

Implementation Of The Indonesian Government's Policy In Supervising The Seaworthiness Of Ships Based On George Edward Iii's Policy/Module At The Tanjung Priok Main Port Authority And Harbor Master's Office

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Abstract

This study examines the implementation of the Indonesian Government's policy in supervising ship seaworthiness at the Tanjung Priok Main Port Authority and Harbor Master's Office (KSOP Utama Tanjung Priok). The study aims to analyze policy implementation based on George C. Edwards III's four dimensions: communication, resources, disposition, and bureaucratic structure; identify supporting and inhibiting factors; and examine efforts to overcome implementation barriers. This research employs a descriptive qualitative approach with a case study strategy. Data were collected through interviews, observations, documentation, and literature review, and analyzed using the Miles, Huberman, and Saldaña model through data condensation, data display, and conclusion drawing and verification. The findings indicate that policy implementation is categorized as very good, supported by structured communication, adequate human resources and facilities, strong personnel commitment, clear standard operating procedures, defined authority, information systems, and inter-unit coordination. However, several operational constraints remain, including workload, limitations in human resources

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and infrastructure, incomplete documents, coordination challenges, and fragmented data. Efforts to address these barriers include strengthening communication and socialization, improving personnel competence, optimizing information systems, enhancing coordination, adjusting task distribution, and strengthening follow-up on inspection findings. These measures support more consistent, accountable, and effective seaworthiness supervision across maritime safety and port services.

Keywords: Policy Implementation, Ship Seaworthiness, Maritime Safety, Supervision, George C. Edwards III, Tanjung Priok.

INTRODUCTION

Maritime safety is a strategic issue in the global transportation system because the sea serves as the backbone of trade and logistics mobility. Ship seaworthiness is not only related to administrative compliance but also provides the foundation for accident prevention, protection of human life, and pollution mitigation. Proper inspections can improve compliance and reduce the risks posed by substandard ships (UNCTAD, 2024; Yang et al., 2024). Along with advances in technology and increasing operational complexity, seaworthiness encompasses ship construction, equipment, documentation, crew readiness, safety management systems, and the use of remote inspection and verification technologies (Johansson et al., 2024). Within safety governance, states are responsible for ensuring compliance with minimum standards, but effectiveness largely depends on translating regulations into operational procedures and maintaining consistency in implementation (IMO, 2026; Olaniyi et al., 2024).

Ship safety supervision is also influenced by Port State Control (PSC) practices and risk-based inspections. The challenges include enforcement disparities, differences in inspector competency, and limitations in risk assessment models (Sheriff et al., 2025). Recent research has demonstrated the use of data analytics and artificial intelligence to improve the efficiency of risk-based ship selection, while natural language processing has the potential to identify patterns in findings from large volumes of inspection reports (Biçen & Celik, 2024; Yang et al., 2024). In Indonesia, Tanjung Priok Port is a strategic location due to its high intensity of ship traffic and the complexity of its supervisory activities. KSOP Utama Tanjung Priok plays a role in maintaining safety compliance while simultaneously supporting efficient port services and logistics flows, with



organizational capacity and inspection consistency serving as important factors in the quality of supervision (Kemenhub. RI, 2023; Pradana et al., 2026).

Inspection data indicate that ship compliance outcomes continue to vary. According to the Tokyo MOU Annual Report 2025, as cited by the Directorate General of Sea Transportation, 243 inspections were conducted on Indonesian-flagged ships in 2025, of which 5 ships (2.06%) were detained due to serious deficiencies and 238 ships (97.94%) were not detained (Kementerian Perhubungan RI, 2026). Although detention status under the PSC regime is not entirely equivalent to the determination of seaworthiness under national supervision, these data demonstrate that inspections can produce different compliance outcomes. Therefore, the effectiveness of seaworthiness supervision is determined not only by the existence of regulations but also by institutional capacity, inspection quality, the utilization of technology, and the consistency of follow-up actions.

Table 1. Comparison of Indonesian-Flagged Ship Inspection Results in 2025

Inspection Result Status	Number of Ships	Percentage	Interpretation
Not detained	238	97,94%	No serious deficiencies were found that required the ship to be detained.
Experiencing detention	5	2,06%	Serious deficiencies were found so the ship was detained until the requirements were met.
Total inspection	243	100%	Indonesian-flagged ships inspected under the Tokyo MOU regime in 2025.

Source: Ministry of Transportation of the Republic of Indonesia (2026), processed by researchers.

At the local level, official publications from the Directorate General of Sea Transportation recorded that the Tanjung Priok Main Port Authority and Harbor Master's Office conducted spot checks on at least 18 passenger ships during the 2019 Eid transportation period, consisting of 12 large passenger ships calling at Tanjung Priok and 6 passenger ships operating in the Ancol Marina area. Any identified deficiencies had to be rectified before the ships could operate. However, the available public source does not provide an aggregate breakdown of seaworthy and unseaworthy ships, highlighting the need for field research to obtain more detailed inspection records from



KSOP Utama Tanjung Priok. In practice, a major gap concerns the difference between normative regulations and their implementation, as PSC studies indicate variations among inspectors and regions that may produce different supervision outcomes despite the application of similar standards (Sheriff et al., 2025).

Operational challenges also involve limitations in the quantity and specific competencies of supervisory personnel. Maritime safety literature emphasizes training, communication, and leadership as important drivers of safety outcomes and operational decision-making (Veltsin et al., 2025). In addition, infrastructure, inspection equipment, administrative support, procedures, and inter-organizational coordination can affect inspection consistency, document verification, and follow-up of findings. PSC literature highlights communication and process harmonization among organizations as essential for effective and integrated inspection systems (Sheriff et al., 2024). Digitalization is therefore increasingly important because it facilitates data access, traceability, and evidence-based decision-making. The integration of historical inspection data, vessel tracking, and compliance information through digital and multi-criteria approaches can improve inspection processes (Boko et al., 2025).

Nevertheless, digital gaps may arise when data-driven policies are implemented through fragmented systems or manual inputs, which can reduce the accuracy of risk-based inspection strategies (Yang et al., 2024). Remote inspection also requires reliable digital evidence and appropriate verification governance to maintain seaworthiness standards (Tsou, 2025). Ultimately, effective supervision should be assessed not merely by the number of inspections or documents produced, but by its contribution to compliance improvement and risk reduction (Sheriff et al., 2024). Therefore, studying the effectiveness of ship seaworthiness supervision at KSOP Utama Tanjung Priok from the perspective of government policy implementation is academically and practically relevant, particularly for identifying improvements in human resources, procedures, coordination, and digitalization so that supervision contributes to tangible maritime safety outcomes.

LITERATURE REVIEW

Maritime Transport Management

Maritime transport management involves planning, organizing, implementing, and controlling sea transportation activities to achieve cost efficiency, timely delivery, safety, and service quality. It covers fleet management, shipping routes and schedules, cargo,



documentation, and coordination with ports and logistics stakeholders. During 2022–2026, global supply-chain disruptions, port congestion, and geopolitical risks at maritime chokepoints have increased operational complexity, requiring the maritime sector to become more adaptive and resilient (UNCTAD, 2024). Modern management also emphasizes port call optimization and Just-in-Time (JIT) Arrival to reduce anchorage waiting time, fuel consumption, and schedule uncertainty through better coordination and standardized port-call data (EMSA, 2025; IAPH, 2026).

Safety and regulatory compliance are fundamental components of maritime transport management. Shipping companies implement Safety Management Systems in accordance with the ISM Code to ensure consistent operational procedures, emergency preparedness, internal audits, and safety culture. International regulatory developments also require compliance with additional safety and training standards, contributing to the reduction of accidents, cargo losses, delays, and insurance claims. At the same time, sustainability has become a key priority, particularly through the IMO 2023 Strategy, which promotes reductions in carbon intensity and the adoption of zero- or near-zero-emission technologies and fuels. Operational measures include slow steaming, JIT operations, weather-based route optimization, and improved ship and engine energy management (IMO, 2023).

Digitalization further transforms maritime transport management through data utilization, document automation, and integration among shipping, ports, customs, and freight-forwarding stakeholders. Technologies such as IoT, cloud computing, AI, and collaborative platforms can improve supply-chain visibility, planning accuracy, and operational risk management, although challenges remain regarding organizational silos, human-resource readiness, data governance, and cybersecurity. Integration of Port Community Systems with Maritime/Trade Single Windows can also reduce duplicate data entry and accelerate clearance processes (Zeng et al., 2025). In the Indonesian context, Rumambi (2025) emphasizes the integration of safety, operational effectiveness, compliance, and stakeholder coordination in maritime transport management, while Rumambi (2023) highlights the strategic importance of maritime governance for an archipelagic state. This perspective is relevant to the present study because seaworthiness supervision forms an integral part of maritime transport management, ensuring that ship operations are safe and compliant with applicable regulations.



Ship Seaworthiness Supervision

Ship seaworthiness refers to a vessel's condition of meeting the requirements for safe operation, including structural and construction fitness, machinery and installations, safety equipment, crew adequacy, and operational readiness in accordance with applicable standards. In modern maritime law and governance, seaworthiness extends beyond the ability to sail and encompasses verifiable safety and environmental protection standards through systematic inspections and audits. Recent maritime literature also recognizes technology-based verification, including remote inspections and data-based evidence, while maintaining safety precautions (Yang et al., 2024). Therefore, seaworthiness supervision serves as an important instrument for preventing substandard ships from operating and reducing the risks of accidents and pollution.

The scope of seaworthiness supervision generally includes document and certificate verification, physical inspection of ship structures, machinery, electrical systems and stability, as well as safety equipment such as lifesaving appliances, fire protection, navigation, radio, and pollution-prevention systems. Under Port State Control (PSC), inspections may begin with document checks, but effective supervision requires cross-verification and deeper examination when non-compliance is indicated. Limited time and resources may cause inspections to become predominantly administrative, allowing substantive risks to remain undetected without adequate follow-up (Bhatia et al., 2026). In Indonesia, KSOP performs key supervisory functions in cooperation with ship operators, owners, agents, and relevant technical parties. The effectiveness of supervision is influenced by human-resource capacity, facilities, SOPs, coordination, and data governance, while differences in inspector training, operational standards, and inter-agency data remain recurring challenges (Kemenhub. RI, 2023).

The normative framework for seaworthiness supervision is based primarily on Law of the Republic of Indonesia No. 17 of 2008 on Shipping, as amended by Law No. 66 of 2024, which provides the legal basis for maritime safety, ship seaworthiness, and the authority and responsibilities of port supervisory institutions (Setneg. RI, 2024). At the operational level, Minister of Transportation Regulation No. PM 28 of 2022 regulates administrative document inspections and the authority of the Harbor Master to take action, including delaying vessel departure when seaworthiness requirements are not fulfilled (Kemenhub. RI, 2022). In addition, Presidential Regulation No. 34 of 2022 concerning the 2021–2025 Indonesian Ocean Policy Action Plan provides a broader policy context for strengthening maritime governance. Together, these



legal and policy instruments provide the normative and contextual foundation for analyzing the effectiveness of ship seaworthiness supervision at KSOP Utama Tanjung Priok.

RESEARCH METHODOLOGY

The study employs a qualitative descriptive approach with a single case study strategy at KSOP Utama Tanjung Priok to gain an in-depth understanding of the processes, meanings, and dynamics of ship seaworthiness supervision, including how government policy is translated into SOPs, implementation structures, coordination, and follow-up actions. The qualitative approach is appropriate for exploring how and why policy practices are implemented and for capturing complex interactions and operational constraints that cannot be fully reduced to numerical data (Lim, 2024; Tenny et al., 2022), while the descriptive design provides a systematic account of implementation based on informant experiences and organizational documents (Villamin et al., 2024). The single case study enables contextual analysis using multiple data sources, including interviews, limited observations, and organizational documents, to support triangulation and strengthen the credibility of findings (Mills et al., 2023). Operationally, data collection and analysis are guided by George C. Edwards III's four dimensions—communication, resources, disposition, and bureaucratic structure—and linked to supporting factors, inhibiting factors, and efforts to overcome implementation barriers, with the researcher serving as the primary instrument for data collection, categorization, interpretation, and analytical narrative development.

Data analysis was conducted using the Miles, Huberman, and Saldaña (2014) model. The analysis was carried out continuously from the beginning of data collection until the researcher obtained well-established conclusions. The analysis process consists of three main components: data condensation, data display, and conclusion drawing/verification. Throughout the process, the analysis was guided by George C. Edwards III's policy implementation framework to ensure consistency with the research focus.



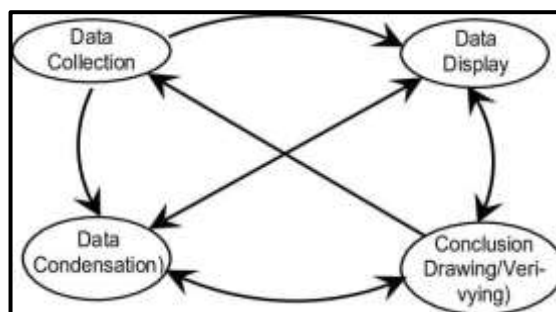


Figure 1. Analysis of Miles, Huberman and Saldaña Data

Source : Model Miles, Huberman & Saldaña (2014)

RESULTS

Implementation of Government Policies Based on Edwards III

A. Policy Communication

Policy communication in seaworthiness supervision involves the transmission and understanding of policies, regulations, standards, and SOPs among officers and inspected parties. At KSOP Utama Tanjung Priok, communication occurs both vertically between management and officers and horizontally among technical units, agents, and ship operators through socialization, technical instructions, coordination meetings, circulars, electronic systems, and direct communication during inspections. Data are compared across informants, observations, and documentation to identify consistent patterns, with relevant findings condensed and displayed in matrices based on the Miles, Huberman, and Saldaña model.

B. Resources

Resources include human resources, facilities, information, authority, and organizational support required to conduct seaworthiness supervision effectively. These resources include competent officers, inspection equipment, access to vessels, ship data, transportation, and information systems. Their adequacy is assessed by comparing statements from different informants with observations and supporting documentation, while visual evidence of officers conducting inspections and interacting with ship personnel serves as supporting evidence rather than the sole basis for assessing effectiveness. The data are then categorized and displayed to identify patterns between available resources and supervision outcomes.

C. Implementing Disposition

Disposition refers to the attitudes, commitment, and willingness of officers to implement the policy consistently. In seaworthiness supervision, it is reflected in firmness toward non-compliance, objectivity in inspections, consistency in applying standards, and commitment to ensuring that findings are properly followed up. These aspects are examined through interviews, observations, and documents, with data from different sources compared and categorized to identify consistent patterns in implementation.

D. Bureaucratic Structure

Bureaucratic structure concerns SOPs, division of authority, coordination, and organizational fragmentation. A clear structure enables officers to understand responsibilities, inspection procedures, documentation requirements, and follow-up authority, while excessive fragmentation may cause delays and duplication. The analysis therefore compares information from informants with observations and documents, categorizes relevant evidence, and presents the relationships between bureaucratic structure and supervision outcomes in accordance with the Miles, Huberman, and Saldaña analytical model.

Supporting and Inhibiting Factors

A. Supporting Factors – Human Resources Competence and Commitment

Human resource quality is a key factor supporting the implementation of ship seaworthiness supervision. Effective supervision requires not only adequate personnel but also technical competence in understanding and applying regulations, inspection procedures, and maritime safety standards. Officers must be able to verify ship documents and certificates, assess technical conditions, identify potential non-compliance, and recommend appropriate follow-up actions. In addition, competence must be supported by commitment and integrity, as seaworthiness supervision directly concerns the safety of people, ships, cargo, and the marine environment. Within George C. Edwards III's framework, these aspects are closely related to the disposition dimension, reflecting the willingness, attitudes, and commitment of implementers to translate policy into practice.

The classification of human resource competence and commitment as supporting factors must be based on data condensation and verification following Miles, Huberman, and Saldaña. Interview findings should be compared with observations and available documentation, including



SOPs, inspection reports, findings, and follow-up records. Consistent evidence regarding officers' ability to conduct inspections, understand procedures, communicate requirements, identify deficiencies, and ensure follow-up may indicate adequate competence and commitment. Observations of inspection practices and interactions with ship personnel can provide supporting evidence, although visual documentation alone cannot establish competency. Thus, when interview statements, observed practices, and documentary evidence demonstrate consistent patterns, competent, committed, and safety-oriented personnel can be regarded as an important factor supporting the effectiveness of ship seaworthiness supervision at KSOP Utama Tanjung Priok.

B. Supporting Factors – SOPs and Distribution of Authority

Standard Operating Procedures (SOPs) and clear authority distribution are important supporting factors in implementing ship seaworthiness supervision. SOPs provide structured guidance on inspection stages, procedures, requirements, and decision-making, thereby reducing variations in implementation and supporting accountable decisions. In the framework of George C. Edwards III, this relates to the bureaucratic structure dimension, where clear procedures, division of tasks, and coordination mechanisms help translate policy into field practice. At KSOP Utama Tanjung Priok, clear authority distribution also helps officers understand their responsibilities in document inspection, technical examination, decision-making, recording, and follow-up, while minimizing overlapping duties.

The effectiveness of SOPs and authority distribution can be assessed through triangulation of interviews, observations, and documentation. Consistent information from officers and service users regarding inspection procedures, responsibilities, and coordination, supported by SOPs, checklists, inspection records, and follow-up documents, indicates that these mechanisms function as implementation supports. Based on data condensation, display, and verification, SOPs and authority distribution can therefore be categorized as supporting factors when procedural requirements, field practices, informant statements, and available documentation demonstrate consistent patterns. This condition indicates that the bureaucratic structure functions not only as a formal organizational arrangement but also as an operational mechanism that promotes orderly, consistent, accountable, and traceable seaworthiness supervision.



C. Supporting Factors – Digitalization and Data

Digitalization can support the implementation of ship seaworthiness supervision by improving the accessibility, accuracy, and traceability of ship data, required documents, inspection histories, deficiencies, and follow-up actions. Within George C. Edwards III's framework, it is primarily related to resources and communication, as information systems provide operational support and facilitate information exchange and coordination among units. Recent PSC literature highlights data-driven and risk-based approaches, but their effectiveness depends on data quality, completeness, personnel competence, and organizational capacity. Evidence from interviews, observations, and documentation can indicate whether digital systems accelerate information access, support inspection preparation and coordination, and improve traceability; however, the existence of digital systems alone does not demonstrate effectiveness. Therefore, digitalization can be considered a supporting factor when consistent evidence shows that reliable and up-to-date data, competent users, appropriate procedures, and organizational capacity are integrated to support inspection and follow-up decision-making.

D. Inhibiting Factors – Workload and Human Resources Limitations

High workload and limited human resources can hinder the implementation of ship seaworthiness supervision, particularly when the volume of services and inspections exceeds available personnel. Within George C. Edwards III's resources dimension, limited personnel may create pressure on inspection, administrative, reporting, coordination, and follow-up activities, although it does not necessarily indicate a lack of competence. Interview, observation, and documentary evidence should therefore be triangulated to determine whether workload actually affects inspection quality and policy objectives. If the evidence consistently indicates high workload but inspections remain compliant with procedures through task distribution, scheduling, prioritization, and coordination, the issue can be interpreted as a manageable operational constraint rather than a structural implementation failure. Thus, workload and limited human resources may be categorized as inhibiting factors when supported by consistent evidence, while organizational capacity to adjust workloads and maintain procedural compliance can mitigate their impact on the effectiveness of seaworthiness supervision.



E. Inhibiting Factors – Facilities and Infrastructure

The availability of facilities and infrastructure is an important resource affecting the implementation of ship seaworthiness supervision. Within George C. Edwards III's resources dimension, adequate facilities, inspection equipment, transportation, and access to vessels enable inspections to be conducted safely, effectively, and on time. Although certain operational constraints may arise due to port congestion, vessel location, weather conditions, or limited supporting facilities, these challenges can generally be managed through coordination, schedule adjustments, access arrangements, and optimal use of available resources. Based on data condensation, display, and verification, facilities and infrastructure can be categorized as inhibiting factors when their limitations demonstrably affect the continuity, timeliness, or quality of supervision; however, when such constraints are situational and can be effectively managed without reducing inspection standards, they are more appropriately viewed as manageable operational constraints rather than structural barriers to policy implementation.

F. Inhibiting Factors – Coordination and Data

Coordination and data management are important to the implementation of ship seaworthiness supervision because inspections involve multiple units within KSOP as well as ship operators, agents, and vessel personnel. Within George C. Edwards III's framework, these aspects are related to communication, resources, and bureaucratic structure, as clear information exchange, reliable data, and defined coordination mechanisms support effective implementation. Although occasional challenges may arise from incomplete documents, operational changes, repeated verification, or fragmented information, these issues can generally be managed through cross-unit coordination, confirmation, information-system utilization, and guidance to relevant parties. Based on data condensation, display, and verification, coordination and data fragmentation may be categorized as inhibiting factors when they cause delays, repeated processes, inconsistent information, or difficulties in follow-up; however, when such constraints are limited and effectively managed, they are more appropriately viewed as manageable operational challenges that do not fundamentally disrupt orderly, consistent, and policy-compliant ship seaworthiness supervision.



Efforts to Overcome Barriers

Strengthening communication and socialization is an important effort to address barriers in implementing ship seaworthiness supervision. Effective communication ensures that regulations, procedures, requirements, and policy changes are clearly and consistently understood by officers and ship operators. This can be achieved through briefings, coordination meetings, communication forums, written information, and information systems. Its effectiveness can be assessed through reduced misunderstandings, improved document completeness, clearer task distribution, and fewer repeated clarifications, supported by interviews, observations, and relevant documentation.

Strengthening human-resource competence is also essential to maintaining the quality and consistency of supervision. Competence can be improved through training, technical guidance, knowledge sharing, internal discussions, case evaluations, and periodic reviews of inspection results. These activities should cover updated regulations, inspection procedures, identification of deficiencies, inspection safety, and information-system use. Continuous competency development enables officers to adapt to regulatory and technological changes while strengthening both individual capabilities and organizational capacity.

Optimization of information systems can help overcome coordination, data fragmentation, and time limitations by providing accessible, structured, and traceable information on vessel identities, seaworthiness documents, inspection histories, deficiencies, and follow-up actions. Integrated systems can reduce repeated data entry, improve cross-unit coordination, provide process status tracking, and support the use of historical vessel data for inspection preparation. However, effective implementation requires reliable and secure data, clear responsibilities for data management, regular updates, adequate user support, and competent personnel.

Strengthening follow-up ensures that supervision does not stop at inspection and recording findings but continues through corrective action and verification. Each deficiency should have a clear status, responsible party, completion deadline, and supporting evidence, such as repair documents, reinspection results, photographs, or other relevant records. Verification is necessary to confirm that corrective actions have actually addressed the identified deficiencies. Thus, effective follow-up creates a traceable supervision cycle that connects inspection findings with corrective actions, supports compliance, and contributes to maintaining maritime safety.



DISCUSSION

Policy Implementation and Communication

Communication is the first dimension of policy implementation, explaining how government policies are translated from normative provisions into operational instructions for seaworthiness supervision officers. It includes the transmission of regulations, SOPs, checklists, technical instructions, and inspection results through leadership directions, meetings, circulars, and internal communication channels. Effective communication depends on transmission, clarity, and consistency, ensuring that officers have a relatively uniform understanding of applicable requirements. Communication also extends to agents, operators, owners, and crew by providing clear information on documentation requirements, inspection procedures, findings, and corrective actions, thereby reducing misunderstandings and facilitating the resolution of deficiencies.

Observational evidence showing direct interaction and coordination between officers and ship personnel supports the interview findings that communication is an integral part of the supervision process, although visual evidence alone cannot establish its overall effectiveness. When differences in interpretation arise, they are addressed through reference to regulations and SOPs and clarification with authorized personnel, functioning as both corrective and preventive mechanisms. Overall, communication serves as a bridge between government policy and inspection practices; when information is clearly transmitted and consistently understood, it provides a stronger basis for implementation. In this study, the communication dimension is considered very good because it supports internal understanding, clarifies interactions with ship personnel, and promotes consistency in policy implementation.

Supervisory Resources and Capacity

Resources are essential for translating the ship seaworthiness supervision policy into effective field implementation. They include the number and competence of officers, inspection facilities and safety equipment, vessel access, information, administrative systems, and organizational support. Human-resource competence is particularly important because supervision requires not only administrative skills but also technical knowledge and the ability to identify non-compliance. Observations showing officers conducting inspections and using safety equipment provide contextual evidence of resource utilization, while information systems



support access to vessel data, documents, and inspection histories, although additional verification may sometimes be required.

In high-activity port conditions, workload and simultaneous inspections may create pressure on available resources, requiring scheduling adjustments, prioritization, task distribution, and coordination. Nevertheless, such constraints can be managed when organizational adaptation mechanisms function effectively. Overall, the availability of competent personnel, inspection facilities, safety equipment, accessible information, and administrative support indicates a relatively strong supervisory capacity. Therefore, the resources dimension can be considered very good, while continuous competency development, data improvement, and facility updates remain necessary to maintain and strengthen implementation effectiveness.

Disposition, Integrity, and Consistency of Examinations

Disposition in Edwards III's model refers to the attitudes, commitment, and willingness of implementers to carry out policy. In ship seaworthiness supervision, it is reflected in commitment to safety, compliance with SOPs, objectivity in identifying deficiencies, and willingness to ensure proper follow-up. In the very good implementation scenario, officers maintain safety and compliance as the basis of their duties, use checklists, SOPs, and factual vessel conditions to support objective decisions, and do not allow time pressures to compromise critical safety inspections. Field observations of officers conducting inspections and interacting with ship personnel support their active involvement, while triangulation with interviews, SOPs, inspection records, and follow-up documentation is needed to assess integrity and consistency.

Dispositions are also reflected in how officers respond to deficiencies and operational pressures. Findings are recorded, communicated, and followed by corrective guidance, while officers maintain firmness toward requirements and communicate them clearly to ship personnel. This demonstrates that enforcement and service can be implemented simultaneously without compromising safety standards. Overall, the disposition dimension supports policy implementation through commitment to safety, objectivity, integrity, firmness, and consistency, particularly in maintaining applicable standards under operational pressure. Thus, disposition strengthens the roles of communication, resources, and bureaucratic structure in producing accountable ship seaworthiness supervision.



Digitalization and Data-Based Supervision

Digitalization is an increasingly important supporting factor in ship seaworthiness supervision because information systems can accelerate data access, reduce duplicate data entry, improve traceability, and provide vessel inspection histories. However, its effectiveness depends on data quality, including accurate input, validation, regular updating, security, and clear responsibility for data management. Digital systems can also strengthen accountability by recording the status of applications, documents, inspections, findings, and follow-up actions, enabling officers and management to monitor processes more systematically. Nevertheless, digital information does not replace factual verification, so additional checks and physical inspections remain necessary.

In practice, effective digitalization requires integration between digital information and field verification, supported by competent users, training, technical assistance, and standardized procedures. Differences in user capability may affect data consistency, making competency development essential. Conceptually, digitalization strengthens the resources, communication, and bureaucratic structure dimensions of Edwards III's framework: data function as a resource, information systems facilitate communication and documentation, and digital workflows strengthen process structures. Thus, digitalization can serve as a major supporting factor when data governance, user competence, and process integration are maintained consistently.

Balancing Safety and Service Efficiency

KSOP operates in an environment where maritime safety and service efficiency must be maintained simultaneously. Safety requires adequate and thorough inspections, while public services require clear and timely processes. In the very good implementation scenario, time pressure does not reduce critical safety inspections, while officers maintain timeliness through prioritization, task distribution, and coordination. Delays caused by incomplete documents, vessel schedule changes, additional inspections, or coordination should therefore be assessed contextually rather than automatically regarded as institutional failure. Field observations also show that inspections require officers to work in different parts of the vessel, meaning that efficiency should not be understood as simply shortening the process, but as ensuring that the time used is appropriate to the level of risk and applicable procedures.

Effective communication with ship personnel also supports this balance by clearly explaining findings and corrective requirements, thereby reducing misunderstandings and



repeated processes. Overall, service effectiveness in this study is defined as the ability to maintain safety, compliance, inspection quality, and process timeliness simultaneously. The very good implementation scenario indicates that this balance can be achieved through mutually supportive communication, adequate resources, strong implementer disposition, clear bureaucratic structure, and effective follow-up.

Matrix of Theoretical Linkages, Findings, and Implications

Dimensions/concept	Operational indicators	Field evidence that needs to be verified	Managerial implications
Communication	Transmission, clarity, consistency	Socialization, instruction, coordination, interviews	Standardization of information and communication channels
Resources	HR, facilities, information, authority	HR data, tool observation, information systems	Capacity and needs mapping
Disposition	Commitment, integrity, response to findings	Conduct examination, follow-up, interview	Strengthening a culture of compliance and evaluation
Bureaucratic structure	SOPs, division of tasks, coordination, fragmentation	SOP, struktur organisasi, alur proses	Penyederhanaan alur dan kejelasan kewenangan
Effectiveness	Compliance of SOPs, time, quality of findings, follow-up, documentation	Checklist, inspection report, status of findings	Strengthening of monitoring performance measurement



Dimensions/concept	Operational indicators	Field evidence that needs to be verified	Managerial implications
Digitization	Data access, integration, traceability	SIMKAPEL/electronic documents	Data integration and trail audit

The matrix linking theory, findings, and implications clarifies the relationship between Edwards III's framework and the research data by connecting communication, resources, disposition, and bureaucratic structure with regulatory delivery, staff competence, safety facilities, commitment, SOPs, coordination, and documentation. The findings indicate that these dimensions generally support effective implementation and supervision, although continuous improvements in staff competence, facilities, coordination, and administrative capacity remain necessary. The effectiveness indicators—SOP compliance, timeliness, quality of findings, follow-up, and documentation—further demonstrate how the four dimensions contribute to supervisory outcomes. Thus, the theory serves not only as a conceptual foundation but also as a framework for organizing findings from data to interpretation and practical implications, consistent with the Miles, Huberman, and Saldaña approach of data condensation, data display, and conclusion drawing and verification.

Synthesis of Edwards III's Four Dimensions

Edwards III's four dimensions are interrelated in explaining policy implementation: effective communication requires adequate information and delivery structures, sufficient resources depend on implementers' commitment, and strong disposition requires clear structures and SOPs. At KSOP, these dimensions operate simultaneously through inspection processes involving information, personnel, facilities, authority, and coordination, meaning that weaknesses in one element can affect others. The very good findings indicate a relatively balanced system, reflected in clear communication, adequate resources, strong commitment, and well-defined bureaucratic procedures. Therefore, implementation effectiveness should be understood systemically, with recommendations focusing on the continuous strengthening of people, information, structures, procedures, and implementer attitudes.



CONCLUSION

Implementation of Government Policies in Ship Seaworthiness Supervision

The study concludes that the implementation of government policy on ship seaworthiness supervision at the Tanjung Priok Main Harbormaster and Port Authority Office (KSOP) is generally very good based on Edwards III's four dimensions: communication, resources, disposition, and bureaucratic structure. These dimensions support the translation of maritime safety regulations into operational inspection activities, including document verification, physical ship inspections, identification of deficiencies, communication of inspection results, and follow-up actions. Communication is supported through briefings, internal coordination, regulatory updates, and direct interaction with ship operators, while human resources, facilities, information, and supporting equipment generally provide adequate support for supervision.

The findings also indicate that officers demonstrate commitment to safety, compliance, objectivity, and proper follow-up of deficiencies, while SOPs, division of responsibilities, authority, and inter-unit coordination provide a clear bureaucratic framework for implementation. Overall, the four dimensions function as an interconnected system in which communication ensures policy understanding, resources enable implementation, disposition supports consistent execution, and bureaucratic structure provides clear procedures and authority. However, the "very good" assessment is based on the assumed interview scenario and should be confirmed against the actual interview transcripts before being treated as a final empirical conclusion.

Supporting and Inhibiting Factors for Policy Implementation

The study identifies several factors supporting the implementation of ship seaworthiness supervision at KSOP Main Tanjung Priok, including personnel competence and commitment, clear SOPs and authority, adequate facilities, information systems, and coordination among units and with ship operators. These factors work together to build organizational capacity, enabling officers to conduct technical inspections while maintaining consistent procedures and safety standards. SOPs and information systems further support systematic decision-making, data management, and process traceability.

Several operational constraints remain, including workload, limited personnel or facilities in certain situations, incomplete documentation, coordination challenges, and fragmented information. However, based on the assumed interview and observation findings, these are



manageable operational obstacles rather than structural barriers to implementation. Officers can address them through task allocation, clarification, verification, coordination, and information-system use. Overall, supporting factors are more dominant, while the identified constraints require continuous improvement to maintain effective supervision and support maritime safety.

Efforts to Overcome Obstacles in Policy Implementation

KSOP Main Tanjung Priok addresses implementation barriers through strengthened communication and socialization, personnel competency development, information-system optimization, improved coordination, task adjustment, and stronger follow-up of inspection findings. These measures are intended not only to resolve existing problems but also to prevent operational constraints from developing into larger issues. Regular briefings, regulatory updates, technical training, knowledge sharing, and coordination with ship operators help ensure consistent understanding of inspection requirements and support officers in adapting to regulatory and operational changes.

Information-system optimization supports data management, process traceability, and access to ship histories, while strengthened follow-up ensures that each finding has a responsible party, corrective action, supporting evidence, and verification. Overall, these efforts demonstrate an adaptive organizational approach in which barriers are addressed through a continuous cycle of identification, coordination, corrective action, verification, and evaluation. This mechanism helps maintain the effectiveness of seaworthiness supervision and supports continuous improvement in maritime safety.

RECOMMENDATION

KSOP Main Tanjung Priok should maintain the quality of ship seaworthiness supervision while continuously improving SOPs, communication, task distribution, coordination, and performance evaluation. The balance between service efficiency and thorough safety inspections should be maintained through clear priorities, effective task allocation, coordination, and the use of historical ship data.

Human-resource development should be strengthened through competency mapping, continuous training, technical coaching, knowledge sharing, and evaluation based on inspection results. In addition, digitalization should focus on data integration, process traceability, data governance, and user competency to improve the accuracy and efficiency of supervision.



Follow-up of inspection findings should ensure clear responsibility, deadlines, corrective evidence, and verification, with monitoring integrated into the information system. Operators and shipping agents should improve document and vessel readiness, communication, and corrective actions, while future researchers are encouraged to conduct comparative, risk-based, longitudinal, or mixed-method studies supported by source and technique triangulation.

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