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Application of the Risk Maturity Model (RMM) in Measuring Risk Management Maturity Levels: A Case Study of a Shipping Company

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Abstract

Purpose – This study aims to assess the current state of the risk management system in a shipping company, determine its maturity level, and provide strategic recommendations for its improvement.

Methodology – The assessment employs the Risk Maturity Model (RMM), which evaluates risk management across seven key attributes. These attributes are further broken down into 25 components and 71 competency drivers to provide a comprehensive measurement of maturity.

Findings – The analysis reveals that the company's risk management maturity score is 3.179, corresponding to the "Repeatable" level. This indicates that while some risk management practices are established and documented, they are not yet standardized or optimized across the organization. Notably, the maturity level falls short of the minimum threshold required by the Indonesian Ministry of State-Owned Enterprises (BUMN).

Originality – This study offers a focused evaluation of risk management maturity in the shipping sector using a structured model. The findings contribute practical insights and targeted recommendations to support the advancement of risk management practices within the industry.

Introduction

Referring to Article 19 paragraph (2) of Law Number 25 of (2004) concerning the National Development Planning System and Article 3 paragraph (1) of Presidential Regulation Number 18 of (2020) regarding the 2020-2024 National Medium Term Development Plan. It is necessary to formulate a strategic plan for the Ministry of State-Owned Enterprises for 2020-2024, so that the Minister of State-Owned Enterprises Regulation Number PER-08/MBU/08/2020 (2020) stipulates the Strategic Plan for the Ministry of State-Owned Enterprises for 2020-2024. One of the strategic steps is regarding the company's Risk Maturity value, where in 2022, the minimum Risk Maturity value is 4.0; in 2023, the minimum value of Risk Maturity is 4.1; and in 2024, the minimum Risk Maturity value is 4.2. Based on that regulation, BUMN companies need to carry out Risk Maturity assessments and carry out

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development if the maturity value is below the minimum value. One of the state-owned companies that needs to comply with this regulation is PT XYZ.

PT XYZ is a state-owned company operating in the shipping industry, inaugurated in 2021. The scope of its business includes the provision of ships to transportation services by ship. PT XYZ is a state-owned company, so it is necessary to comply with applicable regulations. One of the regulations is the Minister of State-Owned Enterprises Regulation Number PER-08/MBU/08/2020 concerning the Ministry of State-Owned Enterprises Strategic Plan for 2020-2024. Based on this statement, it is necessary to measure the level of maturity or Risk Maturity at PT XYZ using the Risk Maturity Model (RMM).

There are several previous studies on RMM such as Tubis & Werbińska-Wojciechowska (2021) who implemented for logistics process. It was stated that the assessment should be based on five maturity areas: knowledge, risk assessment, process risk management, cooperation at risk, and risk monitoring. However, the scope of this research is limited in the logistics process. Proença et al. (2017) proposed framework of RMM based on ISO 31000. However, they did not test it in the industry. Another study by (Karunarathne & Kim, 2021) tested the framework in Korean construction firms, but it cannot be generalized in other industries. Therefore, this study tried to address the previous limitation by conducting shipping firms and focusing on the overall business process of the firms.

So, in this study, there will be 3 points or research steps that will be carried out: the first is the identification of the risk management system at PT XYZ, the second is an assessment of the maturity level of risk management at PT XYZ, and the third is providing recommendations for increasing appropriate risk management maturity at PT XYZ.

Literature Review

In the literature review section, two major theories are used for this study: ISO 31000:2018 Risk Management and the Risk Maturity Model (RMM).

Risk Management

In a company, risk can be defined as a deviation from the expected results. Risk can also be considered an obstacle or obstacle to achieving goals (Ikatan Bankir, 2015). So, companies need to have a way to manage these risks.

Risk management is a coordinated activity to direct and manage an organization to deal with risk (ISO 31000, 2018). Risk cannot be left alone because risk can have a negative impact (Pardjo, 2017). Risk management's main benefit is to increase an organization's or company's operational effectiveness and efficiency (Hopkin, 2018), also to minimize the probability and impacts in the firms (Harju et al., 2024). Risk management has three inseparable components, namely risk management principles, risk management framework, and risk management process.

Risk Maturity Model (RMM)

Risk Maturity is an assessment tool used to measure the maturity of risk management in companies (Kusrini et al., 2023). Risk Maturity is built to comply with Risk Management standards. Thus, the Risk Management system that runs within the company is under applicable standards. Many Risk Maturity methods can be used to assess a company's Risk Management system. One of them is the Risk Maturity Model (RMM) published by the Risk and Insurance Management Society (RIMS) in 2020. RMM is not a standard but a framework that measures the implementation of risk management in an organization at a company based on the Risk

Management standards used, namely, ISO 31000, OCEG "Red Book", BS 31100, COSO, FERMA, SOLVENCY II and AS/NZS 4360:2004 (Risk and Insurance Management Society, 2020). RMM can be used to measure the effectiveness and implementation of Risk Management in corporate organizations. It measures the strengths and weaknesses of the current level of RM and its future implementation (Karunarathne & Kim, 2021). RMM is measured based on seven attributes, then developed to 25 Success and further developed to 71 Competency Drivers. Then, these attributes will produce maturity level values from 1-5.

Research Methods

This research will be divided into three stages. The first is the identification of PT XYZ's risk management system. Identification will be carried out by conducting interviews with PT XYZ's risk management committee. Then, the second stage is PT XYZ's risk management maturity assessment. The assessment will use the Risk Maturity Model (RMM) tool. Assessment will be carried out through a questionnaire in which PT XYZ stakeholders will assess seven attributes, which will be developed into 25 components and further developed into 71 competency drivers on a scale of 0-5. This value will be averaged, and the company's risk management maturity level will be determined based on this value.

Table 1. Risk Management Maturity Assessment Attributes

No	7 Attributes	No	25 Success Components
1	Adoption of ERM-Based Process	1.1	Business Process Definition and Risk Ownership
		1.2	Frontline and Support Process Owner Participation
		1.3	Far-Sighted Risk Management Vision
		1.4	Executive ERM Support
2	Uncovering Risks	2.1	Risk Ownership by Business Area
		2.2	Formalized Risk Indicators and Measures
		2.3	Follow up Reporting
		2.4	Adverse Events as Opportunities
3	ERM Process Management	3.1	ERM Program Oversight
		3.2	ERM Process Steps
		3.3	Risk Culture, Accountability, and Communication
		3.4	Risk Management Reporting
		3.5	Repeatability and Scalability
4	Risk Appetite Management	4.1	Risk Portfolio View
		4.2	Risk Reward Tradeoffs
5	Root Cause Discipline	5.1	Root Cause Consideration
		5.2	Risk and Opportunity Information Collection
		5.3	Information Classification
		5.4	Dependencies and Consequences
6	Business Resiliency and Sustainability	6.1	Risk-Based Planning
		6.2	Understanding Consequences
		6.3	Resiliency and Operational Planning
7	Performance Management	7.1	Communicating goals
		7.2	ERM Information and Planning
		7.3	ERM Process Goals and Activities

Source: (Risk and Insurance Management Society)

Then, in the third stage, recommendations will be given regarding increasing risk management maturity for the company. The recommendations will be based on a book published by the Risk and Insurance Management Society (Risk and Insurance Management Society, 2020). In this study, four respondents and their weighting are as follows.

Table 2. Research Respondents

Name	Position	Weight
Respondents 1	Manager	40%
Respondents 2	Senior Officer	25%
Respondents 3	Senior Officer II	30%
Respondents 4	Admin Finance	5%

Based on the table above, the weighting for managers is 40%, Senior Officer II Risk Management is 30%, Senior Officers PDA & ICoFR is 25%, and Admin Finance is 5%. The weighting is obtained from the Forum Group Discussion (FGD) based on the division of labour for each.

Results and Discussion

Based on the flow or stages of the research, there are three results and research discussions: the Risk Management System that runs at PT XYZ, PT XYZ's Risk Management Maturity Value, and Recommendations related to increasing PT XYZ's risk management maturity value.

Risk Management System that runs at PT XYZ

The risk management standard used at PT XYZ is ISO 31000:2018. The purpose of risk management at PT XYZ is to implement Risk Management, maximize and create value for the company, and implement Business Processes regarding managing enterprise Risk, Compliance, Remediation and resiliency. Following the ISO 31000:2018 standard, PT XYZ implements three main components of risk management: risk management principles, processes, and frameworks.

In the ISO 31000:2018 Risk Management standard, the company uses the 8 Risk Management Principles to guide effective and efficient Risk Management through developing risk management frameworks and processes in the first principle, Integrated. The risk management system implemented by PT XYZ is applied to all business activities and interests in sub-holdings and subsidiaries. The second principle is Structured and Comprehensive. At PT XYZ, all work standards are written on Organization Work Procedures (TKO), Individual Work Procedures (TKI), and guidelines, where the difference is in the scope. The third principle, namely Customized. As explained in the previous chapter, PT XYZ has guidelines, TKO, and TKI standards for corporate work procedures, functions, and business areas. The working procedure is adjusted annually, or if needed, it can be updated in the middle of the year.

The fourth principle is Inclusive. PT XYZ has a main and supporting business. PT XYZ's businesses have integrated risk management processes, from the main business and supporting businesses, even to its subsidiaries. The fifth principle, namely Dynamic. To document the company's risk management, PT XYZ uses a risk register containing risk categorization, identification, risk assessment, and risk assessment after reducing the impact and likelihood. These risks are documented on a website, where if the risk changes, the assessment, cause, or impact may change according to the original conditions. The sixth principle is the Best Available Information. PT XYZ's risk management system is governed by a risk committee, where the risk committee manages all risks in the company and its subsidiaries. However, their respective functions carry out identification, assessment, and treatment. So that all information regarding risks that have been identified is valid. The seventh principle is Human and Cultural Factors. For several periods, the company held useful pieces of training to improve employee competency.

Similarly, several times, the company has held training on risk management, which was attended by all employees, especially the PIC, whose job is to manage risk management in their function or division. The eighth principle is continuous improvement. At the beginning of the

year, PT XYZ conducts a risk register and determines risk tolerance limits. This is done to determine what risks exist in the company and the risk tolerance limits the company can accept.

The Risk Management Framework provides the basis for managing the company, which covers all of the company's business activities. In order to obtain an effective, structured and proactive Risk Management framework, the implementation of Risk Management is based on a strong foundation and aligned components. Under the ISO 31000:2018 Risk Management standard, 6 Risk Management Frameworks exist. In the first Framework, namely Leadership and Commitment, the company's risk management is carried out sustainably and coordinatedly, requiring ongoing leadership and commitment. The implementation of Risk Management is fully supported by the Board of Directors on an ongoing basis so that Risk Management can run effectively. The second framework is the integration of the risk management framework. Understanding the company's structure and context is required in integrating Risk Management. For this reason, in the integration of the Risk Management Framework, the following things need to be done:

1) Risk Management at all levels

   Risk management is carried out at all levels in the company's organizational structure, where the Company's Processes and Risk Management Principles have been integrated into all Directorates.

2) Part of the Integrated Management System

   The Risk Management System is integrated with other management systems and is integral to the company's objectives, governance, leadership and commitment, strategy, objectives, and operations.

In the Third Framework, namely Risk Management Design. At PT XYZ, the company uses a 3LOD (Three lines of defense) approach by implementing a layered defense mechanism in managing risk. The first line of defense lies in each function as a Risk Owner. The second line of defense is the risk management unit, and the third is the Internal Audit function. In the fourth framework, namely the Implementation of Risk Management. In implementing Risk Management, the company does the following:

1) Risk Management Process

   The Risk Management process implementation is explained in detail in PT XYZ's Risk Management Process.

2) Risk Management Workplan

   The company establishes a short- and long-term Risk Management work plan outlined in the form of a work plan and/or roadmap, which at least contains strategy, work plan, resources, and time to implement Risk Management effectively.

3) Decision Support System

   Determination of mechanisms and decision-making processes within the company is always aligned with Risk Management.

The fifth framework, namely the Evaluation of Risk Management. The implementation of effective Risk Management to support the company's performance sustainably is evaluated through:

1) Responsive to Change

   The regular review of alignment between frameworks, policies, and work plans of Risk Management with the internal and external context of the company.

2) Rolling Risk Management Workplan

   Adjustment of the Risk Management work plan as input for continuous improvement.

The sixth framework is Risk Management Improvement. Improvement of Risk Management is intended for system development to adapt to existing changes. Continuous and sustainable monitoring and adjustment of the Risk Management framework to address external

and internal changes in the company so that the Risk Management framework is still relevant to the company's current conditions.

The risk management process is the application of risk management policies, procedures, and practices into business processes. Under the ISO 31000:2018 standard, the risk management process contains six things. The first process, namely regarding Scope, Context, and criteria. Determining the Scope of Risk Management is determining the internal and external scope that must be considered in managing risk and determining the scope and risk criteria for Risk Management policies. Determining the Scope of Risk Management needs to consider internal and external factors. The second process is Risk Assessment. It includes risk identification, risk analysis, and risk evaluation. The risk assessment methods used are qualitative and quantitative. Qualitative risk assessment is assessed by measuring the likelihood and impact of the risk occurring, while quantitative risk assessment is assessed using how much loss can be accepted using currency units. Risk assessment is carried out for all risks to the company and its subsidiaries. The identified risks are All risk (overall risk) and Top Risk (Risk that needs to get the main attention from the company's directors). Determination of Top Risk is carried out after identifying All Risks in all functions. The third process is Risk Treatment. It is an activity carried out after carrying out a risk assessment.

In PT XYZ, there are four types of risk management. The first is Risk Avoidance, namely not starting or continuing activities that can pose a risk. The second is Risk Reduction, namely by reducing the impact and possibility of risk. The third is sharing risk by involving or sharing with external parties to reduce risk. The fourth is Accepting risk, namely continuing the activity without effort to reduce, share or transfer the risk. The fourth process, namely regarding communication and consultation, is a continuous and iterative process between stakeholders to mutually provide, share and obtain information and conduct a dialogue about handling risk. The fifth process, namely regarding monitoring and review. Inspection, supervision and observation activities can be carried out routinely according to plan and/or at any time needed to ensure the achievement of plans or targets and determine the suitability, adequacy, and effectiveness of the Risk Management Process. The sixth process is recording and reporting. The implementation and results of the Risk Management Process must be documented and reported through a mechanism appropriate to the company's characteristics so that the information conveyed is right on target.

The Maturity Grade of the Risk Management of PT XYZ

To measure PT XYZ's risk management maturity value, Risk Maturity Model (RMM) tools are used. The tools measure 7 attributes which are then broken down into 25 components and further broken down into 71 competency drivers. The assessment was carried out through a questionnaire, which was distributed to 4 respondents. The results of the questionnaire are as follows.

Table 3. Risk Management Maturity Value of PT XYZ

No	7 Attributes	No	25 Success Components	Total	Maturity Level
1	Adoption of ERM-Based Process	1.1	Business Process Definition and Risk Ownership	3,058	Repeatable
		1.2	Frontline and Support Process Owner Participation	3,400	Repeatable
		1.3	Far Sighted Risk Management Vision	2,750	Initial
		1.4	Executive ERM Support	3,463	Repeatable
AVERAGE (1st Attribute)				**3,168**	**Repeatable**
2	Uncovering Risks	2.1	Risk Ownership by Business Area	3,650	Repeatable
		2.2	Formalized Risk Indicators and Measures	3,400	Repeatable
		2.3	Follow up Reporting	3,150	Repeatable

No	7 Attributes	No	25 Success Components	Total	Maturity Level
		2.4	Adverse Events as Opportunities	3,550	Repeatable
AVERAGE (2nd Attribute)				**3,438**	**Repeatable**
3	ERM Process Management	3.1	ERM Program Oversight	4,267	Managed
		3.2	ERM Process Steps	3,250	Repeatable
		3.3	Risk Culture, Accountability, and Communication	3,125	Repeatable
		3.4	Risk Management Reporting	3,350	Repeatable
		3.5	Repeatability and Scalability	3,600	Repeatable
AVERAGE (3rd Attribute)				**3,518**	**Repeatable**
4	Risk Appetite Management	4.1	Risk Portfolio View	3,013	Repeatable
		4.2	Risk Reward Tradeoffs	2,617	Ad Hoc
AVERAGE (4th Attribute)				**2,815**	**Initial**
5	Root Cause Discipline	5.1	Root Cause Consideration	2,483	Initial
		5.2	Risk and Opportunity Information Collection	3,025	Repeatable
		5.3	Information Classification	3,350	Repeatable
		5.4	Dependencies and Consequences	2,717	Initial
AVERAGE (5th Attribute)				**2,894**	**Initial**
6	Business Resiliency and Sustainability	6.1	Risk Based Planning	3,150	Repeatable
		6.2	Understanding Consequences	3,575	Repeatable
		6.3	Resiliency and Operational Planning	2,900	Initial
AVERAGE (6th Attribute)				**3,208**	**Repeatable**
7	Performance Management	7.1	Communicating goals	2,340	Initial
		7.2	ERM Information and Planning	4,025	Managed
		7.3	ERM Process Goals and Activities	3,270	Repeatable
AVERAGE (7th Attribute)				**3,212**	**Repeatable**
Risk Management Maturity Value of PT XYZ				**3,179**	**Repeatable**

Based on the calculations that have been done in Table 3, PT XYZ has a Risk Management maturity value of 3.179 or a maturity level of repeatable, although some indicators, as illustrated in Figure 1 still in the initial level (Risk Appetite Management and Root Cause Discipline) At this level, the risk management system has been implemented into management and organization, where PT XYZ has Organizational Work Procedures (TKO), Individual Work Procedures (TKI), and Guidelines used by the company to guide risk management in all functions. Then, in managing the risk, each risk owner is responsible, and the risk is documented, whereas, at PT XYZ, there are guidelines that explain that each function is responsible for identifying, assessing, and providing treatment for their respective risks, which are filled in the risk register form, and then submitted to the risk management committee. Then, risk management is used to create and evaluate long-term plans, where PT XYZ conducts a risk register at the beginning of the year, which contains risk categorization, risk identification, risk assessment, and risk assessment after treatment. Then the risk register will be used for future decision-making, and at the end of the year, an evaluation will be carried out regarding the risk register for that year. At the Repeatable level, it indicates that a company already has a tolerance limit system in accepting risk, where PT XYZ at PT XYZ has a BTR calculation of 7% of NPAT (Net Profit After Tax). The calculation is carried out at the beginning of the year and

will be used as the company's risk tolerance plan. In case of exceedance of limits, it is necessary to obtain approval from the risk management committee. The Repeatable level also indicates that the Risk Management System can adapt to changes, whereas PT XYZ, after creating the Risk Register at the beginning of the year, can change according to the original conditions. Changes can occur when risks have not been identified before, risks that are no longer relevant, loss events that give rise to new risks, or changes in the risk context that cause information adjustments in the Risk Register.

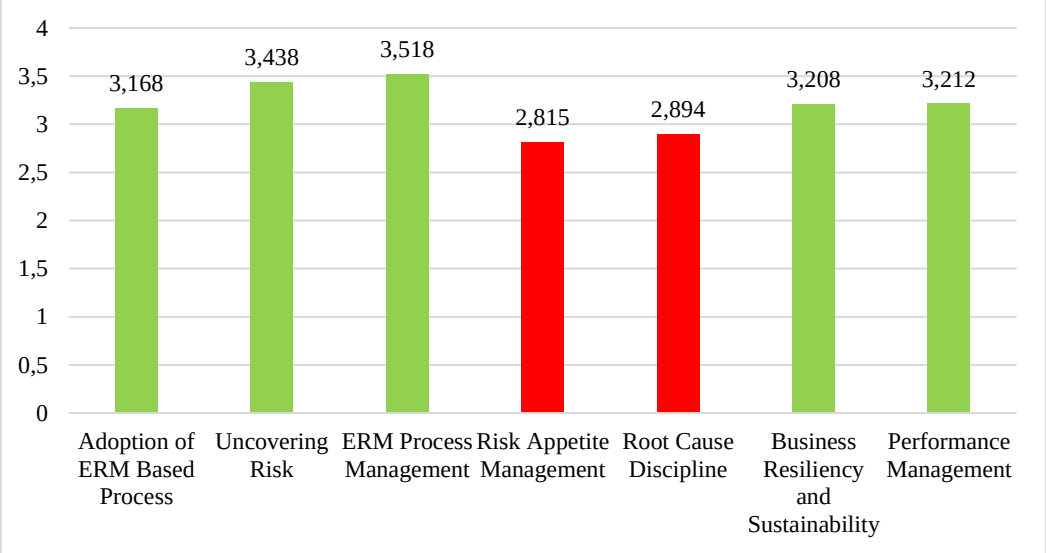

Figure 1. Average RMM per Indicator

Recommendations to Increase Risk Maturity Score PT XYZ

After assessing and explaining PT XYZ's Risk Management System, PT XYZ's maturity value is at the Repeatable level. So, it is necessary to provide recommendations to increase PT XYZ's Risk Management System to the next level. The following is a recommendation for each attribute.

Table 4. Recommendations for Increasing PT XYZ's Risk Management Maturity Value

Attributes	Recommendations
Adoption of ERM-Based Process	Risk assessment is carried out by the Risk Owner, where each Directorate is responsible for their respective risks. However, in this Directorate, only one person oversees identifying, assessing, supervising and reporting risks to the Risk Management Committee. So that other employees have no responsibility in assessing the risk of the Directorate. Because of this, the risk culture is still not integrated with every employee. Recommendations that can be given are to provide training on enterprise risk management or to involve more than 1 PIC in the Directorate's risk assessment.
	The guidelines used to carry out a risk assessment at the beginning of the year, and if necessary, a risk assessment can be carried out, for example, when a risk that has not been identified before is found, or a loss event occurs that causes a new risk, and others. However, there is no periodic reassessment or evaluation of the identified risks. Thus, in the guidelines, periodic reassessment or evaluation of identified risks must be added.
	Risk monitoring is only carried out for risks that require the supervision of the Director or the highest leadership in the Directorate or Top Risk, and apart from these risks, there is still a lack of supervision. So, it needs periodic supervision for all risks, not only risks with the supervision of the Director or Top Risk.

Attributes	Recommendations
	In changing the context or risk management system, PT XYZ does not conduct qualitative or quantitative risk assessments. Thus, risks will arise when context or system changes are not identified. It is necessary to identify risks to changes in the system or context.
Uncovering Risks	The risk assessment is carried out by the Directorate or middle management and not by the frontline management. Thus, it is necessary to carry out a risk assessment at every management level to identify all risks.
	In controlling risk, the company makes a structured action plan to control risk. Nevertheless, the action plan is only made for Top Risk. So, not every risk has its own Action Plan. In supervision, it is necessary to add periodic reporting of All Risks.
	In decision-making, all levels of management have considered the opportunities and risk objectives that exist. However, the Risk Management Guidelines or guidelines that the company follows are not explicitly written, so it is necessary to add this to clarify and so that the risk culture is more embedded in the company.
ERM Process Management	Risk identification can be made periodically because risk identification is only carried out at the beginning of the year or when the risk has already occurred.
	In planning a project, a risk assessment is carried out only qualitatively so that it can be developed to do a quantitative assessment first, then a qualitative assessment.
	In risk mitigation or handling, only the Top Risk is given an Action Plan, which will then be reported for supervision by the Director and the Holding Company. Supervision can also be given at all risks by reporting the development of all risks regularly. So that if there is an all-risk that has an increased level, it can be detected.
	In the Risk Management Process, only one person in charge carries out the Directorate. So that other employees do not understand the company's risk management and risk culture. Recommendations that can be given are to provide regular training on risk management or to educate on the Company's Risk Management System.
Risk Appetite Management	PT XYZ often makes changes related to business processes and others. However, the company does not measure risk. So, the risks that arise when making business changes are not identified. Because of that, measuring or identifying risks when making changes to business or others is necessary.
	In determining the risk limit that the company can accept, PT XYZ uses the Risk Tolerance Limit, which is based on the Net Profit Affect Tax (NPAT), where the Risk Tolerance Limit is calculated at the beginning of the year and distributed to the relevant Directorates. However, BTR is not adjusted when there is a change in risk or when a new risk is identified. So, it needs to be added in the guide to update the BTR according to certain risk conditions.
Root Cause Discipline	In risk identification, it is also necessary to identify that the risk may affect any Directorate because the risk identification that has been carried out has not yet identified the impact of the risk on other directorates. Then, it is necessary to carry out collaborative handling between the Directorates if needed. Because the handling of risks that the company has carried out is still based on the respective Directorates, and there is no interference from other Directorates, even though the relevant Directorates influence these risks.
Business Resiliency and Sustainability	In the long-term planning of the Company and the Directorate, it is necessary to implement risk management. Because the risks that can be faced will be limited or may not be identified. This can also cause the scope of risk not to cover all the company's business processes.

Attributes	Recommendations
	Companies need to consolidate and align all Directorate ERM plans, Company risk approaches, and perceptions of risk in achieving a thorough Risk Management Process.
	In reporting, the company needs to categorize the scope of risk, which includes internal or external areas and the root causes of these risks.
Performance Management	In measuring company performance, risk management can be considered as one of the considerations. Through this, the company can also know the competence of employee risk management.

Source: (Risk and Insurance Management Society)

Conclusion

PT XYZ is a state-owned company operating in the international standard national shipping industry. The risk management standard used at PT XYZ is ISO 31000:2018. Per the ISO 31000:2018 standard, PT XYZ implements three main components of risk management: risk management principles, risk management processes and frameworks. Maturity values are measured using the Risk Maturity Model (RMM) tools issued by RIMS (Risk and Insurance Management Society), which focuses on developing risk management. The RMM method uses seven assessment attributes: ERM-Based Approach, Uncovering Risk and Identification, ERM Process Management, Risk Appetite Management, Root Causes of Risk, Business Resilience and Continuity, and Performance Management. The maturity assessment results show that PT XYZ enters the Repeatable level with a value of 3.179. This level has not yet reached the minimum limit specified in the Minister of State-Owned Enterprises Regulation Number PER-08/MBU/08/2020 concerning the Ministry of State-Owned Enterprises Strategic Plan for 2020-2024. Further research that can be done is to design a strategy or action plan for developing the risk management system maturity value at PT XYZ.

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References

Harju, A., Schaëfer, K., Hallikas, J., & Kähkönen, A.-K. (2024). The role of risk management practices in IT service procurement: A case study from the financial services industry. *Journal of Purchasing and Supply Management*, *30*(2), 100899. https://doi.org/https://doi.org/10.1016/j.pursup.2024.100899

Hopkin, P. (2018). *Fundamentals of risk management: understanding, evaluating and implementing effective risk management*. Kogan Page Publishers.

Ikatan Bankir. (2015). *Manajemen Risiko 1*. Gramedia Pustaka Utama.

ISO 31000. (2018). *Risk Management: Principles and Guidelines*. International Organization for Standardization.

Karunarathne, B. V. G., & Kim, B.-S. (2021). Risk Management Application-Level Analysis in South Korea Construction Companies Using a Generic Risk Maturity Model. *KSCE Journal of Civil Engineering*, *25*(9), 3235–3244. https://doi.org/10.1007/s12205-021-2277-x

Kementerian Badan Usaha Milik Negara. (2020). *Peraturan Menteri Badan Usaha Milik Negara Nomor PER-08/MBU/08/2020 tentang Rencana Strategis Kementerian Badan Usaha Milik Negara Tahun 2020-2024*.

Kusrini, E., Praditya, T. A., & Wahyudi, B. (2023). Risk Maturity Model: A Systematic Literature Review'. *Proceedings of the International Conference on Industrial Engineering and Operations Management (IEOM 2023)*, 368–377.

Pardjo, Y. A. P. (2017). *Manajemen Risiko Perusahaan*. Growing Publishing.

Pemerintah Pusat. (2004). *Undang-Undang Nomor 25 Tahun 2004 tentang Sistem Perencanaan Pembangunan Nasional*.

Pemerintah Pusat. (2020). *Peraturan Presiden Nomor 18 Tahun 2020 tentang Rencana Pembangunan Jangka Menengah Nasional Tahun 2020-2024*.

Proença, D., Estevens, J., Vieira, R., & Borbinha, J. (2017). Risk Management: A Maturity Model Based on ISO 31000. *2017 IEEE 19th Conference on Business Informatics (CBI), 01*, 99–108. https://doi.org/10.1109/CBI.2017.40

Risk and Insurance Management Society. (2020). ERM Program Audit Guide: Risk Maturity Model. *Logic Manager*.

Tubis, A. A., & Werbińska-Wojciechowska, S. (2021). Risk Management Maturity Model for Logistic Processes. *Sustainability*, *13*(2), 659. https://doi.org/10.3390/su13020659