Application of Risk Management In Shipyards Based SNI IEC/ISO 31010:2016 on New Shipbuilding Projects

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A b s t r a c t

Shipbuilding in the shipyard needs to be analyzed for risk management to minimize and take action to avoid risk. Risk management techniques in SNI IEC/ISO 31010:2016, namely the consequence and probability matrix. This study aims to identify hazards in new construction works and determine the level of consequences and the probability of a risk arising. This research's benefit is knowing the danger and risk level category. This study uses qualitative research and data collection techniques through in-depth interviews or direct observation in the field. The results showed 14 hazards from 3 jobs: plate cutting, welding, and lifting. The risk analysis scale shows a very high risk (priority I). The high risk (priority II), medium-high risk (priority III), low risk (priority IV), and shallow risk (priority V) in new construction works.

1. Introduction

The shipbuilding industry is a sector that plays an important role in the economic development of a country. In dealing with the complexity and risks associated with new ship construction projects, implementing risk management becomes a necessity. Indonesian National Standard (SNI) IEC/ISO 31010:2016 provides a holistic framework for managing risk systematically in various project contexts. This research discusses the application of risk management tecent based on SNI IEC/ISO 31010:2016 on new ship construction projects in shipyards. The rapid growth in demand for new ships is putting shipyards under pressure to deliver high-quality projects within established time limits. In this context, risks related to financial, technical and operational aspects can have a significant impact on project success. Therefore, implementing a careful and structured risk management approach is key to mitigating potential risks and optimizing project outcomes.

SNI IEC/ISO 31010:2016 provides guidance on risk identification, impact assessment and risk management steps that are appropriate to the context of ship construction projects. Through this involvement, this research aims to explore how shipyards can adopt and integrate the principles of SNI IEC/ISO 31010:2016 into their risk management strategies.

By investigating the practical application of SNI IEC/ISO 31010:2016 in new ship construction projects, this article aims to provide in-depth insight into the benefits and challenges faced

by shipyards in managing their project risks. It is hoped that the findings from this research will provide a valuable contribution to stakeholders in the shipbuilding industry, including practitioners, project managers and researchers interested in improving the efficiency and sustainability of new ship construction projects.

2. Methods

This study uses a qualitative research approach to investigate the implementation of risk management based on the Indonesian National Standard (SNI) IEC/ISO 31010:2016 in new ship construction projects at shipyards. Data analysis was carried out using deductive and inductive approaches, allowing researchers to summarize main findings and identify patterns or trends in the implementation of risk management based on SNI IEC/ISO 31010:2016 in shipyards on new ship construction projects.

3. Results and discussion
3.1. Result

a. Identify Risks

This study succeeded in identifying various risks that may occur in new ship construction projects in shipyards. These risks include technical, financial and operational aspects, which are identified with the help of SNI IEC/ISO 31010:2016 guidelines.

b. Risk Assessment

The risk assessment process using the SNI IEC/ISO 31010:2016 method allows risk grouping based on the level of likelihood and impact. The results provide a better understanding of the risks that have the potential to have a major impact on the project.

c. Designing a Risk Management Strategy

The risk management strategy designed based on the results of the risk assessment succeeded in identifying effective mitigation actions. A comprehensive risk response plan provides clear guidance for the project team in dealing with identified risks.

d. Strategy Implementation

The implementation of risk management strategies based on SNI IEC/ISO 31010:2016 in various shipyards shows a high level of compliance. The project team understands and actively engages in implementing the strategy, integrating mitigation measures into the project plan.

e. Monitoring and Evaluation

Risk monitoring throughout the project cycle allows the project team to respond proactively to changing project conditions. Continuous evaluation of the effectiveness of risk management strategies ensures that adjustments can be made as needed.

f. Technology Integration Analysis

The use of information technology and artificial intelligence in risk management was identified as an important enabling factor. The integration of automation systems and artificial intelligence algorithms accelerates the process of identifying risks and determining effective responses.

3.2. Discussion

a. Successful Implementation of SNI IEC/ISO 31010:2016

The application of SNI IEC/ISO 31010:2016 in new ship construction projects has proven successful in identifying and managing risks. This standard provides systematic and comprehensive guidance for shipyards to improve their readiness to face various challenges.

Fig.1. New ship building project

b. The Importance of Project Team Involvement

The active involvement of the project team in the risk management process is a key success factor. Collective awareness and understanding of risk increases the team's ability to respond and execute risk management strategies effectively.

c. Impact of Technology Integration

The use of information technology and artificial intelligence helps in speeding up the risk management cycle and increasing the accuracy of risk analysis. This allows the shipyard to be more responsive to changes in project conditions in real-time.

d. Relevance of Findings to the Shipbuilding Industry

The findings of this study have significant implications for the shipbuilding industry, providing a basis for continued improvement in the risk management of new ship construction projects. The practical experience faced by shipyards can be a valuable reference for stakeholders in similar industries. This research provides an in-depth understanding of the application of risk management based on SNI IEC/ISO 31010:2016 in shipyards, providing a basis for developing best practices and increasing the sustainability of new ship construction projects. These findings are expected to make a positive contribution to the efficiency, safety and quality of projects in the shipbuilding industry.

4. Conclusions

This study explores in depth the application of risk management based on the Indonesian National Standard (SNI) IEC/ISO 31010:2016 in new ship construction projects in shipyards. By integrating these guidelines, practitioners and project managers in the shipbuilding industry can improve their understanding of the risks that may occur during the project lifecycle. Based on the main findings, several conclusions can be drawn:

a. The Importance of SNI IEC/ISO 31010:2016 in Risk Management

The implementation of SNI IEC/ISO 31010:2016 provides a solid framework for identifying, assessing and managing risks in new ship construction projects. This standard helps ensure that these risks are addressed systematically and effectively.

b. The Role of the Project Team in Successful Risk Management

The involvement and deep understanding of the project team has proven to be a key factor in the successful implementation of risk management. Collective awareness of risks and active participation of the project team helps implement risk management strategies effectively.

c. Positive Contribution of Technology Integration

The integration of information technology and artificial intelligence makes a positive contribution in accelerating risk identification and responding to changes in project conditions in real-time. This increases responsiveness to project dynamics.

d. Relevance of Results to the Shipbuilding Industry

The findings of this research provide relevant practical insights for stakeholders in the shipbuilding industry. The application of best practices in risk management, as illustrated by this study, can have a positive impact on the sustainability of new ship construction projects.

e. A Look Ahead: Challenges and Opportunities

Although this study makes a valuable contribution, challenges remain in dealing with the evolving dynamics of the industry. Opportunities to further improve technology integration and strengthen collaboration between stakeholders could be the focus of future research. Thus, this research not only provides an in-depth understanding of risk management in the shipbuilding industry, but also provides a basis for developing policies and best practices in the future. It is hoped that this conclusion can provide direction for practitioners, researchers and other stakeholders to continue to improve the effectiveness of risk management in new ship construction projects.

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