



Evaluation of Compliance with IMO FAL Regulations in International Shipping Standards: A Comparative Study between Indonesia and Singapore

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ABSTRACT

This study examines and compares the compliance levels of Indonesia and Singapore with the International Maritime Organization's Convention on Facilitation of International Maritime Traffic (FAL Convention), focusing on its implications for international shipping standards. The background of this research lies in the growing importance of administrative efficiency and digital integration in port operations as essential determinants of maritime competitiveness. Both countries, situated along vital international trade routes, have ratified the FAL Convention; however, their implementation outcomes differ significantly. The main objective of this study is to evaluate how far both states have operationalized facilitation obligations, including the use of standardized FAL forms, electronic reporting systems, Maritime Single Window (MSW) implementation, and the enforcement of inspection facilitation principles. Using a qualitative comparative method based on document analysis, the research reviews legal frameworks, official port authority guidelines, and international compliance reports. The findings reveal that Singapore exhibits full compliance across all FAL indicators, supported by an integrated MSW, mandatory electronic data exchange, and consistent application of inspection facilitation procedures. Indonesia demonstrates partial compliance, with major ports showing progress in digital reporting but with smaller ports still constrained by limited interoperability, uneven enforcement, and fragmented administrative coordination. These variations stem from institutional capacity gaps, regulatory misalignment, and differing levels of digital readiness. The study concludes that enhancing inter-agency coordination, standardizing inspection procedures, and improving MSW interoperability are critical strategies for Indonesia to strengthen its compliance with the FAL Convention and improve port facilitation performance within global maritime governance.

Keyword: IMO FAL, Compliance, Maritime Facilitation, Maritime Single Window

INTRODUCTION

International maritime transport performance is increasingly determined by how efficiently ports handle administrative and procedural formalities during ship arrival, stay, and departure. Persistent problems such as duplicated documentation, fragmented clearance channels, and sequential processing across multiple authorities can extend vessel turnaround time and generate avoidable logistics costs that ultimately weaken port competitiveness in global liner networks. In this context, facilitation is not a peripheral administrative matter; it is a core determinant of reliability, schedule integrity, and supply chain predictability. The

practical consequences are visible in door-to-door transit time, port call planning, and the resilience of maritime logistics flows when disruption occurs (Sun et al., 2022; Vaghi & Lucietti, 2016).

Addressing port formalities has intensified with the global push toward paperless reporting and interoperable digital submission. One key direction is the adoption of the Maritime Single Window (MSW) concept, designed to consolidate vessel, cargo, crew, and passenger reporting through a unified electronic gateway. While MSW is widely promoted as a solution to repetitive submissions and clearance delays, the benefits depend on how well MSW is implemented, whether electronic reporting becomes mandatory rather than optional, and whether stakeholders consistently rely on the same digital channel instead of maintaining parallel manual pathways. These conditions make MSW a relevant lens for evaluating facilitation outcomes across different national and port governance settings (Morrall et al., 2016; Peynirci, 2023).

At the port-community level, facilitation is also shaped by inter-organizational information systems such as Port Community Systems (PCS), which connect shipping lines, agents, terminals, and public authorities to coordinate port calls and share standardized information. Research shows that PCS can support port efficiency and reduce friction by enabling data reuse and smoother communication among actors. However, PCS effectiveness is not automatic; it requires coordination rules, consistent participation, and credible governance arrangements that sustain information quality. These insights matter for facilitation compliance because standardized procedures on paper do not necessarily translate into standardized practices in daily operations without shared digital routines (Carlan et al., 2016; Moros-Daza et al., 2020).

Despite the promise of digital facilitation, ports often struggle to integrate legacy ICT modules, harmonize data standards, and create interoperable infrastructures across multiple systems. The challenge is not only technical but also organizational: different actors may adopt different platforms, interpret reporting requirements differently, and maintain closed information silos. Open-data initiatives and platform strategies offer new opportunities for transparency and decision support, yet they also highlight persistent gaps in data formats, access rules, and implementation capability. As a result, facilitation performance is increasingly linked to whether ports can align interoperability strategies with practical operational constraints across diverse stakeholders (Cepolina & Ghiara, 2013; Inkinen et al., 2019).

The broader literature on maritime logistics digitalization further underscores why facilitation has become urgent: digital transformation is widely associated with efficiency gains, improved coordination, and better service performance, but it also faces barriers such as fragmented governance, uneven digital maturity, and limited cross-organizational standardization. "Smart port" research similarly emphasizes that digital solutions, standard setting, and integrated systems are decisive for operational improvement. These findings suggest that assessing facilitation must consider not only whether digital tools exist, but whether they are embedded as routine infrastructure that reshapes port-call processes and inter-agency collaboration (Pham, 2023; Raza et al., 2023).

This urgency is especially pronounced in archipelagic and multi-port states where digital readiness and capability vary widely across ports of different sizes and roles. Evidence from digital maturity assessments indicates that ports in archipelago contexts face structural challenges in technology adoption and integration across hub-and-spoke networks. Meanwhile, comparative studies in Southeast Asia highlight that digital transformation can be linked to measurable competitiveness and performance outcomes, reinforcing the policy relevance of facilitation reform. Together, these strands imply that compliance with facilitation obligations should be evaluated as a system capability problem, not merely a legal commitment (Nguyen & Pham, 2025; Utama et al., 2024).

Another key reason facilitation remains difficult is governance: digital trade-facilitation systems can be undermined by inconsistent institutional coordination, politicization of digital initiatives, and incomplete alignment among agencies responsible for clearance, inspection, and enforcement. Platform perspectives on port ecosystems emphasize that digital systems must be designed and governed to enable trusted data exchange and stable cooperation among stakeholders. Without institutional coherence, ports may keep duplicative processes “just in case,” leading to partial digitalization and persistent manual repetition. This means that facilitation compliance is shaped as much by governance and enforcement coherence as by technology availability (Aryee & Hansen, 2022; Kapkaeva et al., 2021).

Within this broader field, Indonesia and Singapore provide a strategically important comparison because both operate on critical international routes while differing markedly in administrative integration and digital consistency across their port systems. Studies on PCS development histories show that sustained success depends on clear focal points in design, governance, and long-term operation, and other work highlights that even after adoption, continuance use can be threatened by organizational and regulatory mechanisms that degrade information quality. This article positions itself within that research landscape but advances a more explicit compliance-oriented evaluation by translating facilitation obligations into comparable operational indicators and using those indicators to interpret why implementation outcomes diverge across two neighboring maritime states (Ali Mubder Mubder & Fredriksson, 2025; Iida & Watanabe, 2023).

Table 1. Indicator Framework for Comparing Facilitation Implementation

Dimension	Operational indikator (port-call level)	Observable manifestation
Documentation standardization	Use of standardized reporting formats	Forms/data elements aligned and consistently required
Electronic reporting	Mandatory electronic submission	Paper/manual submissions minimized or eliminated
Single submission	One-time submission reused across agencies	No repeated entry of identical data
Interoperability	Cross-agency data exchange	Systems connected; data accessible to relevant authorities
Inspection facilitation	Coordination and avoidance of repetition	Risk-based targeting; reduced overlapping inspections
Procedural transparency	Clear SOPs and predictable steps	Public guidance and consistent application across ports

Source: Author, 2025

A persistent bottleneck in facilitation practice is inspection and control routines that remain sequential, overlapping, or weakly coordinated. Research on Port State Control (PSC) inspection regimes demonstrates that efficiency varies by regime design and implementation stability, and risk-based approaches can improve targeting and reduce unnecessary burdens. Data-driven approaches to inspection further show how risk models can support smarter enforcement and reduce arbitrary or repetitive checks. These insights are relevant to facilitation because repetitive inspection behavior can negate the benefits of electronic reporting, keeping port calls slow even when documents are digitized (Xiao et al., 2021; Yang et al., 2018).

Accordingly, this article adopts an indicator-based qualitative comparative approach to discuss facilitation implementation as a measurable set of administrative and operational practices rather than a purely formal commitment. The analysis systematically compares

Indonesia and Singapore by examining how facilitation principles are operationalized through standardized reporting, electronic submission, single-submission enforcement, interoperability, and inspection facilitation then interprets observed gaps through the lens of institutional capacity and governance coherence. By doing so, the article aims to clarify the originality of its contribution: it connects digital integration and inspection coordination to a structured compliance evaluation, offering policy-relevant implications for strengthening facilitation performance where fragmentation and uneven capacity persist.

METHODOLOGY

This study adopts a qualitative, descriptive-comparative research design to evaluate how facilitation obligations under the IMO Convention on Facilitation of International Maritime Traffic (FAL Convention) are operationalized in Indonesia and Singapore. Rather than surveying individuals, the "population" in this research is a corpus of policy and operational documents relevant to port clearance formalities. A purposive sampling strategy was used to select documents that directly relate to FAL-relevant facilitation practices (e.g., standardized reporting formats, electronic submission requirements, inspection facilitation principles, and inter-agency data exchange). Inclusion criteria prioritized authoritative sources (international instruments and amendments; national regulations; official port authority guidelines; and institutional reports) and materials that explicitly describe procedures and requirements for ship reporting and clearance. This design is consistent with maritime transport scholarship that positions qualitative document-based inquiry and structured qualitative synthesis as suitable approaches for analyzing complex governance and operational systems (Cammin et al., 2022; Yan et al., 2021).

Data collection was conducted systematically through document retrieval, screening, and cataloguing. Retrieved materials were grouped by jurisdiction (Indonesia/Singapore), issuing authority, document type (law/regulation/guideline/report), and relevance to facilitation obligations. From this corpus, the study constructed an indicator framework translating FAL obligations into observable implementation dimensions (e.g., use of standardized forms, mandatory electronic reporting, functionality of single window arrangements, single-submission enforcement, interoperability, and inspection coordination). Each indicator was assessed using a qualitative scale (full, partial, or limited/non-compliance) based on the presence of formal mandates, the clarity of operational procedures, and the consistency of implementation evidence described in official documentation. The focus on digital reporting environments and interoperability aligns with empirical research on maritime single window systems and digital transformation readiness in port contexts, particularly where uneven capacity may produce differentiated implementation outcomes (Utama et al., 2024).

For analysis, the study applies directed content analysis combined with thematic analysis. First, relevant text segments were coded according to the predefined indicator framework (e.g., "electronic submission mandate," "single submission," "inter-agency exchange," "inspection repetition limits"), producing a structured evidence matrix for each country. Second, themes explaining observed differences (e.g., institutional capacity, regulatory alignment, digital interoperability, and coordination mechanisms) were synthesized to interpret why similar formal commitments yield different operational outcomes. To strengthen transparency and reliability, the research maintains an audit trail of coding decisions and cross-checks interpretations across indicators before drawing comparative conclusions. Because the study relies on publicly available documents and does not involve human participants, it does not require IRB approval; ethical safeguards are addressed through accurate attribution, careful source evaluation, and transparent reporting of analytical steps (Karahalios et al., 2011; Xiao et al., 2021).

RESULTS AND DISCUSSION

1. IMO FAL as International Shipping Standards

The International Convention on Facilitation of Maritime Traffic (IMO FAL Convention) represents a distinct regulatory pillar within the international maritime governance regime. Unlike technical conventions such as SOLAS, MARPOL, or STCW which regulate ship construction, environmental protection, and seafarer competence the FAL Convention focuses on administrative facilitation. Its primary objective is to ensure that international maritime traffic is not delayed or obstructed by excessive, duplicative, or non-standardized port formalities imposed by national authorities. In this sense, FAL operates at the interface between maritime transport efficiency and state administrative control.

The rationale behind the FAL Convention lies in the recognition that port clearance procedures, if left uncoordinated, can become a significant non-tariff barrier to trade. Differences in documentation requirements, inspection practices, and reporting formats across states historically caused delays, increased transaction costs, and legal uncertainty for shipping operators. The FAL Convention seeks to address this problem by harmonizing documentary requirements and limiting the discretion of port officials in requesting information beyond internationally agreed standards. Through this approach, facilitation becomes an integral component of maritime governance rather than a peripheral administrative concern.

A central feature of the FAL framework is the standardization of documents required for ship arrival and departure. The Convention explicitly limits permissible documentation to a defined set of standardized FAL forms, including the General Declaration, Cargo Declaration, Crew List, Passenger List, and Maritime Health Declaration. By prohibiting the routine request for additional documents, FAL aims to reduce administrative burdens while maintaining states' ability to perform legitimate functions related to security, customs, immigration, and health control. The facilitation logic of FAL was significantly strengthened through the 2016 amendments, which introduced mandatory electronic data interchange (EDI). This development marked a transition from paper-based simplification toward digital integration.

The amendment encourages member states to establish Maritime Single Window (MSW) systems, enabling ships to submit required information electronically through a single entry point for use by multiple authorities. As a result, FAL compliance now depends not only on legal alignment but also on the availability and interoperability of digital administrative systems. Therefore, the IMO FAL Convention should be understood as a governance instrument that operationalizes efficiency, transparency, and predictability in port administration. Its effectiveness depends on how deeply facilitation principles are embedded in national regulatory frameworks and daily port operations. This understanding provides the analytical foundation for evaluating state compliance with FAL obligations.

2. Compliance with IMO FAL in International Shipping Standards

Compliance with the IMO Convention on Facilitation of International Maritime Traffic (FAL Convention) has become a defining element of contemporary international shipping standards because it directly shapes how efficiently ships are cleared in ports through standardized documentation, streamlined formalities, and electronic data exchange. In an era where port time, predictability, and administrative transparency influence carrier routing and network decisions, facilitation compliance is no longer a purely administrative concern it is a competitiveness issue. The 2016 amendments, which strengthened expectations around electronic reporting and encouraged single-window arrangements, further elevated compliance from legal alignment to measurable operational performance, linking facilitation practices to broader goals of trade efficiency and maritime governance.

Table 2. Comparative Assessment of IMO FAL Compliance Indicators

No.	FAL Indicator	Indonesia	Singapura
1.	Standardized FAL forms	Partial	Full
2.	Electronic data submission	Partial	Full
3.	Maritime Single Window	Partial	Full
4.	Single submission principle	Limited	Full
5.	Inter-agency interoperability	Limited	Full
6.	Ban on extra documents	Inconsistent	Enforced
7.	Inspection repetition limits	Inconsistent	Enforced
8.	Acceptance of previous crew lists	Partial	Full
9.	Transparency of inspection SOPs	Partial	Full
10.	Early electronic reporting	Partial	Full

Source: Author, 2025

Table 2. presents a comparative assessment of Indonesia's and Singapore's compliance with the International Maritime Organization Facilitation Convention (IMO FAL), based on key operational and institutional indicators derived from the Convention's core principles. These indicators reflect not only formal ratification, but also the extent to which FAL standards are translated into effective port practices, administrative simplification, and digital maritime governance. The first indicator, implementation of standardized FAL Forms, reveals a clear divergence between the two countries. Singapore demonstrates full compliance, as all ship arrival and departure formalities are conducted using standardized FAL Forms in accordance with the IMO Compendium on Facilitation and Electronic Business.

These forms are submitted electronically through a centralized system, and port authorities are prohibited from requesting additional documentation beyond what is stipulated by the Convention. Indonesia, by contrast, shows partial compliance. Although FAL Forms have been formally adopted into national regulations and are applied at major international ports, empirical studies indicate that in several medium and small ports, additional documents are still requested by different agencies. This practice undermines the FAL principle of limiting formalities to what is strictly necessary and reflects uneven implementation across port jurisdictions.

The second indicator concerns the implementation of the Maritime Single Window (MSW), which is a mandatory requirement following the 2016 FAL Amendments. Singapore has fully operationalized its MSW, managed by the Maritime and Port Authority of Singapore (MPA), enabling a single electronic submission of ship, crew, cargo, and health data to all relevant authorities. This system integrates immigration, customs, port authorities, and quarantine services, significantly reducing clearance times and administrative duplication. Indonesia, while having established the Indonesia National Single Window (INSW), remains in a transitional phase. The INSW functions as a national platform; however, its integration with port operators, terminal systems, and sectoral agencies is not yet fully interoperable. As a result, the single submission principle has not been uniformly achieved across all Indonesian ports.

The third indicator evaluates inter-agency data integration and interoperability. Singapore exhibits a high level of compliance due to its seamless digital connectivity between port operations systems, vessel traffic management, and government agencies. Real-time data sharing allows for coordinated decision-making and minimizes repetitive inspections. Indonesia's compliance in this area is categorized as limited to moderate. While large ports such as Tanjung Priok and Tanjung Perak have made progress in integrating digital systems, many ports still rely on fragmented or semi-manual coordination mechanisms. This

fragmentation contributes to inefficiencies, longer vessel waiting times, and inconsistent application of FAL procedures.

Another important indicator in Table 2 is limitation of repetitive inspections, which is a core principle of the IMO FAL Convention. Singapore applies a risk-based inspection model, ensuring that ships which have already complied with reporting requirements are not subjected to multiple or overlapping inspections by different authorities. This approach aligns with FAL provisions that prohibit unnecessary repetition of formalities. Indonesia, although formally recognizing this principle, continues to face implementation challenges. In practice, inspections by immigration, customs, quarantine, and port authorities are often conducted separately, reflecting weak coordination mechanisms. Consequently, Indonesia is assessed as partially compliant in this aspect.

The indicator on regulatory alignment and legal harmonization further highlights structural differences. Singapore's domestic maritime regulations and port operating procedures are consistently updated to reflect the latest FAL amendments, ensuring legal certainty and operational clarity. Indonesia has ratified the FAL Convention and incorporated its provisions into national laws and ministerial regulations; however, not all sectoral regulations have been harmonized with recent FAL revisions, particularly those related to mandatory electronic data interchange and document reduction. This regulatory lag affects the consistency of implementation at the operational level.

Overall, demonstrates that differences in compliance levels are not primarily driven by formal commitment, as both countries are IMO member states and FAL signatories. Rather, compliance outcomes are shaped by institutional capacity, digital infrastructure, and governance coherence. Singapore's high and consistent compliance reflects its advanced port digitalization, strong inter-agency coordination, and regulatory responsiveness. Indonesia's moderate compliance indicates ongoing progress, but also underscores persistent challenges related to infrastructure disparities, human resource capacity, and administrative fragmentation. These findings suggest that enhancing digital interoperability, harmonizing regulations, and strengthening institutional coordination are critical for narrowing Indonesia's compliance gap with IMO FAL standards.

3. Shipping Standards in Indonesia

Indonesia has formally committed to the IMO Convention on Facilitation of International Maritime Traffic (FAL) and has incorporated its core principles into a range of national legal and administrative instruments governing port operations, immigration control, customs clearance, and ship reporting procedures. This commitment is reflected in the ratification of the Convention, the adoption of standardized FAL Forms, and the formal endorsement of electronic data interchange following the 2016 FAL Amendment. The establishment of the Indonesia National Single Window (INSW) represents a significant institutional initiative aimed at harmonizing domestic port practices with international facilitation standards, particularly those related to electronic reporting, data sharing, and inter-agency coordination among port authorities, customs, immigration, and quarantine agencies.

From a regulatory perspective, Indonesia has demonstrated substantial progress in aligning its legal framework with FAL requirements. National laws and ministerial regulations explicitly recognize standardized documentation, electronic submission of ship arrival and departure information, and the principle of reducing administrative formalities. In normative terms, Indonesia's regulatory architecture reflects compliance with the core obligations of the FAL Convention, suggesting that non-compliance does not stem from the absence of legal commitment or policy intent. However, empirical evidence indicates that the implementation of FAL standards in Indonesia remains uneven across ports, revealing a significant gap between regulatory alignment and operational practice. Major international ports such as

Tanjung Priok, Tanjung Perak, Belawan, and Makassar exhibit partial to near-full compliance with several key FAL indicators. At these ports, electronic submission of ship clearance documents is increasingly standardized, reporting formats are aligned with FAL Forms, and clearance processes are supported by digital platforms integrated with the INSW. These ports also demonstrate improved coordination among relevant agencies, resulting in reduced processing times and more predictable clearance procedures. Such practices indicate measurable progress toward fulfilling facilitation obligations, particularly with regard to document standardization, electronic transmission, and procedural transparency.

Medium-sized and smaller ports continue to face persistent and systemic challenges that limit effective FAL implementation. Many of these ports lack adequate digital infrastructure, including reliable connectivity, integrated information systems, and compatible software platforms. As a result, interoperability between the INSW and local port systems remains incomplete. Administrative coordination among customs, immigration, quarantine, and harbor master authorities is often fragmented, with each agency operating semi-independently. In operational terms, this fragmentation translates into continued reliance on manual or semi-digital procedures and the repeated submission of similar information to multiple authorities, directly undermining the single submission principle that constitutes a central pillar of the FAL Convention.

Inspection practices further illustrate the uneven nature of Indonesia's compliance. While FAL principles emphasize risk-based inspections and the avoidance of repetitive or unnecessary checks, implementation at the port level remains inconsistent. In several ports, ships are still subject to sequential inspections by different agencies, even when no material changes in vessel status, crew composition, or cargo have occurred. This practice not only increases administrative burden and vessel turnaround time but also reflects insufficient institutional coordination and limited operational understanding of FAL facilitation principles.

These disparities suggest that Indonesia's compliance with the FAL Convention is best characterized as partial and differentiated rather than uniform and systemic. The divergence between national regulatory intent and local operational outcomes reflects deeper structural constraints, including Indonesia's archipelagic geography, disparities in port development, and decentralized port governance arrangements. While legal harmonization with FAL exists at the national level, the effectiveness of facilitation measures depends heavily on port-level administrative capacity, digital readiness, and inter-agency cooperation. Consequently, Indonesia's FAL compliance profile indicates that facilitation is not merely a matter of legal adoption, but a complex administrative and infrastructural challenge. Strengthening compliance therefore requires a multidimensional approach that extends beyond regulatory reform to include targeted investment in port digitalization, the standardization of operating procedures across all ports, capacity building for maritime administrative personnel, and the institutionalization of integrated coordination mechanisms among relevant agencies.

4. Shipping Standards in Singapore

Singapore represents a benchmark case of comprehensive and consistent compliance with the IMO FAL Convention. As a global maritime hub with a highly centralized port administration system, Singapore has fully integrated facilitation principles into both its regulatory framework and daily port operations. The Maritime Single Window operated by the Maritime and Port Authority of Singapore functions as a fully interoperable digital platform through which all required ship information is submitted electronically prior to arrival. All standardized FAL forms are embedded within this system, leaving little scope for discretionary or additional documentary requests by port officials. The single submission principle is applied rigorously, ensuring that data provided once can be accessed and used by customs, immigration, port authorities, and other relevant agencies without duplication. This system-

wide integration directly reflects the core objectives of the FAL Convention to reduce administrative burdens and enhance predictability in port clearance procedures.

Inspection practices in Singapore further demonstrate full compliance with FAL facilitation principles. Clear standard operating procedures limit repetitive inspections, recognize previously submitted documentation for ships engaged in regular services, and emphasize risk-based approaches rather than blanket checks. Early electronic reporting requirements allow authorities to process information in advance, significantly reducing clearance times and minimizing delays at port. Singapore's high level of compliance is underpinned by strong institutional capacity, regulatory clarity, and sustained political commitment to port modernization.

The centralized governance structure of the MPA ensures uniform application of facilitation rules across all terminals, eliminating disparities between ports. Continuous investment in digital infrastructure and human resource development further reinforces consistent implementation. As a result, Singapore's compliance with IMO FAL is not merely formal but deeply institutionalized. Facilitation obligations are embedded within system design, administrative routines, and enforcement practices, making compliance resilient and predictable. This contrasts sharply with more fragmented implementation environments and highlights the importance of institutional coherence in achieving effective facilitation.

5. Indonesia and Singapore Cooperation in International Shipping Standards

The comparative findings reveal a pronounced compliance gap between Indonesia and Singapore, despite both states being parties to the IMO Convention on Facilitation of International Maritime Traffic (FAL) and having formally incorporated its provisions into their respective national legal frameworks. This divergence cannot be explained by differences in legal commitment or normative acceptance of international obligations. Instead, the gap is rooted in the manner which facilitation requirements are translated into administrative practice and institutional routines at the port level. Singapore's high level of compliance reflects a governance model characterized by centralized authority, uniform regulatory enforcement, and advanced digital integration. The Maritime and Port Authority of Singapore functions as a single coordinating body with clear jurisdiction over port operations, inspection procedures, and data management.

This institutional arrangement allows FAL facilitation principles such as single submission, electronic data interchange, standardized documentation, and limited inspection repetition to be applied consistently across all ports. As a result, facilitation is embedded as a systemic feature of port governance rather than treated as an optional or capacity-dependent policy objective. The predictability and transparency of administrative processes reduce uncertainty for shipping operators and reinforce Singapore's reputation as a highly efficient maritime hub. Indonesia's compliance profile reflects structural constraints associated with decentralized governance and the country's geographically dispersed port system. While national regulations formally align with FAL requirements, implementation varies significantly across ports due to differences in institutional capacity, technological readiness, and coordination mechanisms. In practice, facilitation obligations are often interpreted and applied differently by local authorities, leading to inconsistent inspection practices, fragmented reporting procedures, and uneven reliance on digital platforms. These variations undermine the uniform application of FAL principles and result in differentiated compliance outcomes within a single national jurisdiction.

The analysis further shows that digitalization plays a decisive role in shaping compliance outcomes. Singapore's fully integrated Maritime Single Window ensures interoperability among port authorities, customs, immigration, and other relevant agencies, thereby operationalizing the FAL principle of single submission. In Indonesia, by contrast, the

Indonesia National Single Window has yet to achieve full interoperability across all ports and agencies. Partial system integration and continued reliance on manual or parallel reporting processes weaken the effectiveness of facilitation measures, even where regulatory provisions exist. Importantly, bilateral and trilateral cooperative mechanisms, such as the Tripartite Technical Expert Group (TTEG), demonstrate that Indonesia and Singapore share a common commitment to maritime governance in strategically vital waterways. These arrangements contribute significantly to navigational safety, traffic management, and environmental protection in the Malacca and Singapore Straits. However, their scope is primarily operational and technical, focusing on external coordination rather than internal administrative reform. Consequently, such cooperation complements national compliance efforts but does not directly address domestic institutional constraints related to FAL implementation.

Overall, the findings underscore that compliance with the IMO FAL Convention is fundamentally an issue of administrative capacity and institutional coherence rather than political willingness or legal ratification. For Indonesia, narrowing the compliance gap requires strengthening the interoperability of the Maritime Single Window, institutionalizing standardized and reporting procedures, and ensuring consistent application of facilitation rules across all international ports. Without addressing these administrative and infrastructural dimensions, formal legal alignment with FAL standards will remain insufficient to achieve comprehensive and uniform compliance.

CONCLUSION

This study demonstrates that compliance with international shipping standards, specifically the IMO Convention on Facilitation of International Maritime Traffic (FAL), is a critical determinant of efficiency, predictability, and administrative coherence in global maritime transport. By applying an indicator-based qualitative comparative framework, the analysis moves beyond formal ratification and highlights how facilitation obligations are operationalized in practice within national port administrations. The findings show that Singapore has achieved a consistently high level of compliance with IMO FAL.

Facilitation principles are not only embedded in national regulations but are also fully institutionalized through an integrated Maritime Single Window, mandatory electronic data interchange, standardized documentation, and uniform inspection procedures. The centralized governance structure of the Maritime and Port Authority of Singapore ensures that FAL obligations are applied consistently across all ports, minimizing administrative discretion and eliminating procedural fragmentation. As a result, facilitation in Singapore functions as a structural component of port governance rather than a policy objective dependent on local capacity.

Indonesia's compliance with IMO FAL remains partial and uneven. While national regulations formally align with FAL provisions and digital initiatives such as the Indonesia National Single Window indicate progress, implementation varies significantly across ports. Major international ports demonstrate higher levels of compliance, whereas smaller and medium-sized ports continue to rely on manual processes, fragmented reporting, and repetitive inspections. These disparities indicate that Indonesia's facilitation challenges stem not from a lack of legal commitment, but from limitations in administrative capacity, digital interoperability, and inter-agency coordination.

The comparative analysis further reveals that the compliance gap between Indonesia and Singapore is primarily institutional rather than normative. Differences in port governance structures, levels of digital integration, and enforcement consistency explain variations in facilitation outcomes more convincingly than differences in regulatory intent. Cooperative mechanisms such as the Tripartite Technical Expert Group (TTEG) reflect shared commitments to maritime safety and coordination in strategic waterways, but they do not directly address

domestic administrative constraints related to FAL implementation. Overall, this study concludes that effective compliance with the IMO FAL Convention requires more than regulatory harmonization. It demands systemic integration of facilitation principles into port administration, supported by interoperable digital systems, standardized procedures, and strong institutional coordination. For Indonesia, strengthening these dimensions is essential to narrowing the compliance gap and enhancing its competitiveness within an increasingly efficiency-driven global shipping network.

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