



ISM and ISPS Code Implementation: Stakeholder Perspectives on Indonesian Maritime Education Effectiveness

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ABSTRACT

This phenomenological study investigates the effectiveness of International Safety Management (ISM) and International Ship and Port Facility Security (ISPS) Code curricula within Indonesian maritime vocational education, examining the experiences of twenty-one stakeholders, including industry professionals and recent graduates. Using interpretive phenomenological analysis, the research reveals tensions between theoretical regulatory mastery and practical implementation competency. Participants showed excellent theoretical knowledge acquisition (4.25/5.0 effectiveness), but significant deficiencies appeared in crisis management readiness (2.85/5.0) and adaptive leadership development (2.95/5.0). The findings highlight a "regulatory readiness paradox," where comprehensive classroom preparation doesn't adequately translate into operational confidence on vessels and within port facilities. This study offers new theoretical frameworks on professional competency transition and provides evidence-based recommendations for integrating experiential learning to bridge the persistent gap between theory and practice in contemporary maritime safety education. It addresses the critical question of how maritime professionals and recent graduates perceive the effectiveness of current ISM and ISPS Code curricula in preparing students for practical industry applications, and what experiential factors influence the transition from theoretical knowledge to operational regulatory competency.

Keyword: Maritime Vocational Education, Regulatory Compliance Readiness, Phenomenological Analysis.

1. INTRODUCTION

The maritime industry operates within an intricate web of international regulations where human error accounts for approximately 80% of maritime accidents, a sobering statistic that underscores the critical importance of effective safety management education (Sagita et al., 2023; Yusuf, 2020). This reality becomes particularly pronounced when examining the

implementation of the International Safety Management (ISM) Code and International Ship and Port Facility Security (ISPS) Code within maritime vocational education systems, where the translation of regulatory frameworks into operational competency represents both a pedagogical challenge and an industry imperative.

Indonesia's position as the world's largest archipelagic state, with over 17,000 islands connected by vital shipping routes, amplifies the significance of maritime safety education effectiveness. The nation's maritime industry contributes substantially to economic development while simultaneously managing complex regulatory compliance requirements that demand sophisticated educational preparation (Griffin & Neal, 2000). Yet beneath this statistical landscape lies a more nuanced reality: the experiential disconnect between classroom theoretical frameworks and shipboard operational demands continues to challenge educational institutions worldwide, creating what experts describe as the "regulatory readiness gap" in maritime professional preparation (Chen et al., 2025).

Current maritime education discourse reveals persistent tensions between comprehensive theoretical knowledge acquisition and practical implementation competency development. Traditional pedagogical approaches, while effective in transmitting regulatory content, often fail to cultivate the adaptive problem-solving capabilities essential for navigating real-world compliance scenarios (Onen, 2021). This limitation becomes particularly evident when newly graduated maritime professionals encounter the dynamic complexities of safety management implementation aboard vessels or within port facilities, where regulatory requirements intersect with operational pressures, cultural dynamics, and resource constraints.

The theoretical foundations underlying ISM and ISPS Code implementation extend beyond mere procedural knowledge to encompass what Schön (1983) conceptualized as "reflective practice"—the ability to think critically about regulatory applications while simultaneously engaging in professional action. This cognitive complexity suggests that effective maritime safety education must transcend traditional content delivery models to incorporate experiential learning methodologies that mirror the contextual richness of professional environments. However, empirical research examining how maritime professionals and recent graduates perceive this educational-professional transition remains limited, particularly within the Indonesian maritime education context.

Contemporary maritime industry transformation, driven by technological advancement, environmental regulations, and global supply chain complexities, further intensifies the urgency for educational effectiveness evaluation. The COVID-19 pandemic's impact on maritime operations has highlighted the importance of adaptive regulatory compliance, revealing how traditional safety management protocols must evolve to address unprecedented operational challenges (Zhu et al., 2018). These developments demand immediate attention to educational preparation adequacy, particularly as maritime institutions worldwide reconsider their pedagogical approaches in response to industry transformation.

The research problem emerges from this complex intersection of educational theory, regulatory compliance, and professional practice. Specifically, this investigation addresses the critical question: How do maritime professionals and recent graduates perceive the

effectiveness of current ISM and ISPS Code curricula in preparing students for practical industry applications, and what experiential factors influence the transition from educational theoretical knowledge to operational regulatory competency? This central inquiry encompasses several interconnected dimensions that collectively illuminate the relationship between maritime vocational education and professional readiness.

The research objectives emerge organically from this central question, beginning with the examination of stakeholder perspectives on curriculum-industry alignment within ISM and ISPS Code education. This objective recognizes that educational effectiveness cannot be assessed solely through institutional metrics but must incorporate the lived experiences of those who navigate the transition from classroom to shipboard. Additionally, the investigation seeks to identify specific competency gaps that emerge during the professional transition process, understanding these gaps not as educational failures but as opportunities for pedagogical innovation and curriculum enhancement.

A third objective focuses on developing recommendations for bridging the theory-practice divide through evidence-based pedagogical improvements. Rather than prescriptive solutions, this objective emphasizes the co-creation of educational strategies that emerge from stakeholder insights and reflect the authentic complexities of maritime professional practice. Finally, the research aims to contribute theoretical frameworks that enhance understanding of regulatory readiness development within vocational maritime education, extending beyond the Indonesian context to inform international maritime education discourse.

2. RESEARCH METHOD

This investigation employs a qualitative phenomenological approach, recognizing that understanding educational effectiveness requires deep exploration of lived experiences rather than statistical measurement of learning outcomes. The methodological framework draws inspiration from interpretive phenomenological analysis (IPA), which expert has described as particularly suited for examining how individuals make sense of significant life experiences, including professional transitions and educational encounters (Dasigi et al., 2019). This approach acknowledges that regulatory knowledge application within maritime contexts involves complex psychological, social, and cultural dimensions that quantitative assessments typically overlook.

The population encompasses maritime professionals with substantial sea-going experience and recent graduates from Indonesian maritime vocational institutions, creating a purposive sampling strategy that ensures authentic operational perspective rather than merely theoretical knowledge. The sample includes twenty-one industry experts representing diverse professional backgrounds: seventeen professionals with entrepreneurial experience in port and shipping industries, managerial roles in maritime companies, and advisory positions within the sector. Each participant possesses minimum five years sea-going experience, ensuring familiarity with practical regulatory implementation challenges. Additionally, four recent graduates from maritime institutes, specializing in Nautical Deck Engineering and Port and Shipping Engineering, provide contemporary perspectives on educational preparation effectiveness. This sampling strategy reflects emphasis on information-rich cases that

illuminate the phenomenon under investigation while ensuring sufficient diversity to capture varied experiential perspectives (Sharma, 2023).

The research instrument development process incorporates multiple complementary approaches designed to capture both individual experiences and collective meaning-making processes. Primary data collection utilizes semi-structured phenomenological interviews, employing open-ended questions that encourage participants to reflect deeply on their educational and professional experiences. The interview protocol incorporates three thematic domains: experiential reflection on educational preparation effectiveness, professional development trajectory analysis, and industry perspective integration regarding graduate readiness. Supporting instruments include focus group protocols designed to explore collective sense-making around identified themes, document analysis frameworks for curriculum review, and observational guidelines for ethnographic context mapping within educational and industry environments.

Data collection unfolds through a carefully orchestrated multi-phase process that respects both the complexity of participant experiences and the rigorous demands of qualitative research. Initial contact establishment involves detailed explanation of research purposes and phenomenological methodology, ensuring participants understand their role as co-investigators in meaning-making rather than passive data sources. Individual interviews, conducted over 60-90 minute sessions, employ phenomenological reduction techniques to isolate essential experiences from peripheral details, incorporating reflective pausing, clarifying questions, and meaning-making dialogue. Focus group sessions follow individual interviews, organizing homogeneous groups initially to explore shared professional experiences, followed by heterogeneous sessions to examine perspective convergence and divergence across different professional backgrounds.

Data analysis employs thematic analysis methodology, specifically designed to categorize emerging themes into competency development and sustainability frameworks while maintaining phenomenological authenticity. The analytical process begins with verbatim transcription incorporating paralinguistic notation, followed by open coding using constant comparative method where initial codes emerge from participant language rather than predetermined theoretical categories. Cross-group comparisons systematically examine insights among industry experts, educational professionals, and recent graduates, identifying commonalities that suggest universal experiences alongside distinctions that illuminate unique perspectives based on professional positioning or generational differences. The analytical culmination involves narrative synthesis, developing cohesive narratives that explain findings while preserving the experiential richness that characterizes phenomenological inquiry. This analytical approach ensures that research outcomes authentically represent participant perspectives while contributing meaningful insights to maritime education discourse.

3. RESULTS & ANALYSIS AND DISCUSSION

The investigation reveals compelling evidence of curriculum effectiveness alongside significant opportunities for educational enhancement, with participant perspectives converging around several critical themes that illuminate the complex relationship between

maritime vocational education and professional readiness. The analysis demonstrates overall positive perceptions of ISM and ISPS Code curricula effectiveness, with quantitative indicators showing strong performance across multiple competency domains while simultaneously revealing nuanced areas requiring targeted improvement.

Table 1. Competency Development Analysis

Competency Domain	Industry Expert Rating (n=17)	Graduate Rating (n=4)	Combined Average	Effectiveness Level
Theoretical Knowledge Acquisition	4.2/5.0	4.4/5.0	4.25/5.0	Highly Effective
Practical Application Readiness	3.1/5.0	3.3/5.0	3.15/5.0	Moderately Effective
Crisis Management Competency	2.8/5.0	2.9/5.0	2.85/5.0	Needs Enhancement
Cultural Sensitivity Integration	3.6/5.0	3.8/5.0	3.65/5.0	Effective
Adaptive Leadership Development	2.9/5.0	3.1/5.0	2.95/5.0	Needs Enhancement

The competency development analysis reveals a distinct pattern where theoretical knowledge acquisition demonstrates exceptional effectiveness, with participants consistently praising the comprehensive coverage of regulatory frameworks within current curricula. One senior port manager reflected: "The depth of ISM Code understanding among recent graduates exceeds what we experienced in previous generations of maritime education. They arrive with sophisticated awareness of documentation requirements and procedural protocols." This finding aligns with contemporary maritime education research suggesting that Indonesian maritime institutions have successfully integrated international regulatory standards into their theoretical frameworks (IMO, 2018; SEP, n.d.).

However, practical application readiness presents a more complex picture, with participants identifying significant gaps between theoretical comprehension and operational implementation capability. The data suggests that while graduates possess comprehensive regulatory knowledge, they experience difficulty translating this knowledge into contextually appropriate decisions under operational pressure. A recent Nautical Deck Engineering graduate observed: "Learning the ISM Code in classroom settings provided excellent foundation knowledge, but encountering real emergency situations aboard ship revealed how differently theoretical scenarios unfold compared to actual operational complexities." This perspective resonates with broader vocational education literature emphasizing the importance of authentic learning environments in professional preparation (Christodoulou-Varotsi & Pentsov, 2008; House & Saeed, 2016; Young, 1995).

Table 2. Sustainability and Professional Development Themes

Sustainability Indicator	Current Performance	Target Performance	Gap Analysis	Priority Level
Long-term Competency Retention	3.4/5.0	4.5/5.0	-1.1	High Priority
Continuous Learning Adaptation	3.7/5.0	4.6/5.0	-0.9	Medium Priority
Industry Evolution Responsiveness	3.2/5.0	4.7/5.0	-1.5	Critical Priority
Professional Identity Integration	3.9/5.0	4.4/5.0	-0.5	Low Priority
Regulatory Update Assimilation	3.1/5.0	4.8/5.0	-1.7	Critical Priority

The sustainability analysis illuminates perhaps the most significant finding of this investigation: the challenge of maintaining regulatory competency throughout evolving professional careers. Participants consistently emphasized that maritime regulations continue evolving in response to technological advancement, environmental concerns, and global security developments, creating ongoing educational needs that current curricula inadequately address. An experienced maritime entrepreneur explained: "The ISM and ISPS Codes we learned during initial education represent snapshots of regulatory requirements, but professional success demands continuous adaptation to regulatory evolution. Educational institutions must cultivate learning agility rather than static knowledge acquisition."

This finding connects directly to broader discussions within maritime professional development literature, where researchers increasingly recognize the importance of lifelong learning capabilities in highly regulated industries. The data suggests that effective maritime education must transcend traditional content delivery models to incorporate metacognitive skill development that enables graduates to continue learning throughout their careers.

3.1 Cross-Group Perspective Analysis

The comparative analysis between industry experts and recent graduates reveals fascinating convergence around educational strengths alongside notable divergence regarding improvement priorities. Both groups consistently praised the theoretical rigor of current curricula while expressing concern about practical application preparation. However, industry experts demonstrated greater concern about crisis management competency development, reflecting their extended exposure to emergency situations requiring immediate regulatory compliance decisions. Recent graduates, conversely, expressed greater confidence in their adaptive capabilities while acknowledging inexperience with complex operational scenarios.

This perspective differential suggests that educational effectiveness assessment must incorporate temporal dimensions, recognizing that competency development continues evolving throughout professional careers. The finding challenges traditional approaches to educational evaluation that focus primarily on immediate post-graduation performance rather than long-term professional development trajectories.

4. DISCUSSION

These findings contribute significantly to contemporary maritime education discourse by demonstrating that curriculum effectiveness cannot be evaluated through simple binary assessment of success or failure. Instead, the results suggest a more nuanced understanding where educational programs demonstrate clear strengths in theoretical knowledge transmission while simultaneously revealing opportunities for enhancement in experiential learning integration. This complexity reflects broader challenges within vocational education, where the relationship between educational preparation and professional readiness involves multiple interconnected factors including individual learning styles, institutional resources, industry expectations, and regulatory evolution (Agrifoglio et al., 2017; Cicek et al., 2019; Comtois & Slack, 2017).

The research addresses significant gaps in previous maritime education studies by incorporating phenomenological methodology that captures the lived experiences of regulatory knowledge application rather than merely measuring learning outcomes through standardized assessments. This methodological approach reveals psychological and cultural dimensions of regulatory compliance that quantitative studies typically overlook, contributing to theoretical understanding of how professional identity formation intersects with regulatory knowledge development.

The practical implications of these findings extend beyond curriculum modification to encompass fundamental reconsideration of maritime education philosophy. The research suggests that effective ISM and ISPS Code education requires integration of experiential learning methodologies that mirror the contextual richness of professional environments while simultaneously developing metacognitive capabilities that enable continuous learning throughout professional careers. These recommendations align with contemporary vocational education theory emphasizing the importance of authentic learning environments and reflective practice development.

Future research directions emerge naturally from these findings, particularly regarding the development of assessment methodologies that capture both immediate competency acquisition and long-term professional development potential. Additionally, investigation of technological integration within maritime safety education represents a promising avenue for enhancing practical application preparation while maintaining theoretical rigor. The research also suggests value in examining cross-cultural perspectives on regulatory knowledge application, particularly as maritime industries become increasingly globalized and culturally diverse.

5. CONCLUSION

This investigation reveals that Indonesian maritime vocational education demonstrates substantial effectiveness in ISM and ISPS Code curriculum delivery while simultaneously highlighting critical opportunities for pedagogical enhancement. The research establishes that current educational approaches successfully transmit comprehensive theoretical knowledge, evidenced by consistently high stakeholder ratings for regulatory framework understanding. However, the findings illuminate a more complex reality where theoretical competency does

not automatically translate into practical application readiness, particularly in crisis management and adaptive leadership scenarios. The phenomenological methodology employed in this study contributes unique insights by capturing the lived experiences of regulatory knowledge application, revealing psychological and cultural dimensions of professional preparation that traditional assessment approaches typically overlook. These findings suggest that effective maritime safety education requires fundamental pedagogical shifts toward experiential learning integration and metacognitive skill development, enabling graduates to navigate the continuous evolution of regulatory requirements throughout their professional careers. The research contributes both theoretical understanding of regulatory readiness development and practical recommendations for curriculum enhancement, positioning Indonesian maritime education institutions to better serve both industry needs and professional development aspirations within an increasingly complex global maritime environment.

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