/5)	3.32 (0.82)	3.04 (0.89)	3.18 (0.86)	3.18 (0.86)
English Communication Proficiency (ECPT/%)	67.4 (12.3)	59.2 (13.8)	63.8 (12.9)	63.5 (13.1)
GMCC Composite (standardized, 1–5)	3.54	3.23	3.38	3.38

AMANJAYA recorded the highest scores across all three dimensions, followed by STMT Malahayati and AMD. Differences among institutions were statistically significant for MIRKS ($F(2,177)=5.14$, $p=0.007$), ICCS ($F(2,177)=4.28$, $p=0.015$), and ECPT ($F(2,177)=6.82$, $p=0.001$). These differences indicate that institutional learning environments may influence global maritime competence, although further research is required to identify the specific curriculum, instructional, and organizational factors responsible for these differences.

The international relations dimension also requires interpretation beyond simple regulatory memorization. Maritime officers operate within a regulatory system established through international conventions and institutional arrangements. The STCW framework, for example, defines internationally recognized standards for seafarer training, certification, and watchkeeping [4]. Understanding these requirements is therefore necessary, but effective professional performance additionally requires officers to interpret how regulations are implemented by different authorities. The relationship among the three competency dimensions is presented in Table 2.

All three competency dimensions were significantly correlated. The strongest relationship among the three dimensions occurred between ICCS and ECPT ($r=0.64$, $p<0.001$). This result indicates that intercultural competency and English communication proficiency are closely related in maritime professional contexts.

The finding is consistent with intercultural communication theory, which emphasizes that effective communication requires more than knowledge of linguistic forms. Intercultural competence involves the ability to interpret culturally situated meanings, interact appropriately, and maintain attitudes of openness and respect [5], [6]. Consequently, English communication instruction that focuses exclusively on grammar and vocabulary may not fully prepare cadets for professional communication involving different cultural expectations.

The result also supports the argument that English for Specific Purposes should engage with the social and institutional contexts in which professional language is used [7]. For example, communication with a port authority, a senior officer, or a charterer may require different levels of directness, formality, and interactional strategy even when the same English language is used. The SEM results further demonstrate the integrated nature of the competency dimensions is presented in Table 3.

Table 2. Correlations Among Global Maritime Competence Dimensions (n=180)

Variable	MIRKS	ICCS	ECPT	GMCC
MIRKS	1	0.58***	0.62***	0.78***
ICCS	0.58***	1	0.64***	0.82***
ECPT	0.62***	0.64***	1	0.86***
GMCC	0.78***	0.82***	0.86***	1

*** $p<0.001$.

Table 3. SEM Factor Loadings for Global Maritime Competence (n=180)

Indicator	Standardized Factor Loading	S.E.	p-value
MIRKS (International Relations)	0.64	0.07	<0.001
ICCS (Intercultural Competency)	0.79	0.06	<0.001
ECPT (English Communication)	0.84	0.06	<0.001

The single-factor SEM model produced acceptable fit indices (CFI=0.93, RMSEA=0.063, 90% CI=0.049–0.077, SRMR=0.071). All three dimensions loaded significantly on the latent Global Maritime Competence construct. English communication proficiency demonstrated the strongest loading ($\lambda=0.84$), followed by intercultural competency ($\lambda=0.79$) and international relations knowledge ($\lambda=0.64$).

These results indicate that the three dimensions should not be regarded as unrelated educational outcomes. Rather, they operate together in professional situations. A deck officer may possess knowledge of international maritime regulations, but this knowledge may not translate into effective professional action if the officer cannot communicate appropriately with the relevant authority or interpret the cultural context of the interaction.

This integrated interpretation is consistent with the broader development of competency-based education. Competency-based approaches emphasize the relationship between knowledge, performance, and authentic occupational contexts [9]. In Indonesian vocational education, the development of occupational competencies is also increasingly connected to changing technological and industry requirements [10], [11]. The findings of the present study extend this perspective to maritime education by demonstrating the importance of integrating regulatory, communicative, and intercultural dimensions. The industry professionals' assessment provides further evidence of the practical significance of the competency gaps. Table 4 presents the results.

Intercultural communication in multicultural crew contexts was the competency gap most frequently identified by industry professionals, with 64.4% reporting that it frequently or always affected early career performance. Only 31.1% considered recent graduates adequately prepared in this area. Furthermore, 84.4% of industry professionals identified at least one global competency gap among recent graduates, while only 24.4% considered graduates adequately prepared across all dimensions.

These findings have direct implications for maritime safety and professional performance. Multicultural crews must coordinate decisions under conditions of hierarchy, time pressure, and operational uncertainty. Previous maritime research has demonstrated that cultural differences can influence decision-making processes and communication patterns in multinational maritime environments [14]. The present findings therefore indicate that intercultural competence should be treated as an operational competency rather than merely an additional soft skill.

Table 4. Industry Professional Ratings of Global Competency Gaps in Recent Graduates (n=45)

Competency Gap	Frequently/Always Affects Early Career (%)	Graduates Rated Adequately Prepared (%)
Intercultural communication in multicultural crew contexts	64.4	31.1
English communication in Port State Control interaction	57.8	42.2
Knowledge of international maritime authority structures	42.2	53.3
English register appropriateness in charterer communication	48.9	37.8

Competency Gap	Frequently/Always Affects Early Career (%)	Graduates Rated Adequately Prepared (%)
Any global competency gap (at least one dimension)	84.4	24.4

The industry interviews identified several recurring situations. Eight professionals reported instances in which junior officers deferred to incorrect procedures because of difficulties communicating disagreement with senior officers. Eleven professionals identified inappropriate register or indirect communication as contributing to misunderstandings with port authority VTS officers. Six professionals associated documentation errors with unfamiliarity with cultural conventions in charterer sustainability audit communication.

The findings also have implications for the design of maritime vocational curricula. Technical and professional competency cannot be separated entirely from the context in which it is applied. Research in vocational education has demonstrated that competency development increasingly requires curricula to respond to authentic workplace expectations and emerging occupational demands [15]. Similarly, technical and vocational education research emphasizes the importance of integrating multiple competency domains rather than maintaining rigid disciplinary boundaries [16, 17].

The qualitative analysis identified three major barriers that help explain the quantitative findings. The first was the Neutral Language Myth. English communication lecturers across the three institutions reported that instruction predominantly emphasized grammatical accuracy, vocabulary, and conventional professional language forms, while cultural conventions governing professional communication received comparatively limited attention.

One lecturer explained that cadets were taught to produce vessel position reports correctly but were not necessarily taught how expectations concerning directness, formality, and authority could vary across professional contexts. This finding illustrates the limitations of treating English as a culturally neutral communication code. Professional English is embedded within institutional practices, occupational norms, and culturally influenced expectations [7]. Maritime English instruction should therefore use authentic professional situations in which linguistic choices have operational and interpersonal consequences.

The second barrier was Governance Without Context. Maritime law lecturers reported that international maritime regulations were generally taught as bodies of technical rules. Cadets were expected to understand regulatory requirements but received less systematic exposure to the historical, institutional, and geopolitical processes through which those requirements were developed.

One lecturer noted that cadets could identify provisions of SOLAS but had difficulty explaining differences between regional Port State Control regimes such as the Paris MOU and Tokyo MOU. This limitation may encourage a compliance-oriented understanding of regulation without developing the institutional awareness required to interpret regulatory situations strategically. International maritime governance should therefore be presented not only as a collection of rules but also as an institutional system involving multiple authorities and jurisdictions.

The third barrier was Contact Without Competency. Port operations lecturers reported that cadets already experienced some multicultural contact through interactions with foreign officers during port visits and exposure to multinational professional environments. However, this exposure was not systematically processed through explicit intercultural learning activities.

Multicultural contact alone does not necessarily result in intercultural competence. Competence requires reflection, cultural knowledge, appropriate attitudes, interpretation skills, and the ability to

interact effectively across difference [5], [6]. Without structured reflection, multicultural exposure may remain an experience rather than becoming transferable professional competency.

These three barriers demonstrate a structural problem in curriculum organization. English communication, maritime law, and port operations are often treated as separate knowledge domains even though they converge during actual professional encounters. A Port State Control inspection, for example, simultaneously requires regulatory knowledge, English communication, and intercultural awareness. Separating these competencies in the curriculum may therefore create an artificial distinction that does not exist in professional practice.

The strongest correlation between ICCS and ECPT provides a practical entry point for curriculum integration. English communication courses can incorporate culturally contextualized maritime scenarios while maintaining existing language-learning objectives. Port State Control interaction transcripts, VTS communication exchanges, charterer correspondence, and multicultural bridge-team scenarios can simultaneously develop English proficiency and intercultural competency.

Maritime law instruction can also incorporate the historical and institutional context behind international regulations. Rather than focusing exclusively on what a regulation requires, instruction can address which institutions develop, implement, inspect, and enforce the regulation. Such an approach can strengthen cadets' ability to interpret regulatory situations rather than merely memorize provisions.

Port operations and watchkeeping courses can integrate structured intercultural reflection into existing simulations and practical activities. Cadets can analyze differences in authority communication, error reporting, leadership expectations, conflict management, and decision-making within multicultural bridge teams. The proposed curriculum integration is summarized in Table 5.

The proposed framework does not require additional contact hours. Instead, it requires redesigning learning materials and activities so that existing instructional time addresses multiple competency dimensions simultaneously. This approach is consistent with competency-based education, which emphasizes authentic occupational performance and the integration of knowledge and skills [9].

The broader significance of this approach lies in its potential contribution to maritime safety and employability. Indonesian deck officers increasingly work in international environments where their professional performance depends on their ability to interpret regulations, communicate with diverse stakeholders, and manage cultural differences. Strengthening global maritime competence during vocational education may therefore reduce the gap between graduation competencies and actual workplace expectations.

Table 5. Proposed Curriculum Priorities for Global Maritime Competence

Curriculum Area	Existing Limitation	Proposed Integration	Expected Competency Outcome
English Communication	Focus on grammar and technical vocabulary	Use culturally contextualized maritime documents and interaction scenarios	English proficiency + intercultural communication
Maritime Law	Focus on regulatory provisions	Integrate governance history, institutions, and geopolitical context	Regulatory knowledge + institutional awareness

Curriculum Area	Existing Limitation	Proposed Integration	Expected Competency Outcome
Port Operations/Watchkeeping	Multicultural exposure without structured reflection	Add intercultural analysis to existing simulations and operational activities	Operational competency + intercultural awareness

Nevertheless, the study has limitations. The sample was restricted to three maritime education institutions in the Jakarta area, limiting the generalizability of the findings to other Indonesian maritime institutions. The industry assessment was also based partly on professional perceptions rather than longitudinal performance records. Future studies should therefore include a larger number of institutions, longitudinal tracking of graduates during their first years of employment, and direct observation of communication performance in simulated or operational maritime environments.

4. Conclusion

International relations knowledge, intercultural communication competency, and English communication proficiency constitute an integrated Global Maritime Competence construct among Nautika cadets at AMANJAYA, AMD, and STMT Malahayati. The SEM model demonstrated acceptable fit, with CFI=0.93, RMSEA=0.063, and SRMR=0.071, confirming that the three dimensions are interconnected rather than independent domains.

Intercultural competency emerged as the weakest dimension, with a mean score of 3.18/5.00. It was also the competency gap most frequently identified by industry professionals, with 64.4% reporting that intercultural communication frequently or always affected early career performance. Only 31.1% considered recent graduates adequately prepared for multicultural crew coordination, while 84.4% identified at least one global competency gap.

The study contributes to maritime vocational education by demonstrating empirically that global maritime competence requires the integration of regulatory knowledge, intercultural communication, and English communication. The findings also provide practical evidence that curriculum integration can be achieved without increasing instructional contact hours.

Three curriculum priorities are recommended. First, English communication instruction should use culturally contextualized professional maritime documents and interaction scenarios. Second, maritime law instruction should connect regulations with institutional, historical, and governance contexts. Third, multicultural exposure in port operations and watchkeeping should be accompanied by structured intercultural reflection and competency development.

The broader societal and professional implication is that preparing Indonesian deck officers for international employment requires more than regulatory compliance and English language accuracy. Graduates need the ability to interpret institutional authority, communicate across cultural differences, and apply maritime knowledge appropriately in complex international professional environments. Integrating these competencies into maritime vocational education can strengthen graduate employability, professional performance, and ultimately the safety of international maritime operations.

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