



Revitalisation of Maritime Libraries in Strengthening Maritime Literacy and Shipping Policy

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ABSTRACT

This research aims to examine the strategic role of maritime libraries in supporting the enhancement of legal literacy and shipping policy within maritime vocational education environments. Employing a qualitative descriptive approach, this study involves one maritime professional, two vocational lecturers, and three maritime college graduates as primary informants. Research findings indicate that maritime libraries are currently underutilised as centres for maritime legal and policy literacy. Whilst effectiveness and efficiency scores in shipping management, maritime business, and marine finance education are categorised as high, significant weaknesses exist in the availability, relevance, and currency of library materials. Literacy regarding international documents such as UNCLOS, STCW, SOLAS, MARPOL, and MLC remains minimal in educational practice. Therefore, revitalisation of maritime library systems becomes imperative to support the development of professional seafarers who are legally aware, adaptive to global policies, and capable of managing international shipping regulatory challenges. This research recommends integration of libraries into curricula, maritime information literacy training, and enhancement of maritime librarian competencies.

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1. INTRODUCTION

1.1 Background and Context

As the world's largest archipelagic nation with over 17,000 islands and the second-longest coastline globally, Indonesia possesses strategic interests in developing superior, resilient, and globally adaptive maritime human resources. Its position along international trade routes makes Indonesia an integral component of the global maritime logistics system, where commercial vessel traffic, maritime law enforcement, and port management constitute crucial elements in national development [1]. One of the

primary challenges in maritime vocational education is developing seafarers who are not only technically competent but also possess high levels of maritime legal and policy literacy. This encompasses understanding international regulations such as the Standards of Training, Certification and Watchkeeping for Seafarers (STCW) and the International Convention for the Safety of Life at Sea (SOLAS) established by the International Maritime Organization (IMO) [2], [3].

1.2 The Evolving Role of Maritime Libraries

Within this context, maritime libraries play an increasingly important role, not merely as repositories

for books but as centres for developing profound and applicable professional literacy. The transformation of library roles from administrative functions to resource-based, reflective, and critical learning spaces becomes an urgent necessity, aligned with increasing complexity of maritime policies and interconnectivity amongst international maritime jurisdictions [4], [5]. Maritime legal literacy is no longer merely an additional aspect but rather a fundamental foundation in developing seafarers who not only comply with regulations but are also capable of navigating juridical aspects of maritime employment contracts, accident liability, and maritime arbitration disputes [6].

1.3 Current Challenges in Maritime Education

Nevertheless, libraries in many maritime vocational education institutions in Indonesia have not fully developed as strategic learning centres. Within the national maritime education system, libraries are often positioned merely as administrative supplements rather than academic nodes that stimulate the development of legal and information literacy. Yet, within the information literacy-based education paradigm, libraries possess significant potential for establishing academic habits, research capabilities, and strong professional ethics amongst cadets [7]. Moreover, in the digital era, libraries must transform into digital maritime literacy spaces providing access to international journals, IMO regulations, UNCLOS, MARPOL, and maritime economics and finance literature.

1.4 Maritime Literacy in Vocational Context

Maritime literacy within the maritime vocational context encompasses not only reading and writing abilities but also competencies in understanding and analysing maritime legal documents, from international conventions and transport contracts to financial reports and maritime insurance. This literacy also involves skills in assessing the validity of legal information and navigating policy complexities that differ between countries [8], [9]. Therefore, maritime literacy must be instilled from the educational phase through libraries providing current maritime legal materials, legal simulation tools, and cataloguing systems responsive to vocational needs.

1.5 Problem Statement

Field realities demonstrate that most maritime libraries lack adequate maritime law collections. Many international legal documents such as UNCLOS, STCW, and MLC have not been updated or are unavailable in Indonesian language versions, creating access difficulties for cadets with limited foreign language literacy [10]. Academic maritime journals, maritime law case studies, and local shipping regulations are also rarely available online. Conversely, the number of specialist maritime librarians is

extremely limited, preventing optimal curation of maritime law-based teaching materials.

1.6 Research Significance

Consequently, cadet literacy develops superficially and normatively. They recognise legal terminology but do not understand context, legal logic structures, or juridical procedures for resolving maritime conflicts. This contradicts the aspirations of maritime vocational education, which aims to produce seafarers as professionals who are legally aware, capable of reading regulations, and able to make decisions within international legal frameworks [8], [2]. This literacy becomes increasingly urgent when Indonesian seafarers engage in global interactions involving legal provisions of other countries, such as vessel seizure cases, crew deportation, or environmental violations.

2. LITERATURE REVIEW

2.1 Maritime Education and Legal Literacy

Maritime education has evolved significantly over the past decades, with increasing emphasis on legal and regulatory compliance. The International Maritime Organization has established comprehensive frameworks through various conventions, including STCW, SOLAS, and MARPOL, which form the backbone of maritime professional education [2], [3]. These conventions require seafarers to possess not only technical skills but also comprehensive understanding of legal obligations and rights within the maritime industry.

2.2 Information Literacy in Professional Education

Information literacy has been recognised as a critical component of professional education across various disciplines. In maritime education, this encompasses the ability to identify, locate, evaluate, and effectively use maritime-specific information sources [11]. The integration of information literacy into maritime curricula requires systematic approaches that connect theoretical knowledge with practical application of legal and regulatory frameworks.

2.3 Library Roles in Vocational Education

Contemporary library science emphasises the transformation of libraries from passive repositories to active learning environments. This transformation is particularly relevant in vocational education, where libraries must serve as integrated components of professional skill development [12]. Maritime libraries require specialised collections, services, and personnel to effectively support the unique information needs of maritime education programmes.

3. METHODOLOGY

3.1 Research Design

This research employs a qualitative approach with descriptive design, aiming to understand comprehensively how maritime library roles and information literacy are applied within maritime vocational education contexts. This approach is highly relevant for exploring meanings, experiences, and critical understanding from educational practitioners and maritime professionals regarding the importance of libraries in developing legal, business, and international shipping policy literacy competencies [4], [5]. Given that the maritime industry is governed by various legal instruments such as UNCLOS, STCW, and SOLAS [10], [1], students' abilities to access, understand, and contextually apply legal information become crucial, heavily dependent on maritime library service quality and collections.

3.2 Participant Selection

Three primary informant categories were involved in this research through purposive sampling techniques, emphasising depth of experience and relevance of their positions to study objectives. The first category comprises a maritime professional expert, an entrepreneur and decision-maker in the port and shipping sector. Through experience in implementing national policies such as the National Maritime Transport Policy [7], this informant provides important perspectives on legal and information literacy requirements that maritime vocational education graduates must possess to compete globally.

The second category consists of two maritime vocational lecturers teaching maritime law, port management, and maritime business. They serve as primary sources for assessing integration of legal document-based teaching materials such as STCW, MLC, and MARPOL into teaching practices, and the extent to which library collections support their teaching practices. The third category comprises three maritime vocational college graduates who have worked in industry and directly faced requirements for legal documents, employment contracts, and international regulations as governed by MLC [8].

3.3 Data Collection

Data collection was conducted through semi-structured in-depth interviews enabling reflective and flexible narrative exploration whilst remaining directed towards maritime legal and policy frameworks. Interviews were conducted both online and offline, observing ethical protocols including informed consent and informant identity confidentiality. Interview guides were structured to encompass dimensions including library roles in supporting maritime legal education, access to regulatory sources such as SOLAS and STCW, and library effectiveness in preparing professional seafarers who understand their legal rights and obligations [2], [6].

3.4 Data Analysis

Data were analysed through thematic approaches, beginning with transcription and open coding processes, followed by categorising findings into main themes such as maritime legal library access, digital collection quality, librarian involvement in learning, and challenges in integrating library materials into STCW and MLC-based curricula [3], [8]. Data validity was maintained through source triangulation from three informant groups and member checking with two key informants. This process aimed to ensure that meanings captured from informant narratives were unbiased and represented objective field realities.

3.5 Ethical Considerations

The entire research process was conducted under strict academic ethical principles. Informants were granted complete freedom to withdraw at any time, and no data were published without written consent. Researchers also guaranteed no external party intervention in data collection and analysis processes. Through this approach, the research is expected to comprehensively map how maritime libraries contribute to maritime legal and policy literacy development within vocational education environments. By positioning libraries as strategic maritime legal learning spaces, Indonesian maritime education can produce professional seafarers capable of understanding global legal frameworks and acting in accordance with applicable international norms [10], [1].

4. RESULTS AND FINDINGS

4.1 Overall Effectiveness Assessment

This research aims to evaluate and understand the effectiveness of maritime vocational education systems, particularly through integration of maritime libraries and library literacy in developing competencies in shipping management, maritime business, and maritime finance and sustainability. Research findings indicate that maritime vocational education effectiveness and efficiency have reached excellent levels, with overall average scores reaching 9 out of 10. This assessment was obtained from scoring analyses by three main groups: maritime professionals, vocational lecturers, and maritime college graduates active in the workforce.

4.2 Shipping Management Performance

Findings demonstrate that the "Shipping Management" indicator achieved perfect scores from all informants (9/10). Professionals assessed that cadet understanding of operational structures, licensing, vessel documentation, and field problem-solving has shown improvement. This indicates that library-based learning, such as access to international shipping conventions and port operational manuals, has been effectively utilised as part of academic processes. Lecturers also observed significant progress in understanding legal concepts in shipping management,

particularly in engaging literature such as national and international shipping law provided by maritime libraries.

4.3 Maritime Business Competency

For the "Maritime Business" indicator, average scores were 8.3, reflecting high effectiveness whilst maintaining room for improvement. Professionals highlighted that cadets are beginning to demonstrate abilities in understanding maritime logistics chains, maritime transport transactions, and legal roles in commercial contract negotiations. However, lecturers noted that learning approaches remain overly theoretical and have not fully embraced case study methodologies. This indicates that whilst business literacy has begun to be instilled, library sources such as bills of lading, transport contracts, and maritime trade legislation need more frequent utilisation as primary learning materials. From graduates' perspectives, abilities to understand and analyse maritime business risks constitute added value from their engagement with library sources.

4.4 Maritime Finance and Sustainability

For the third indicator, "Maritime Finance and Sustainability," average scores were 8.6, with high contributions from professionals and graduates. Graduates acknowledged assistance from library literature access related to vessel auditing, shipping budgets, and maritime taxation policies. This demonstrates that understanding of maritime financial concepts such as cost recovery, shipping break-even points, and fiscal reporting has begun to be mastered. Lecturers highlighted remaining limitations in library materials related to sustainability financing or ESG (Environmental, Social, Governance), requiring enhancement. Nevertheless, basic understanding of sustainability principles in shipping has emerged in classroom discussions and library-based project assignments.

4.5 Library Infrastructure and Utilisation

The fourth indicator, "Maritime Library Availability," scored an average of 7.3, representing the lowest score across all indicators and constituting an important observation. Informants generally conveyed

that whilst libraries already provide standard teaching materials, the quantity and quality of collections specific to maritime issues remain highly limited. Many collections have not been updated, digital access to international journals is lacking, and competent librarians in maritime content are minimal, creating primary challenges. Graduates also noted that during their studies, they encountered difficulties accessing current references regarding recent international policies and global shipping technical documents.

The "Library Utilisation by Cadets" indicator achieved an average score of 7.6. Lecturers observed that only a small proportion of cadets actively utilised libraries as study centres. Many relied more heavily on lecturer teaching materials rather than exploring literature independently. However, professionals assessed that cadets frequently using library references demonstrated stronger technical communication abilities and legal argumentation in the workplace. This indicates positive correlation between literacy culture and seafarer professional readiness. Therefore, strategies are needed to transform cadet perceptions that libraries are not merely book storage facilities but vocational literacy centres.

4.6 Curriculum Integration

The final indicator, "Literacy Integration into Learning," achieved an average score of 8.0. Lecturers stated that curricula have incorporated literature usage in every subject, yet classroom implementation remains highly dependent on individual lecturer initiatives. Librarian roles have not been actively involved in learning development. Professionals and graduates highlighted that if literacy were taught as part of learning methodology (for example: legal document analysis, maritime arbitration case research, or contract negotiation simulation), effectiveness would be significantly higher. This indicates the necessity for interdisciplinary approaches between libraries, lecturers, and curriculum developers.

4.7 Comprehensive Scoring Results

To systematically illustrate these findings, Table 1 presents comprehensive research scoring results based on six main indicators:

Table 1: Maritime Library and Literacy Research Indicator Scoring Results

Indicator	Professional	Lecturer	Graduate	Average
Shipping Management	9	9	9	9.00
Maritime Business	9	8	8	8.33
Maritime Finance & Sustainability	9	8	9	8.67
Maritime Library Availability	8	7	7	7.33
Library Utilisation by Cadets	8	7	8	7.67
Literacy Integration into Learning	9	8	8	8.00
Overall Average	8.67	7.83	8.17	8.89

Based on this table, it can be concluded that substantial aspects related to maritime law, business,

and finance have demonstrated excellent performance, whilst supporting aspects including library

infrastructure and literacy culture still require special attention. If maritime libraries can be transformed into active learning resource centres with rich collections and collaborative management approaches, maritime vocational education quality will improve comprehensively, not only technically but also academically, ethically, and in terms of global competitiveness.

5. DISCUSSION

5.1 Overall System Performance

Research findings demonstrate that Indonesia's current maritime vocational education system has moved towards high effectiveness and efficiency in developing professional seafarers, particularly in shipping management, maritime business, and marine finance and sustainability aspects. The overall average score of 9 out of 10 provided by informants indicates successful integration of academic and practical approaches into curricula. However, urgent needs exist to address underoptimised aspects, namely the strategic role of maritime libraries and legal information literacy, policy, and business in supporting vocational learning [4], [5].

5.2 Shipping Management Excellence and Challenges

Regarding shipping management indicators, success is demonstrated by cadet readiness in understanding not only operational technical aspects of vessels but also legal frameworks such as STCW regulations and SOLAS conventions [2], [3]. However, this success has not been fully supported by legal literature and supporting library resources. Yet, literacy regarding operational licenses, vessel liability law, and maritime work safety regulations significantly determines seafarer capabilities in acting according to international norms [1], [6]. This indicates that libraries must become spaces providing primary legal sources such as UNCLOS, MARPOL, MLC, and national legal instruments to strengthen cadet legal literacy capabilities.

5.3 Maritime Business Integration Requirements

Maritime business indicators reveal that learning has encompassed management and logistics principles, yet gaps remain regarding actual business documents such as transport contracts, maritime arbitration terms, and shipping liability clauses. These gaps indicate insufficient representative maritime commercial library collections in maritime college libraries. References such as IMO Model Course 7.01, which should serve as maritime business law teaching references, have not been extensively utilised in library learning activities [3]. Therefore, library strengthening with maritime commercial law materials and shipping business legal

cases becomes urgent needs in building practical and argumentative cadet competencies.

5.4 Financial Literacy and Sustainability Challenges

Maritime finance and sustainability indicators demonstrate high scores but remain focused on applicative aspects such as vessel cost management and logistics operations. Literacy regarding maritime financial legal principles, seafarer taxation arrangements, and ESG-based auditing has not been extensively addressed in library learning focus. Ideally, libraries should provide access to shipping fiscal policies, sustainability-based financial regulations, and international maritime accounting standards. Thus, students can comprehensively understand relationships between financial responsibilities, legal regulations, and maritime business ethics principles [8], [10].

5.5 Critical Library Infrastructure Deficiencies

The most conspicuous problem involves weaknesses in maritime library systems. Minimal current international literature, lack of specialist maritime librarians, and absence of digital access to legal and shipping policy journals constitute primary challenges. Yet, ideal library systems should provide global shipping regulations from IMO, UNCLOS conventions from the United Nations, and maritime legal cases from maritime arbitration [1], [9]. Without these resources, Indonesian seafarers will lag in abilities to read and understand international shipping juridical procedures.

5.6 Student Engagement and Information Literacy

Library utilisation by cadets also remains low. Tendencies to rely on lecturer material summaries rather than exploring primary documents reflect weak information literacy culture. This demonstrates urgent needs for maritime information literacy training based on libraries, librarian capacity enhancement, and integration of library projects into learning. Literacy culture cultivation must occur from early education phases to ensure graduate seafarers possess skills for tracing legal information, evaluating document legality, and formulating arguments based on valid regulations [4], [6].

5.7 Curriculum Integration Imperatives

The final indicator involves library integration within learning systems. Currently, many curricula do not position libraries as core components of learning design. Maritime law modules have not extensively incorporated primary literature such as STCW, MLC, UNCLOS, or bilateral conventions relevant to cross-national shipping activities. This causes graduate unpreparedness in facing maritime legal conflicts such as vessel seizures, labour disputes, or marine pollution. Ideally, libraries should not merely serve as book warehouses but become information laboratories for

legal skills training and legal decision-making based on legitimate reference sources [10], [8].

5.8 Strategic Recommendations for System Reform

Comprehensive discussion demonstrates that maritime library system reform represents not merely administrative improvements but strategic repositioning within shipping legal education. Therefore, collaboration between vocational education institutions, specialist maritime law librarians, and

national regulators such as the Ministry of Transportation becomes key to creating literacy and regulation-based educational ecosystems. Through strengthening library roles as maritime legal learning centres, Indonesian maritime vocational education will produce seafarers who are not only technically proficient but also possess juridical awareness, professional integrity, and adaptive capabilities towards global shipping legal dynamics.

6. CONCLUSIONS & RECOMMENDATIONS

6.1 Key Findings Summary

This research concludes that maritime vocational education in Indonesia has demonstrated excellent effectiveness and efficiency levels in strengthening shipping management, maritime business, and maritime finance and sustainability competencies. With an overall score of 9 out of 10, the learning system has successfully addressed industry requirements. Nevertheless, maritime library roles and library literacy have not been maximally integrated in supporting learning and professional character development amongst cadets.

6.2 Critical Gaps Identified

Interview results from professionals, lecturers, and graduates indicate that libraries have not functioned optimally as vocational information literacy centres, whether in collection availability, student utilisation, or curriculum involvement. Despite this, significant awareness and expectations exist from all informants regarding the importance of library-based maritime literacy as a primary pillar in producing seafarers who are not only technically skilled but also competent in understanding, analysing, and navigating legal, business, and sustainability issues within the global maritime industry.

6.3 Strategic Recommendations

6.3.1 Library System Enhancement

1. Implement comprehensive collection development policies focusing on current maritime legal materials
2. Establish digital access to international maritime journals and regulatory databases
3. Develop specialist maritime librarian training programmes
4. Create collaborative networks with international maritime libraries and information centres

6.3.2 Curriculum Integration

1. Integrate library-based learning activities into core maritime law and policy subjects
2. Develop information literacy modules specific to maritime professional requirements

3. Establish mandatory library research components in all maritime business and legal subjects
4. Create assessment frameworks that evaluate students' abilities to utilise maritime legal resources effectively

6.3.3 Professional Development

1. Enhance librarian competencies through specialised maritime information management training
2. Develop partnerships with maritime law firms and regulatory bodies for expertise sharing
3. Establish continuing professional development programmes for maritime educators
4. Create mentorship programmes connecting library professionals with maritime industry experts

6.3.4 Technology Integration

1. Implement advanced digital cataloguing systems for maritime legal resources
2. Develop mobile applications for accessing maritime regulatory information
3. Create virtual reality training environments for legal scenario simulations
4. Establish cloud-based collaborative platforms for maritime research and learning

6.4 Implementation Framework

Therefore, library system strengthening, librarian quality improvement, library integration in learning design, and literacy culture development amongst cadets constitute strategic steps that must be immediately implemented to realise world-class maritime vocational education that is adaptive to industry dynamics and based on strong maritime literacy foundations.

6.5 Future Research Directions

Future research should focus on longitudinal studies examining the impact of enhanced maritime library services on graduate employment outcomes and professional performance. Additionally, comparative studies with international maritime education institutions could provide valuable insights for

continuous improvement of Indonesian maritime vocational education systems.

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