DIJEMSS:
Dinasti International Journal of Education Management and Social Science
E-ISSN: 2686-6331
P-ISSN: 2686-6358
https://dinastipub.org/DIJEMSS dinasti.info@gmail.com +62 811 7404 455

DOI: https://doi.org/10.38035/dijemss.v7i1.5606
https://creativecommons.org/licenses/by/4.0/
Received: 16 September 2025 | **Revised:** 24 September 2025 | **Accepted:** 04 November 2025

Evaluation of the Implementation of Safety Standards in the Debarkation and Embarkation Process of Seatoll Vessel R-72 at Anchorage

Fadel Muhammad[1], Muhammad Idris[2], Idham Dwi Satria[3], Filemon[4], Muhammad Sapril Siregar[5], Stevian G. A. Rakka[6]
[1]Program Studi Nautika Politeknik Pelayaran Sorong, Indonesia, dell.fadel86@gmail.com
[2]Program Studi Manajemen Transportasi Laut Politeknik Pelayaran Sorong, Indonesia, idris.muh2626@gmail.com
[3]Program Studi Nautika Politeknik Pelayaran Sorong, Indonesia, idhamdwisatria33@gmail.com
[4]Program Studi Permesinan Kapal Politeknik Pelayaran Sorong, Indonesia, filemontarigan@gmail.com
[5]Program Studi Nautika Politeknik Pelayaran Sulawesi Utara, Indonesia, msaprilsiregar@poltekpelaceh.ac.id
[6]Program Studi Nautika Politeknik Pelayaran Sulawesi Utara, Indonesia, stevian@poltekpelsulut.ac.id

Corresponding Author: dell.fadel86@gmail.com[1]

Abstract: This study aims to evaluate the implementation of safety standards in the debarkation and embarkation process of the R-72 seatoll vessel at anchorage in Sofyanin Village. The research employed a qualitative case study design, utilizing field observations, interviews, questionnaires, and literature review. The findings indicate that passenger safety is influenced by three main dimensions: structural–policy, operational, and cultural. Structurally, the absence of a permanent pier and lack of regulatory oversight are the dominant factors increasing risks. Operationally, the captain's ability to determine anchorage points and the limited availability of safety equipment serve as critical challenges. Culturally, low public awareness of safety procedures further exacerbates vulnerabilities. Evaluation against international standards (SOLAS, STCW, ISM Code, LSA Code) and national regulations (Law No. 17/2008, MoT Regulation No. 11/2023) reveals significant gaps between requirements and actual practices. The risk matrix analysis shows that most hazards, such as passengers falling overboard, capsizing of small transfer boats, and injuries from gangways, fall under the High–Extreme category. Therefore, this study recommends strengthening regulatory oversight, providing safety facilities in compliance with standards, and promoting safety culture awareness among local communities to minimize maritime accident risks.

Keywords: Maritime Safety, Debarkation, Embarkation, Sea Toll Vessel, Risk Matrix.

INTRODUCTION

Indonesia, as the world's largest archipelagic country, relies heavily on sea transportation as the main means of mobility for its population and distribution of goods, particularly in remote areas with limited access to land and air transportation (Jinca & Humang, 2023). To connect isolated regions lacking adequate port infrastructure, the Sea Toll Vessel program serves as a reliable maritime transport solution to enhance connectivity in underdeveloped, frontier, and outermost regions (3T) (Suyono & Mukti, 2018). One critical aspect of sea toll

vessel operations is the debarkation and embarkation process, which often faces challenges due to limited facilities and infrastructure in many remote areas.

Debarkation and embarkation activities on sea toll vessel routes play a vital role, not only in ensuring smooth community mobility but also in supporting the economy of 3T regions (Susanto et al., 2021). Sea toll vessels act as the main link between villages and islands, making safety standards during passenger boarding and disembarking a priority in service delivery. In many cases, sea toll vessels operate in areas without docks, forcing them to anchor in open waters. This practice requires the use of small boats and hanging ladders for debarkation and embarkation, which are prone to accidents if not supported by adequate safety standards (Lu & Aljawarneh, 2022).

The phenomenon of anchoring as the only operational option is commonly found in Indonesia's remote coastal areas in remote areas, such as Sofyanin Village in Maluku Province. This village is one of the stops on the R-72 sea toll vessel route. With the absence of port infrastructure, passenger embarkation and debarkation are often carried out under challenging conditions while the vessel is anchored. Weak implementation of safety standards in such situations increases the risk of injuries and even fatalities. The challenge is compounded by passengers' low awareness of safety, particularly when using hanging ladders to board the vessel (Jiang et al., 2025).

In addition to internal factors such as limited facilities, external factors like unpredictable weather conditions also heighten the risk of accidents. Research shows that extreme weather increases the likelihood of maritime accidents, especially during embarkation and debarkation conducted at sea (Meštrović, 2016) Thus, a comprehensive evaluation of safety factors in the context of anchorage ports becomes increasingly important, not only to protect passengers but also to safeguard crew members who operate under the pressure of unpredictable natural conditions.

Although maritime transport safety issues have been widely studied, most research has focused on modern ports with complete facilities or large cargo vessels on international routes (Vieira et al., 2019). Few studies explore safety challenges in sea toll vessels serving areas without permanent ports, particularly when vessels operate at anchor. This indicates a research gap in the literature concerning the implementation of safety standards in local contexts with limited infrastructure. Moreover, the lack of crew training in emergency management, limited safety equipment such as additional life jackets, and insufficient emergency communication systems further exacerbate safety risks (Carreras Ruiz, 2023). These gaps emphasize the need for evidence-based research to evaluate current safety practices in the field and identify priority factors for policy improvement.

This study specifically aims to evaluate the implementation of safety standards in the debarkation and embarkation processes of the R-72 sea toll vessel while anchored at Sofyanin Village. Through this case study, the article seeks to identify the gap between actual practices and the safety standards that should be applied. The findings are expected to strengthen the maritime literature on sea transportation safety in anchorage ports. The contribution of this research lies in enriching the understanding of safety practices in local contexts that have not been explored in previous studies. Meanwhile, the contribution

METHOD

Type of Research

This study employs a qualitative approach with a case study design. The qualitative approach was chosen because the research focuses on an in-depth understanding of embarkation debarkation safety phenomena in a real life context (Creswell & Creswell, 2017). The case study design was selected since the research location, Sofyanin Village, has a unique characteristic: the absence of a pier, which requires all passenger boarding and disembarking activities to be carried out using an anchoring system.

Research Location and Time

The study will be conducted in Sofyanin Village, one of the villages served by the sea toll vessel *KM Frans Kaiseipo*. This vessel operates routes in the Maluku region, including Saumlaki to Ambon, Namrole, Larat, and Sofyanin. (Pelu, 2024). Sofyanin Village, located in Maluku, is one of the small villages that plays a role in improving inter-island connectivity in eastern Indonesia.

Population and Sample

The research population consists of all subjects or objects with certain characteristics that serve as the generalization scope for the study (Levy & Lemeshow, 2013; Sugiyono, 2017). In this context, the population includes all parties involved in the embarkation and debarkation of sea toll vessel R-72 passengers in Sofyanin Village. From this population, the sample was determined as a smaller group representing the whole, consisting of operational personnel directly involved in the process, such as ship crew, port authority (*syahbandar*), and local government officials. Their selection is based on their ability to provide in-depth information regarding the implementation of safety procedures and challenges encountered during embarkation and debarkation activities. A sample itself is understood as a subset of the population that shares the same characteristics and is used as a representative in research (Creswell & Creswell, 2017).

Data Collection Techniques

The data collection techniques used in this study include questionnaires, structured interviews, field observations, and literature review. The required data are as follows:

1. **Field Observation** – The researcher directly observes the embarkation and debarkation process of sea toll vessel passengers in Sofyanin Village. The focus includes how activities are carried out while the vessel is anchored, the extent to which safety procedures are implemented, and the condition and availability of safety facilities on board. This approach was chosen because it provides a real picture of daily safety practices and highlights areas needing improvement. Observation is a technique of collecting data through direct monitoring of the research object. (Sugiyono, 2017). Similarly, field observation helps researchers gain deeper understanding of a phenomenon through direct involvement in the environment where the events occur (Bailey, 2017)
2. **Unstructured Interviews** – These are conducted to explore the perceptions of stakeholders such as regulators, captains, and local government regarding safety aspects in sea toll vessel operations. This method allows flexibility for researchers to adjust questions according to the flow of conversation, yielding more natural and in-depth insights that reflect respondents' real experiences. Unstructured interviews allow researchers the freedom to explore broad information (Sugiyono, 2017), while other scholars emphasize that open-ended interviews are highly useful for comprehensively understanding respondents' perspectives (Patton, 2014).
3. **Literature Review** – Conducted to strengthen the theoretical and regulatory foundation of safety procedures. This involves examining various sources such as international regulations (STCW, SOLAS, ISM Code), national regulations, and maritime safety guidelines related to anchorage operations and embarkation–debarkation activities. Through this approach, researchers obtain a more comprehensive understanding of applicable safety standards and the academic context of similar studies. A literature study is a series of activities related to data collection through the review of written sources relevant to the research problem (Zed, 2008), while literature review serves to build a conceptual framework and strengthen research arguments based on existing theories and empirical finding (Creswell & Creswell, 2017)

Data Analysis

The data analysis procedures are as follows:

1. The initial step is to identify potential risks in the embarkation and debarkation activities of sea toll vessel R-72 in Sofyanin Village. This identification is conducted through field observation and interviews with relevant parties, focusing on hazards such as falling into the sea, capsizing of small boats due to waves, collisions between small boats, and injuries caused by inadequate boarding facilities.
2. After risks are identified, the analysis will examine the underlying causal factors. Data will be obtained from in-depth interviews with the Department of Transportation, port authority, ship captains, and passengers. The factors under study include structural–policy (e.g., lack of pier and regulatory oversight), operational (captain's skills, safety equipment), cultural (community awareness), and natural factors (weather and sea conditions). These will be analyzed using theoretical frameworks such as the Swiss Cheese Model to understand interactions among layers of safety defenses.
3. Safety Compliance Evaluation – This analysis involves comparing field practices with applicable standards. Both international and national regulations will serve as benchmarks to assess compliance levels and identify existing gaps.
4. Reduced data will be presented in narrative, tables, or visualizations (such as a risk matrix), and analyzed using the qualitative approach of Miles & Huberman. This stage will connect field findings with theoretical frameworks and previous literature.

RESULTS AND DISCUSSION

Risk Identification of Accidents in Debarkation and Embarkation Activities

Based on field observations in Sofyanin Village, the debarkation and embarkation of the R-72 sea toll vessel during anchoring reveal a number of risks that cannot be underestimated. First, there is the risk of falling into the sea when passengers climb up or down the hanging ladder. This situation becomes more dangerous because most passengers are not equipped with protective gear such as life jackets, and the hanging ladders used are not always equipped with sturdy rails or handholds. Several passengers, especially children and the elderly, were observed struggling on ladders that swayed under the waves. This illustrates how vulnerable such a simple activity as boarding and disembarking can be to fatal accidents.

Another highly evident risk is that the small boats transporting passengers from the vessel to the shore can capsize or be struck by waves. Because the ship anchors quite far from the shoreline, passengers must be transferred using small wooden boats. The lack of technical standards on these boats, combined with unpredictable sea conditions, makes the short trip from ship to shore full of uncertainty. On several occasions, boats were observed rocking violently when hit by waves, causing panic among passengers who clung to each other without clear procedures.

Potential collisions between small boats were also observed. During the embarkation and debarkation process, there were no designated personnel to regulate marine traffic around the anchored vessel. Small boats moved in and out simultaneously to pick up or drop off passengers, often competing for passage. This not only increased the risk of collisions but also slowed the overall process and added congestion around the ship.

There is also the risk of physical injury due to the lack of safety-supporting facilities. Passengers climbing the hanging ladder had no adequate handholds, while small boats lacked protective rails or support equipment to shield passengers from impact. Some passengers had to balance themselves by holding onto the boat's body or leaning on one another, which indirectly increased the likelihood of minor accidents such as sprains or falls.

These observations confirm that embarkation and debarkation are not merely simple technical activities but critical points that greatly determine passenger safety. The risk identification highlights the urgent need for serious attention from ship operators, regulators,

and local governments, because if left unaddressed, potential accidents will not only cause material losses but could also claim lives among the community who rely on the sea toll vessel as their only means of maritime transportation.

Factors Contributing to Accidents

Interviews with the Department of Transportation, harbor masters, and ship captains reveal that accidents during embarkation and debarkation of the R-72 sea toll in Sofyanin Village do not occur suddenly but are influenced by various interrelated factors. These can be grouped into three main dimensions: structural–policy, operational, and cultural.

1. **Structural–Policy**
   a. Structurally, the absence of a permanent pier in Sofyanin Village is the root cause. This small village in a remote (3T) area has not been prioritized for maritime infrastructure development due to budget constraints. As a result, the sea toll vessel must anchor far from the coast, forcing passengers to rely on small boats to reach land. This condition not only complicates the process but also greatly increases accident risks during each embarkation–debarkation activity.
   b. In addition, the absence of regulators on site exacerbates vulnerability. Interviews with harbor masters confirmed that limited personnel make direct supervision rare, even though national regulations (Law No. 17/2008 and Ministerial Regulation No. 11/2023) require safety monitoring in every vessel operation. The lack of regulators means the process proceeds without formal control, and safety aspects are often neglected.
2. **Operational**
   a. At the operational level, safety responsibility almost entirely falls on the ship's captain. He must select the proper anchoring point, taking into account sea currents, wind direction, and waves. This decision is critical: a slight misjudgment could cause small passenger boats to drift dangerously or capsize. An experienced captain may minimize risks, but relying solely on an individual without systemic support is not an ideal safety strategy.
   b. Moreover, the lack of additional safety equipment is a serious issue. Available life jackets are often insufficient for the number of passengers, while backup lifeboats are almost never provided. In interviews, captains admitted that existing safety facilities are more of a formality to meet departure requirements rather than genuinely prepared for emergencies. This illustrates a gap between international safety standards (SOLAS, ISM Code) and actual practices in the field.
3. **Cultural**
   a. From the cultural dimension, low community safety awareness is a dominant factor. Most passengers are coastal residents accustomed to maritime activities since childhood. They often consider life jackets or compliance with safety procedures unnecessary, even burdensome. Some refuse to wear life jackets, claiming they hinder mobility, especially when carrying goods or fishing catches. This "casual" culture makes it difficult to implement even simple risk mitigation efforts.
   b. Additionally, interviews with the Department of Transportation revealed socioeconomic aspects influencing safety culture. For Sofyanin residents, the sea toll vessel is not only a means of transportation but also a symbol of connectivity with the outside world. As a result, they tend to tolerate high risks in order to continue traveling and trading. This economic orientation often outweighs concerns for life safety.

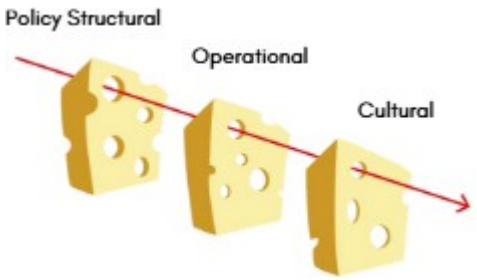


Figure 1.
Swiss Cheese Model of Debarkation and Embarkation While Anchorage

Research findings in Sofyanin Village show that all layers of safety defenses depicted in the Swiss Cheese Model have significant weaknesses. In the structural–policy layer, the absence of a permanent pier and regulators opens a major initial gap. The next layer, operational, is fragile because safety relies solely on the captain's skills in choosing an anchoring point, while safety equipment such as life jackets and lifeboats fail to meet LSA Code standards. The final layer, cultural, demonstrates low public awareness of wearing life jackets or following crew instructions, widening the gaps even further.

When the holes in all three layers align, as depicted in the Swiss Cheese Model, the risk of fatal accidents falling overboard, capsizing boats, or boat collisions—becomes very high. Thus, this analysis confirms that accidents in Sofyanin Village are not merely due to temporary technical factors but represent a **systemic failure** involving regulations, infrastructure, operations, and community culture. Therefore, safety improvements cannot be carried out partially but must be systemic and multilayered, including the construction of a simple pier, the presence of regulators, improved safety equipment, and community safety education.

Risk Mapping (Risk Matrix)

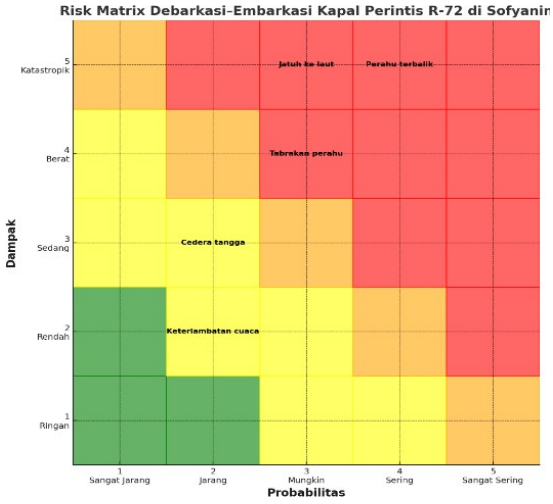


Figure 2.
Risk Assessment of Debarkation and Embarkation While Anchorage

The risk assessment shows that most potential hazards in the embarkation–debarkation process fall into the High/Extreme category. The risks of falling overboard and boats capsizing due to waves fall into the catastrophic category with a relatively high probability, as both events directly threaten passenger lives. The risk of collisions between small boats is classified as severe with medium–high probability, given the absence of traffic regulation for boats around the anchored vessel.

Moderate risks, such as injuries from slippery or unstable hanging ladders, are relatively less severe but still significant as they can trigger panic or secondary incidents. Meanwhile, risks such as embarkation delays due to bad weather are categorized as low, since their impact is indirect on life safety, although they may disrupt travel schedules.

Interpretation of the matrix highlights that the main focus of mitigation must be on high-category risks. In other words, improving passenger boarding facilities, providing adequate safety equipment, and strict supervision by regulators are urgent steps that cannot be postponed. In addition, these results also show the importance of safety education for the community so they are better prepared to face maritime risks that cannot be completely eliminated.

Evaluation of Compliance with Safety Standards (Gap Analysis)

Research findings compared to IMO, SOLAS (International Convention for the Safety of Life at Sea), and Ministry of Transportation regulations:

Table 1.
Gap Analysis of Debarkation and Embarkation while anchorage

Safety Aspect	Regulation/Standard	Field Findings	Gap
Embarkation–disembarkation facilities	SOLAS Ch. II-1, Ministry of Transportation Regulation No. 11/2023	Passengers use makeshift hanging ladders/small boats	Non-compliance with standards; very high risk of falling
Presence of regulators	Law No. 17 of 2008 on Shipping	No harbor master/regulator present during the process	No direct safety supervision
Safety equipment	IMO Life-Saving Appliances (LSA Code)	Lifejackets not available for all passengers	Quantity and quality of safety equipment do not meet requirements
Community education	STCW Code (safety awareness training)	No safety outreach/education conducted	Low community participation in safety practices

The table above shows substantial disparities between the established national and international maritime safety regulatory frameworks and practices observed in Sofyanin Village. Safety standards outlined in SOLAS Chapter II-1 and Ministry of Transportation Regulation No. 11/2023 mandate the provision of safe embarkation–debarkation facilities, yet in reality, passengers still rely on makeshift hanging ladders and small boats, inherently increasing the risk of falling overboard. Similarly, Law No. 17/2008 on Shipping emphasizes the harbor master's obligation for supervision, but field findings show no regulator presence during the process, resulting in ineffective safety control.

Safety equipment aspects also reveal significant deviations from standards. The IMO Life-Saving Appliances Code requires life-saving appliances in adequate quantity and quality according to passenger numbers, but field conditions show the availability of life jackets falls far below minimum standards. Furthermore, the STCW Code emphasizes the importance of safety awareness training, but safety education and socialization for passengers are not conducted, resulting in low community participation in ensuring safety. This low level of safety awareness worsens structural and operational weaknesses.

The identified regulatory gaps reflect weak implementation of the multilayered safety system, spanning infrastructure, supervision, equipment, and community education. These

findings confirm that safety in embarkation–debarkation processes in Sofyanin Village depends not only on technical factors but also heavily on the misalignment between formal regulations and actual operational practices in the field.

Validity and Reliability of Data

To ensure the credibility of the research, data validity will be maintained through triangulation of sources and methods. Data will be collected from various key actors such as the Department of Transportation, harbor masters, ship captains, and community members using the vessels, and then compared with field observation results. In addition, the use of diverse data collection methods observation, interviews, and regulatory document reviews will complement each other, making the information obtained more consistent and verifiable. This step ensures that the research findings are not solely dependent on a single perspective, but rather are the result of a synthesis of various relevant viewpoints.

The reliability of the research will be maintained through the use of clear and structured instruments. An observation checklist will be used to ensure uniformity in recording data in the field, while interview guidelines will be prepared in accordance with the research problem formulation. This is important to keep the data consistent, even when collected at different times or from different respondents. In addition, documentation such as photos and field notes will be used as comparison material, thereby reducing interpretation bias.

Discussion

The factors influencing the safety of debarkation and embarkation activities during anchoring are identified through risk assessment and analysis of causal factors. Maritime safety is influenced not only by technical aspects, but also by structural dimensions (infrastructure and policy), operational dimensions (crew skills and safety equipment), and cultural dimensions (public awareness and behavior). This analysis positions the conditions of Sofyanin Village within the research framework, thus revealing the relationship between theory and field reality.

The implementation of safety standards in preventing accidents during debarkation and embarkation of the R-72 sea toll vessel while anchoring is assessed by evaluating compliance with applicable regulations. International standards such as SOLAS, STCW, and the LSA Code, as well as national regulations such as Law No. 17/2008 and Ministerial Regulation No. 11/2023, are used as benchmarks to measure the conformity of field practices. The connection between safety regulation theory and research findings is evident in the gap between normative standards and factual practices, highlighting the need to address and reduce this gap in debarkation and embarkation activities during anchoring.

CONCLUSION

From the results of the study, several conclusions can be drawn. The debarkation and embarkation process in Sofyanin Village is influenced by several safety factors that can be categorized into three main dimensions. Structurally, the absence of a permanent pier, the lack of safety facilities, and the unavailability of evacuation routes make passenger boarding and disembarking highly risky. Operationally, safety largely depends on the captain's skills in determining the proper anchoring point, but this is worsened by limited safety equipment and weak crew supervision during the process. Culturally, the low awareness of the community to comply with safety procedures, including reluctance to use life jackets, further increases the likelihood of incidents in the field. The implementation of safety standards in the debarkation and embarkation process of the R-72 sea toll vessel in Sofyanin Village has not yet been carried out properly. This is evident from the absence of regulatory authorities on site, the insufficient number of life jackets compared to passengers, the lack of pre-departure safety briefings, and the high risks triggered by weather conditions. These circumstances highlight a clear gap

between the safety regulations established at the international level (IMO, SOLAS, STCW) and the national level (Law No. 17/2008 and Ministerial Regulation No. 11/2023) with the reality in the field. Therefore, concrete steps are needed through enhanced supervision, provision of adequate safety facilities, and the cultivation of a safety culture among both ship crews and service users to ensure maritime travel truly provides a sense of security. Based on the risk matrix analysis, most potential hazards such as passengers falling overboard, transport boats at risk of capsizing, and injuries caused by the use of hanging ladders fall into the High–Extreme category. This means that such risks cannot be ignored as they directly threaten lives. This condition underscores the urgent need for immediate mitigation measures, including the provision of adequate safety facilities, strict supervision from regulatory bodies, and practical education for the community to ensure that every boarding and disembarking process takes place more safely and in a controlled manner.

REFERENCES

Apsari, N. K. Y., Sukartini, N. W., & Suamba, I. B. P. (2022). *Implementasi Sistem Manajemen Keselamatan Dan Kesehatan Kerja (SMK3) Pada Kegiatan Embarkasi Dan Debarkasi Penumpang Kapal Pada Terminal Domestik Pelabuhan Benoa-Bali* [Diploma, Politeknik Negeri Bali]. https://repository.pnb.ac.id/2690/

Aydin, M., Uğurlu, Ö., & Boran, M. (2022). Assessment of human error contribution to maritime pilot transfer operation under HFACS-PV and SLIM approach. *Ocean Engineering*, *266*, 112830. https://doi.org/10.1016/j.oceaneng.2022.112830

Bailey, C. A. (2017). *A Guide to Qualitative Field Research*. SAGE Publications.

Carreras Ruiz, J. (2023). *Study and analysis of passage planning principles. Voyage planning and monitoring from Sakai to Point Fortin*. https://hdl.handle.net/2117/386704

Casareale, C. (2019). *Improving Safety at Sea through the Implementation of a New Maritime Emergency Management Model*. https://iris.univpm.it/handle/11566/263314

Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.

Habibi. (2018). Kegagalan Sistem Keselamatan Transportasi Laut di Indonesia. *Jurnal Aplikasi Pelayaran Dan Kepelabuhanan*. https://doi.org/10.30649/japk.v8i2.46

IMO. (2020). *STCW: International Convention on Standards of Training, Certification and Watchkeeping for Seafarers : Including 2010 Manila Amendments, STCW Convention and STCW Code*. International Maritime Organization.

International Maritime Organization. (2017). *Life -saving appliances: Including LSA code* (2017 edition). International Maritime Organization.

International Maritime Organization. (2020). *SOLAS: Consolidated edition 2020* (London). International Maritime Organization. //library.stipjakarta.ac.id%2Findex.php%3Fp%3Dshow_detail%26id%3D12975%26keywords%3D

Jiang, Z., Xiao, Z., Feng, Y., Cao, Y., Zhou, D., & Wang, X. (2025). Analysis of risk influential factors of marine pilots during the embarkation and disembarkation. *Journal of Marine Engineering & Technology*, *24*(1), 40–53. https://doi.org/10.1080/20464177.2024.2397847

Jinca, M. Y., & Humang, W. P. (2023). *Perencanaan dan Pengembangan Transportasi Wilayah Kepulauan*. Nas Media Pustaka.

Levy, P. S., & Lemeshow, S. (2013). *Sampling of Populations: Methods and Applications*. John Wiley & Sons.

Lu, P., & Aljawarneh, S. (2022). Case Study on Berthing and Disembarking of Ships and Traffic Organization in Rugao Port of Nantong. *Mob. Inf. Syst.*, *2022*. https://doi.org/10.1155/2022/4261240

Mandi, N. B. R. (2015). *Pelabuhan—Perencanaan dan Perancangan konstruksi bangunan laut dan pantai*. Buku Arti.

Meštrović, F. (2016). *Procedures on arrival and departure from international ports* [Info:eu-repo/semantics/bachelorThesis, University of Zadar. Maritime Department. Division of Nautical Studies]. https://urn.nsk.hr/urn:nbn:hr:162:524185

MM, P. D. H. B. S., SE. (2021). *Manajemen Pelabuhan dan Realisasi Ekspor Impor*. Penerbit Andi.

Patton, M. Q. (2014). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. SAGE Publications.

Pelu, M. M. (2024, July 22). *Sore Ini, KM. Frans Kaisiepo Siap Berangkat dari Ambon ke Berbagai Wilayah di Maluku, Cek Rutenya—Tribunambon.com*. https://ambon.tribunnews.com/2024/07/22/sore-ini-km-frans-kaisiepo-siap-berangkat-dari-ambon-ke-berbagai-wilayah-di-maluku-cek-rutenya

PM 11 Tahun 2023 tentang Pelaksanaan Konvensi International untuk Keselamatan Jiwa di Laut beserta amandemennya (2023). https://peraturan.bpk.go.id/Details/254400/permenhub-no-11-tahun-2023

Reason, J. (1990). *Human Error*. Cambridge University Press.

Sugiyono. (2017). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif dan R & D*. Alfabeta.

Susanto, P. C., Pahala, Y., & Setyowati, T. M. (2021). KONEKTIVITAS PELAYARAN PERINTIS SEBAGAI BAGIAN SISTEM DISTRIBUSI LOGISTIK DALAM MENDUKUNG KEBERHASILAN TOL LAUT. *Jurnal Transportasi, Logistik, Dan Aviasi*, *1*(1), 97–109. https://doi.org/10.52909/jtla.v1i1.42

Suyono, R. S., & Mukti, E. T. (2018). Studi Dan Evaluasi Operasional Pelayaran Perintis Di Indonesia. *Jurnal Teknik Sipil*, *18*(2), Article 2. https://doi.org/10.26418/jtst.v18i2.31216

Tahta, M. B. (2024). *ANALISIS PROSES EMBARKASI DAN DEBARKASI PENUMPANG KM. DOBONSOLO DI PELABUHAN AMBON* [Diploma, POLITEKNIK ILMU PELAYARAN SEMARANG]. https://library.pip-semarang.ac.id

Undang-undang No. 17 Tahun 2008 tentang Pelayaran, 17 (2008). https://peraturan.bpk.go.id/Details/39060

Vieira, G. B. B., Silva, R. M. D., Senna, L. A. D. S., Neto, F. J. K., & Costa, P. C. (2019). The VTMIS implementation and their impact on pilotage and mooring operations: A comparative study between the ports of Barcelona (Spain) and Santos (Brazil). *International Journal of Logistics Systems and Management*, *32*(1), 110. https://doi.org/10.1504/IJLSM.2019.097076

Wiku, Y. A. (2023). *ANALISIS KETERLAMBATAN PROSES EMBARKASI DAN DEBARKASI KM. BUKIT RAYA AKIBAT GAGAL SANDAR DI PULAU MIDAI* [Diploma, POLITEKNIK ILMU PELAYARAN SEMARANG]. https://library.pip-semarang.ac.id

Zed, M. (2008). *Metode Penelitian Kepustakaan*. Yayasan Pustaka Obor Indonesia.