Implementation of Safety Management System in Improving Ship Crew Work Safety

[1]Ofel Yericho Todingan
Institut Bisnis and Multimedia asmi Jakarta

[2]K.P. Suharyono S. Hadiningrat
Vice Chancellor of Research, Community Services and Cooperation in Institut Bisnis and Multimedia asmi Jakarta

[3]Verry Albert Jekson Mardame Silalahi
Institut Bisnis and Multimedia asmi Jakarta

Author's correspondence: haryshadiningrat@gmail.com[1], ofelyerichotodingan@gmail.com[2], vicoletta.silalahi@gmail.com[3]

Abstract. *The importance of occupational safety in the maritime industry encourages the implementation of the Safety Management System (SMS) to reduce the risk of accidents and improve protection for ship crews. This study aims to analyze the role of SMS in improving work safety, identifying implementation challenges, and its impact on incident reduction. The research method uses a qualitative approach with literature analysis and case studies to explore the complexity of SMS implementation in the maritime sector. The results show that effective SMS consists of four main components: safety policy, risk management, safety assurance, and safety promotion. Its implementation involves risk assessment, ongoing training, and periodic evaluation. However, challenges such as a lack of management commitment, an unsupportive organizational culture, and limited resources often hinder the success of SMS. Nonetheless, companies that successfully implement SMS experience increased safety awareness, reduced incidents, and the formation of a strong safety culture among crews. In conclusion, SMS is a crucial tool to improve work safety in the maritime sector. Its success depends on management commitment, crew training, and technology integration. Research recommendations include longitudinal studies to assess the long-term impact of SMS as well as quantitative approaches to objectively measure its effectiveness. These findings make a practical contribution for shipping companies and regulators in optimizing safety policies.*

Keywords: Safety Management System, Occupational Safety, Ship Crew

INTRODUCTION

Occupational safety in the maritime industry is a very important aspect and should not be ignored. The maritime sector, which includes a wide range of activities such as shipping, freight transport, and port operations, has a high risk that can result in serious accidents, material losses, and even loss of life (Mappangara, 2024). According to data from the International Maritime Organization (IMO), the number of accidents in international waters is still quite high, indicating the need for more attention to occupational safety in this sector. In Indonesia, as an archipelagic country with many maritime activities, shipping safety is a top priority to maintain security and order in the waters. The importance of occupational safety in the maritime industry not only protects workers, but also has implications for the economy and reputation of the industry. Accidents that occur can cause significant financial losses, both for companies and the state, so the implementation of effective systems to improve occupational safety is indispensable (Bakamla, 2025).

In this context, the Safety Management System (SMS) emerged as a systematic approach designed to manage safety in maritime operations. SMS serves to identify, evaluate, and control risks associated with ship and port operations. With SMS, companies can ensure that all aspects of safety are taken into account and integrated into their work culture. The implementation of SMS can improve the safety of ship crews by helping to identify potential risks that can occur during operations, so that preventive measures can be taken before accidents occur. In addition, SMS encourages ongoing training for ship's crew, guaranteeing that they have the necessary knowledge and skills to deal with emergency situations. Evaluation and audits are also an important part of SMS, as by conducting regular assessments, companies can measure the effectiveness of the safety systems implemented and make necessary improvements (Nainggolan & Hendra, 2023). Last but not least, SMS helps companies to comply with safety regulations set by maritime authorities, thereby reducing the risk of violations that can lead to accidents. Thus, the effective implementation of SMS not only improves the work

safety of ship crews, but also contributes to the smooth operation and reputation of the maritime industry as a whole.

The problem formulation in this study focuses on how the implementation of the Safety Management System (SMS) can improve the work safety of ship crews. In this context, several key questions need to be answered, such as the challenges faced in the implementation of SMS in the maritime industry, the effectiveness of SMS in reducing the incidence of work accidents on ships, as well as the factors that affect the success of SMS implementation in improving work safety. By formulating these issues, the research aims to provide a deeper understanding of the relationship between SMS and occupational safety in the maritime sector.

The purpose of this study is to analyze and evaluate the role of SMS in improving the work safety of ship crews. This study will identify best practices in the implementation of SMS and examine their impact on the reduction of accidents and incidents on board. In addition, this study will provide recommendations that can be used by shipping companies to optimize their SMS, thereby improving work safety. Thus, this research is expected to make a significant contribution to the development of safety policies in the maritime sector.

The benefits of this research are very diverse and include various parties. First, this research is expected to provide better insight for shipping companies regarding the importance of implementing SMS in improving work safety. In addition, the results of this research can be used as a reference for related parties, such as maritime regulators and training institutions, in developing more effective training programs for ship crews. This research also contributes to the academic literature in the field of maritime safety, by adding the latest data and analysis on the implementation of SMS and its impact on occupational safety.

The contribution of this research to the practice of occupational safety on ships is very important. By providing an in-depth analysis of the effectiveness of SMS, this study can help shipping companies understand how these systems can be optimized to improve work safety. In addition, this research will offer practical recommendations that

can be implemented by companies to overcome challenges in the implementation of SMS. Thus, this research not only focuses on theoretical aspects, but also provides practical solutions that can be applied in the field to improve the work safety of ship crews.

LITERATURE REVIEW

The Safety Management System (SMS) is a collection of structured processes throughout the company that provide effective risk-based decision-making for daily functions (Manawis, 2024). SMS is also a systematic approach implemented in the maritime industry to manage safety. The concept of SMS emerged in response to the increasing need to reduce accidents and incidents that can result in major losses, both financially and humanely (Turner, 2018). SMS is designed to help shipping companies identify, evaluate, and control the risks associated with their operations. The history of the development of SMS began to be highlighted by the International Maritime Organization (IMO) through the STCW Convention and the ISM Code which regulates work safety at sea. In this context, SMS is a very important tool to improve safety culture in the maritime environment.

Key Components of a Safety Management System

The application of SMS in the maritime industry involves various interrelated components (Sitorus, 2023). One of the main components of SMS is the safety policy. This safety policy serves as the foundation for all the initiatives that companies take to improve occupational safety. Senior management must affirm its commitment to the safety and health of operations, explain the safety objectives to be achieved, and provide clear guidelines on the approach to be taken to minimize risk. This policy should be widely distributed within the organization so that all crew members understand their responsibilities in the context of safety.

Another component of SMS is safety risk management. This process includes hazard identification, risk analysis, and control of identified risks. With effective risk

management, shipping companies can implement preventive measures before incidents occur. These activities include risk assessment and implementation of relevant mitigation strategies. In practice, risk management also requires the involvement of the entire ship's crew, where each individual must participate in identifying potential risks based on their experience and insights.

The success of SMS also depends heavily on the safety assurance component. This process aims to ensure that all risk control measures that have been implemented function effectively. Through periodic audits and evaluations, companies can conduct a review of all existing safety procedures and practices. If it is found that one of the risk controls is not working effectively, corrective action should be taken immediately. This allows the company to correct the error before it results in more serious incidents.

Furthermore, safety promotion is an equally important component of SMS. Safety promotion includes training and communication aimed at building a culture of safety at all levels of the organization. Through regular training, ship crew members are taught safety protocols, emergency procedures, and ways to report suspicious or potentially dangerous events. Open communication also helps create an environment where all staff feel comfortable voicing their safety concerns.

Figures of Safety Management System Components (Adhitanoko & Widodo, 2024)

The basic principles of SMS play an important role in realizing an effective system. One of the most fundamental principles is management commitment. Leaders must demonstrate a strong commitment to safety, provide the necessary support and

resources to implement SMS well. In addition, management also needs to encourage the active participation of all crew members in every aspect of safety. Direct involvement will increase each individual's sense of ownership and responsibility for safety.

A risk-based approach is the foundation for decision-making in SMS. By analyzing risks in detail and using relevant data, companies can give better priority to preventive measures, so that existing resources can be used efficiently. This approach also allows companies to keep up with changing operating conditions and evolve over time. By adopting a risk-based approach, companies can be more adaptive to challenges that arise in the field.

Continuous improvement is another very important principle in SMS. In fact, the success of SMS is not static; rather, it must be constantly evaluated and improved based on the feedback and audits conducted. Through this process, organizations can be able to learn from past experiences, both positive and negative. The application of the lessons learned will make the safety system more effective over time, as well as reduce the likelihood of future incidents (Khomeiny et al., 2019).

Factors that affect crew work safety

Occupational safety in the maritime sector is a very important issue, considering the high risks faced by ship crews in carrying out their duties. Various factors affect crew work safety, which can be divided into several categories, including human factors, environmental factors, and organizational factors.

The human factor is one of the main causes of accidents in the maritime sector. Fatigue, lack of training, and human error are often the causes of serious incidents. Fatigue can occur due to long working hours and the pressure to meet deadlines, which can reduce the concentration and alertness of the crew. Additionally, a lack of adequate training regarding safety procedures and the use of equipment can increase the risk of accidents. A crew that is not properly trained may not know how to react in an emergency situation, which can make things worse.

Environmental factors also play an important role in occupational safety in the maritime sector. Adverse weather conditions, such as storms or high waves, can increase the risk of accidents. In addition, environmental conditions around ports or shipping lanes, such as the presence of other ships, can add to the complexity of the situation faced by the crew. An unsafe work environment, such as poorly maintained areas or poorly functioning equipment, can also be a contributing factor to accidents.

Organizational factors include the policies and procedures implemented by shipping companies. An effective implementation of a Safety Management System (SMS) can help identify and manage existing risks. However, if the company does not have a strong commitment to safety or if safety policies are not consistently implemented, then the safety of the crew's work can be threatened. In addition, poor communication between management and crew can lead to misunderstandings regarding safety procedures, which in turn can increase the risk of accidents.

Organizational culture factors also affect work safety. A culture that encourages openness and incident reporting can help create a safer environment. Conversely, a culture that stigmatizes mistakes or ignores safety can cause crews to be reluctant to report the problems they face. This can result in bigger problems later on, as potential risks are not identified and handled properly.

In addition, technology factors also play a role in work safety in the maritime sector. The use of modern technology, such as advanced navigation systems and automated safety devices, can help reduce the risk of accidents. However, over-reliance on technology without an adequate understanding of how it works can lead to problems. Crews who are not trained in the use of new technologies may not be able to effectively address emergency situations, which can worsen outcomes.

Overall, occupational safety in the maritime sector is influenced by various interrelated factors. To improve crew work safety, it is important for shipping companies to identify and manage these factors holistically. This includes providing adequate training, implementing effective safety policies, and creating an organizational culture

that supports safety. With a comprehensive approach, it is hoped that the number of accidents in the maritime sector can be significantly reduced (Ardianto, 2017).

Previous research related to the implementation of SMS and work safety

Previous research on the implementation of Safety Management System (SMS) and occupational safety in the maritime sector has shown that the effective implementation of SMS can contribute significantly to improving occupational safety. These studies cover a wide range of aspects, from the factors that affect the success of SMS implementation to their impact on reducing the incidence of accidents on ships.

One of the relevant studies was conducted by Zhang et al., (2022), which explored the relationship between SMS implementation and occupational safety in the maritime industry. The study found that companies that implemented SMS well tended to have lower accident rates. This research emphasizes the importance of adequate training and the involvement of all crew members in the SMS implementation process. The results showed that when crews felt engaged and had a good understanding of safety procedures, they were more likely to adhere to established safety practices.

Another study by Ali and Khan, (2023) examined the effectiveness of SMS in reducing risk in the maritime sector. They found that the implementation of risk-based SMS can help companies identify and manage existing hazards. This study shows that by conducting regular risk assessments and implementing appropriate mitigation measures, companies can reduce the likelihood of workplace accidents. Ali and Khan also highlighted the importance of effective communication between management and crew in supporting the successful implementation of SMS.

Research by Sari et al., (2023) also provides important insights into the factors that affect the success of SMS implementation. This study shows that an organizational culture that supports safety has a great influence on the effectiveness of SMS. Organizations that have a strong safety culture tend to be more successful in implementing SMS and reducing accident incidents. Sari et al., emphasized that

management must be committed to creating an environment that encourages openness and incident reporting, so that crews feel safe to report issues they face.

In addition, research by Hossain and Rahman, (2021) highlights the role of technology in supporting the implementation of SMS. They found that the use of modern technologies, such as safety monitoring systems and risk management software, can improve the effectiveness of SMS. This research shows that technology can aid in data collection and risk analysis, which in turn supports better decision-making in the context of occupational safety. Hossain and Rahman also noted that training in the use of new technologies is essential to ensure that crews can make effective use of these tools.

Overall, previous research has shown that the implementation of SMS in the maritime sector depends not only on established policies and procedures, but also on the active involvement of all members of the organization, a strong safety culture, and the proper use of technology. These studies provide valuable insights for shipping companies and other maritime organizations in an effort to improve occupational safety through the effective implementation of SMS. By understanding the factors that affect the success of SMS implementation, companies can develop better strategies to reduce risk and improve safety in their work environment.

RESEARCH METHODS

A qualitative descriptive approach was chosen as a suitable method to delve deeper into this phenomenon. The qualitative descriptive approach allows researchers to explore and understand how SMS is applied in the maritime industry as well as its impact on occupational safety.

Using this approach, researchers can obtain data that is complex and contextual, not only in the form of numbers, but also narrative descriptions that describe the processes, challenges, and strategies applied in the application of SMS (Agustini et al., 2023). The advantage of the qualitative approach is its ability to understand subjective

aspects that may not be measurable with a quantitative approach, as well as the flexibility in data collection that allows for method adjustments based on developments during the research (Putri, 2024).

The data sources used in this study consisted of relevant literature and case studies. Relevant literature includes books, academic journals, research articles, and other reports related to SMS and occupational safety in the maritime sector. Through literature analysis, researchers can obtain a framework that understands the context and issues raised, as well as contribute to broader knowledge by identifying existing research gaps.

The data collection techniques used in this study include literature studies and document analysis. Through a literature study, the researcher will collect and analyze various relevant literature sources. Searches in academic databases will be conducted to find journal articles, books, and previous studies on SMS and occupational safety in the maritime sector. Analysis of this literature is very important to understand the theoretical and practical basis related to the research topic (Sugiyono, 2022).

In addition, document analysis will include a review of policy documents, SMS procedures applied, and safety reports produced by shipping companies that are the object of the research. By gathering these documents, researchers can analyze the content of each document to understand how SMS is implemented in practice and how safety policies are integrated into day-to-day operations.

RESULTS AND DISCUSSION

Implementasi Safety Management System

The implementation of the Safety Management System (SMS) in the maritime sector is an important step to improve work safety and reduce the risk of accidents. The process and steps of SMS implementation can be divided into several key stages that

are interrelated. Based on recent research, the following are the steps generally taken in the implementation of SMS (Purwanto & Facta, 2016):

1. *Risk Assessment:* The initial stage in the implementation of SMS is to conduct a risk assessment to identify potential hazards in the work environment. This assessment involves an analysis of a variety of factors that can affect safety, including physical conditions, work procedures, and human behavior. By understanding the risks involved, companies can design appropriate mitigation measures.

2. *Pre-Qualification*: After the risk assessment, the next step is to pre-qualify the contractor or third party who will be cooperating. At this stage, the company must ensure that all parties involved meet the set safety standards. This includes the examination of relevant documents and certifications.

3. *Selection*: In this stage, the company selects contractors or service providers based on the safety criteria that have been set. This process must be transparent and fair, and take into account the safety track record of potential contractors.

4. *Pre-Job Activity:* Before work begins, it is important to conduct a safety briefing with all parties involved. At this stage, safety procedures, responsibilities, and emergency measures should be clearly explained to all team members.

5. *Work in Progress:* During the execution of the work, strict supervision must be carried out to ensure that all safety procedures are followed. This includes monitoring working conditions and implementing pre-planned mitigation measures.

6. *Final Evaluation:* After the work is completed, a final evaluation must be conducted to assess the effectiveness of the SMS implementation. This includes an analysis of incidents that occurred, if any, and an assessment of compliance with safety procedures. The results of this evaluation will be the basis for future improvements.

Effective SMS implementation requires commitment from all levels of the organization, as well as adequate training for all team members. Additionally, it's important to create a safety culture that supports openness and incident reporting, so that every member feels safe to report issues they encounter. By following these steps,

it is hoped that companies can improve work safety and reduce the risk of accidents in the maritime sector.

The implementation of the Safety Management System (SMS) in the maritime sector faces various challenges that can affect its effectiveness. In addition, the impact of the implementation of SMS on crew work safety is also very significant. The following is an explanation of the challenges faced during the implementation of SMS and its impact on crew work safety.

Some of the challenges faced during SMS implementation:

1. One of the main challenges in the implementation of SMS is the lack of awareness and commitment from management and crew to the importance of safety. Without strong support from all levels of the organization, safety initiatives are often not implemented effectively.

2. An organizational culture that doesn't support safety can be a big barrier. If organizations don't encourage openness in incident reporting or don't respect safety practices, then SMS implementation will be hampered.

3. Many maritime companies face limited resources, both financially and humanly. This can hinder the implementation of the necessary training and the development of effective systems.

4. The SMS implementation process is often complex and requires good coordination between different departments. Ambiguities in responsibilities and procedures can lead to confusion and reduce the effectiveness of the system.

5. Frequent changes in safety regulations can be a challenge for companies to stay compliant with applicable standards. Adaptation to new regulations requires a lot of time and resources.

The Impact of SMS Implementation on Crew Work Safety

Effective SMS implementation can have a significant positive impact on crew work safety. Some of these impacts include:

1. *Increased Safety Awareness*: With SMS, safety awareness among the crew increases. Better training and communication regarding safety procedures helps crews understand the importance of safety in every aspect of their work.

2. *Reduction in Accident Incidents*: Research shows that companies that implement SMS well experience a significant decrease in the number of accident incidents. This is due to better risk identification and mitigation.

3. *Improved Operational Performance*: SMS implementation not only focuses on safety, but can also improve overall operational performance. Better procedures and effective risk management can lead to higher efficiency in ship operations.

4. *Strong Safety Culture*: With the implementation of SMS, companies can build a strong safety culture. Crews feel safer to report problems and participate in safety initiatives, which in turn improves overall job safety.

5. *Increased Job Satisfaction*: When crews feel that their safety is taken care of and protected, this can increase their job satisfaction and morale. A safe work environment contributes to better employee productivity and retention.

Overall, despite the challenges in the implementation of SMS, the positive impact on crew work safety is significant. By addressing these challenges and implementing SMS effectively, maritime companies can improve their safety and operational performance.

Qualitative Analysis of Existing Data

Qualitative analysis of existing data shows that the success of SMS implementation is highly dependent on the involvement of all parties in the organization. Research shows that when management shows a strong commitment to safety, and when crews are involved in safety-related decision-making processes, the results tend to be more positive. In addition, effective communication between management and crew is also a key factor in the successful implementation of SMS.

Examples of Success and Failure Cases

PT. Hafar Daya Samudera implements a Safety Management System (SMS) for the PLB Hafar Neptune ship in accordance with the rules of the International Safety Management Code 1994 (ISM CODE)

PLB Hafar Neptune has shown progress in implementing safety management systems, although there are still some challenges that need to be overcome. The company has successfully drafted safety procedures in accordance with the international standard ISM Code, which is an important basis for reducing the risk of accidents on board. In addition, accident prevention efforts receive serious attention, including the provision of adequate safety equipment and ensuring that vessels meet seaworthiness requirements.

However, there are still some weaknesses that need to be fixed. Safety management system documents have not been updated since 2013, even though periodic updates are very important to keep up with the latest safety standards. In addition, safety exercises such as simulated emergencies are rarely carried out, even though this is crucial to ensure the readiness of the crew. Internal audits have also not been carried out regularly, making it difficult to ensure that all safety procedures are actually effective.

Overall, PLB Hafar Neptune has been on the right track in implementing SMS, but it still needs to improve document updates, crew training, and internal audits so that the safety system can function optimally and provide maximum protection for all crew and shipping operations (Khomeiny et al., 2019).

Steps that can be taken to improve the effectiveness of SMS

To increase the effectiveness of the implementation of the Safety Management System (SMS) in the maritime sector, several strategic steps can be taken. These measures are designed to ensure that SMS is not only implemented, but also functions optimally in improving work safety.

First, it is important for management to demonstrate a strong commitment to the implementation of SMS. This can be done by providing sufficient budget for safety

training, procurement of personal protective equipment, and infrastructure development that supports SMS implementation. When management is actively involved and provides financial support and resources, this will drive safety awareness throughout the organization.

Second, implementing a comprehensive and continuous training program for the entire crew is a key step. The training not only covers safety procedures, but also risk recognition and the use of incident reporting systems. An effective training program should be tailored to the specific needs of the team and the type of operation being performed, and conducted regularly to ensure that crew knowledge is always updated.

Third, creating a strong safety culture is critical to the success of SMS. Organizations need to build an environment where safety is a top priority and where every crew member feels safe to report a problem or incident without fear of consequences. This can be achieved by encouraging open communication, rewarding safety initiatives, and involving crews in the decision-making process.

Fourth, conducting routine evaluations and audits of the existing SMS system. This evaluation will help in identifying weaknesses in SMS implementation and ensuring that safety procedures are implemented consistently. Based on the results of the evaluation, the organization can make the necessary adjustments to improve the effectiveness of the system.

Fifth, utilizing technology to support SMS implementation. The use of digital tools and safety management software can help in incident tracking, data management, and risk analysis. With the right technology, companies can improve efficiency and responsiveness in handling safety issues.

Through these measures, the maritime sector can further improve the effectiveness of the implementation of the Safety Management System, which in turn will contribute to improving work safety and crew protection.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In the overall research on the implementation of Safety Management System (SMS) in the maritime sector, a number of important findings have been identified that provide insight into its impact on occupational safety and safety practices in the industry. Research shows that the application of SMS in the maritime sector can significantly improve crew work safety. Through a systematic risk assessment process, consistent training, and strict supervision, the company is able to reduce accident incidences and create a safer working environment.

However, the implementation of SMS is not without challenges. Some companies face difficulties in terms of lack of commitment from management, unsupportive organizational culture, and limited resources. These factors can hinder the effectiveness of SMS in improving work safety. Despite the challenges, the successful implementation of SMS contributes to the formation of a stronger safety culture. In this context, crews feel more involved and responsible for the safety of themselves and their colleagues.

The implications of these findings for practice in the maritime sector are crucial. Management must demonstrate a strong commitment to SMS implementation by actively supporting safety initiatives and providing the necessary resources. In addition, it is important for companies to implement a comprehensive and ongoing training program for all crew members regarding safety procedures, risk recognition, and the use of personal protective equipment. Building a safety culture is also essential, where organizations need to create an environment where safety is a top priority and encourage crew involvement in incident reporting and feedback on safety procedures.

Recommendation

Based on the results of this study, some suggestions for future research include longitudinal studies needed to understand the long-term impact of SMS implementation on occupational safety and operational performance in the maritime sector. Using quantitative methods to measure the effectiveness of SMS more objectively will also help in providing more concrete data regarding the reduction of accident incidents and the improvement of safety performance. In addition, further research can focus on case

studies of specific companies that have succeeded or failed in SMS implementation, to provide an in-depth analysis of the factors that influence such success or failure.

REFERENCES

Adhitanoko, I., & Widodo, S. (2024). PENERAPAN DAN TANTANGAN SAFETY MANAGEMENT SYSTEM (SMS) PADA ORGANISASI PENERBANGAN MILITER. *HUMANIS (Humanities, Management and Science Proceedings*, *4*(2), 780–789.

Agustini, Grashinta, A., Putra, S., Sukarman, Guampe, F. A., Akbar, J. S., Lubis, M. A., Maryati, I., Ririnsahawaitun, Mesra, R., Sari, M. N., Tuerah, P. R., & Rahmadhani, M. V. (2023). *Metode Penelitian Kualitatif (Teori & Panduan Praktis Analisis Data Kualitatif)* (Irmayanti (ed.)). Tanjung Morawa : Mifandi Mandiri Digital.

Ali, A., & Khan, M. (2023). Risk-Based Safety Management System in Maritime Operations: A Case Study. *Maritime Policy & Management*, *50*(1), 45–60.

Ardianto, M. S. (2017). *PENGARUH FAKTOR KESELAMATAN KERJA PADA CREW DI ATAS KAPAL MV. DK 01*. Politeknik Ilmu Pelayaran Semarang.

Bakamla. (2025). *Pentingnya Keselamatan Pelayaran dalam Industri Maritim Indonesia*. Bakamlatanjungpinang.Com. https://bakamlatanjungpinang.com/2025/03/pentingnya-keselamatan-pelayaran-dalam-industri-maritim-indonesia/

Hossain, M., & Rahman, M. (2021). The Role of Technology in Enhancing Safety Management Systems in Maritime Operations. *Journal of Marine Science and Engineering*, *9*(5), 567–580.

Khomeiny, A. S. El, Primanta, F., & Nasution, S. (2019). Peran Safety Management System Dalam Keselamatan Pelayaran. *Jurnal Manajemen Bisnis Transportasi Dan Logistik (JMBTL)*, *5*(3), 375–380. http://library.itl.ac.id/jurnal

Manawis, R. (2024). *What is a Safety Management System?* Safety Culture. https://safetyculture.com/topics/safety-management-system/

Mappangara, A. S. C. (2024). *Sistem Layanan Trasportasi Laut* (Marwati (ed.); 1st ed.). Makassar : Professorline. https://book.professorline.com/index.php/about/article/view/54/52

Nainggolan, H., & Hendra, H. (2023). Evaluasi Penerapan Sistem Manajemen Keselamatan Dan Kesehatan Kerja (K3) Pada Industri Galangan Kapal Kecil Di Indonesia. *Jurnal Kesehatan Tambusai*, *4*(4), 7129–7151. https://doi.org/10.31004/jkt.v4i4.16083

Purwanto, Y. H., & Facta, M. (2016). Implementasi Contactor Safety Management System (CSMS) pada Proses Pengadaan Barang Jasa di PT PLN (Persero). *Jurnal*

Transistor Elektro Dan Informatika (TRANSISTOR EI), *1*(1), 28–34.

Putri, A. C. (2024). Metode Penelitian Kualitatif: Pengertian, Jenis, Kelebihan dan Kekurangannya. *Telkom University*. https://telkomuniversity.ac.id/metode-penelitian-kualitatif-pengertian-jenis-kelebihan-dan-kekurangannya/

Sari, R., Prabowo, H., & Setiawan, A. (2023). Organizational Culture and Its Impact on The Effectiveness of Safety Management System in Shipping Companies. *International Journal of Maritime Engineering*, *165*(3), 215–230.

Sitorus, L. (2023). *Pengertian, Komponen dan Contoh Safety Management System*. Kompasiana Beyond Blogging. https://www.kompasiana.com/lionysitorus5577/63d0b9664addee6a29609783/pengertian-komponen-dan-contoh-safety-management-system

Sugiyono. (2022). *Metode Penelitian Kualitatif Untuk Penelitian Yang Bersifat: Eksploiratif, Enterpretif Dan Konstruktif* (Suryandari (ed.)). Bandung : Penerbit Alfabeta.

Turner, K. (2018). Safety Management Systems. *Safety and Quality in Medical Transport Systems: Creating an Effective Culture*, 113–126. https://doi.org/10.1201/9781315607450-11

Zhang, Y., Liu, X., & Wang, J. (2022). The Impact of Safety Management System on Maritime Safety Performance: Evidence From the Shipping Industry. *Journal of Safety Research*, *82*, 123–134.