

# Design and Implementation of Risk Management System:

## The Case of PT Lanius

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**Abstract**—Lanius (pseudonym) is a company that engaged in developing energy resources into investment portfolios requires a proper design for risk management system. It is because of the needs to diversify its business into new business fields as energy investments that entrusted to Lanius. New business fields in the energy sector will certainly face with high risks. In addition, Lanius's business model that differs from contractor to investor can arise new risks for the company. Coupled with minimal experience makes the potential risk will be even higher. Thus, a comprehensive risk management system is needed as a guide for Lanius in carrying out its business model to achieve the company's objectives. This study uses ISO 31000: 2018 approach which consists of three circles, namely: principles, frameworks and risk management processes. The advantages of ISO risk management system approach are that it is relatively simple and general so that it can be implemented in various types of organizations. To find out the current implementation of risk management at Lanius, an assessment of the risk maturity level that refers to the Chapman model (2011) was conducted. According to this model, the risk maturity level consists of four levels, namely: initial, basic, standard, and advanced. The assessment was carried out through a questionnaire consisting of 42 questions from five dimensions, namely: culture, systems, experience, training and management. This study's result is risk management system design that be used in the implementation of risk management at Lanius such as: risk management policy design, proposed organizational structure, SOP and risk management processes templates that include communication and consultancy; determination of the scope, context and criteria, risk assessment, risk evaluation, risk treatment, monitoring and review; recording and reporting. The risk maturity level assessment of Lanius's risk management implementation shows that currently Lanius is at the basic level. Furthermore, in this study, the risk management system design then implemented. The scope of the risk management process is limited to Lanius and has not been integrated with its subsidiaries. From the process, 128 risks in Lanius have been identified, consisting of 59.4% strategic risks; 32.0% financial risk; 4.7% HR risk; 1.6% reputation risk; 1.6% legal risk; and 0.8% operational risk. In addition, the result of the risk evaluation shows that Lanius has 8% extreme risk. Therefore, a treatment plan has been composed to reduce the level of extreme risk. The risk mapping results show that Lanius has 34% low level risk, 33% medium level, 26% high level, and 8% extreme level. The risk treatment plan needs to be composed to reduce the level of likelihood and / or level of impact of extreme risks. Therefore, after being given treatment, extreme risks that are outside the tolerance limit of Lanius will shift into the risk tolerance limit. Thus, Lanius's risk

profile changed to 33% low level risk, 41% medium level risk and 26% high level risk.

**Keywords**—*risk management, energy investment, ISO 31000:2018*

### I. INTRODUCTION

PT Lanius (pseudonym) as a subsidiary of PT PP (Persero) which is engaged in developing energy resources into an investment portfolio needs to implement risk management. One of urgency for management implementation in Lanius is the business soul of PT PP (Persero) as the parent is in the construction sector and wants to diversify its business into new business fields in the form of energy investments entrusted to Lanius. New business fields in the energy world will certainly be faced with great risks. Coupled with minimal experience makes the risk faced will be even greater. The urgency that needs to be underlined is PT PP (Persero), which initially had a business model as a 'contractor', now has the role of an 'investor', which of course they have no experience. As a result, the potential risks faced are also very large. The implementation of risk management in Lanius functions as an early warning if there will be risks that can cause the company's targets to not be achieved. For instance, if Lanius want to do an acquisition in an oil and gas block which is engaged in the upstream oil and gas sector using loan funds from creditors. In this case, Lanius is faced with financial risk where Lanius has the obligation to pay the principal and interest on the creditor according to the specified time period. Lanius faces a form of uncertainty that allows them to face the risk of default, so they must implement effective risk management so that the risks they face do not cause harm to the company and investors. Therefore, risk management plays a role in ensuring that every energy investment project undertaken by Lanius can provide optimal benefits. Thus, the organizational goals of Lanius can be achieved.

Lanius also plans to take the floor on the Indonesian Stock Exchange by conducting an IPO (Initial Public Offering) in mid-2020. Therefore, Lanius management must implement a Good Corporate Governance (GCG) system as a form of compliance in order to increase the confidence of potential investors and the proper risk management implementation is a part of good GCG implementation.

The need for the implementation of risk management at Lanius is also marked by the occurrence of cost overrun in current projects. The cost overruns mostly occurred in the pre-development stage and the project development stage. In carrying out each project, Lanius must incur a substantial pre-development cost. These costs include the costs of consulting fees and costs for approaching partners. In addition, at the project development stage, Lanius was assisted by a financial arranger who was a third party. The costs incurred by Lanius to pay for the financial arranger have a high nominal, which is 2-3 billion Rupiah. However, after Lanius issued the costs, the planned project may not be able to proceed to the next stage so that Lanius has the potential to pay sunk costs in the pre-floating phase of the project. Thus, the risk management implementation is expected to minimize the use of costs in pre-development projects.

In implementing risk management, there are various approaches that can be used such as: COSO, ISO 31000, and Risk Management models. The design of risk management at Lanius uses the ISO 31000:2018 approach. The advantages of ISO risk management system approach are that it is relatively simple and general, so that it can be implemented in various types of organizations. The purpose of this study, among others, is to design and implement a risk management system at Lanius. In addition, this study also identifies the level of risk management maturity at Lanius.

## II. LITERATURE REVIEW

### A. System Design

The system is an entity that maintains its existence and function as a whole through the interaction of its parts [1]. Meanwhile, according to Gordon B. Davis, a system consists of interrelated parts that operate together to achieve several goals or intentions [2]. In addition, from the approach to procedures, the system is a network of procedures; proper sequence of stages of instruction that explains what must be done, who does it, when it is done, and how to do it that are interconnected, gather together to do an activity or complete a certain goal [3]. In general, the system model consists of input, process, and output.

The design system shows how the system will meet its goals [4]. Meanwhile, McLeod and Eleanor states that there are two basic types of system design, namely logical and physical [5]. Logical design is the processing and data specifications needed to convert system input into output. Physical design is a specification of the specific details of the technology for the acquisition and assembly of information resources needed to complete the transformation. In addition, McLeod and Eleanor also mentioned that the design phase consists of three steps, namely: the design of new system components, the design of interfaces with other systems, and documenting new systems [5].

The system definition can also use an element / component approach. In the element approach, the system is defined as a set of elements that interact with one another to achieve a certain goal [6]. This approach is broader and more widely accepted by various groups. A system created certainly has a specific purpose. The system is made to achieve a goal and target. The purpose in this case has a broad scope. Meanwhile, the target covers a narrow scope, so it is better known in the

sub-system. So the difference between goals and objectives lies in their scope.

### B. Risk Management Based on ISO 31000: 2018

ISO 31000 is a risk management system issued by the International Organization for Standardization (ISO). ISO 31000 was first published in 2009. The advantages of this ISO risk management system are that it is relatively simple and general so that it can be implemented in various types of organizations. In general, the purpose of ISO 31000 is to integrate risk management into an organization's strategy. In February 2018, ISO issued an update to ISO 31000 to ISO 31000: 2018. This latest ISO 31000 version is simpler than the previous version and presents how risk management initiatives can be implemented. In ISO 31000: 2018 there are three circles that describe the implementation of risk management. The circle represents the three components of risk management, namely: principles, frameworks, and risk management processes that cannot be separated each other.

The first circle illustrates the principles of risk management. Risk management has the main as value creation and protection. If risk management is implemented well in an organization, this will have an impact on improving performance, driving innovation and achieving organizational goals. In addition, risk management can also provide improvements in all aspects, such as compliance with laws and regulations, safety aspects, operating efficiency and others. The principles of risk management are the things needed to initiate risk management practices in an organization. The principles of risk management provide guidance on the characteristics of effective and efficient risk management, communicate values and explain the goals. According to ISO 31000: 2018, there are eight principles in the application of risk management, including: customized; inclusive; structured and comprehensive; integrated; dynamic; best available information, human and Cultural Factors, and continuous improvement.

The second circle illustrates the risk management framework. The risk management framework according to ISO 31000 is defined as a set of components that provides the foundation and governance of an organization to plan, implement, monitor, review, and improve risk management on an ongoing basis for the entire organization. The purpose of the risk management framework is to integrate risk management into all activities and functions of the organization. The integration of risk management into management and the whole organization will determine the effectiveness of risk management implementation. The risk management framework according to ISO 31000: 2018 consists of: leadership and commitment; integration; design; implementation; evaluation; and improvement.

The third circle illustrates the risk management processes. The risk management process should be an inseparable part of management in general. It must enter and become part of the organization's culture, organizational best practices, and the organization's business processes. The risk management process includes five activities, namely: communication and consultation; determine the scope, context, criteria; risk assessment; risk management; monitoring and review; and recording and reporting.

Thus, the analytical framework of this study can be seen in figure 1:

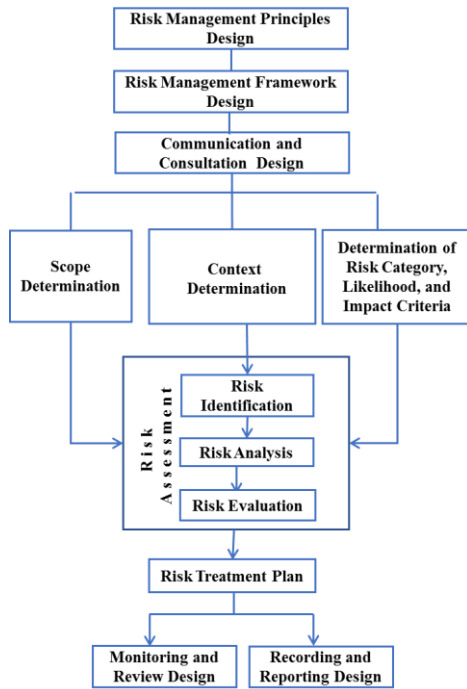


Fig. 1. Analytical framework.

### III. METHODOLOGY

This study is applied research which aims to solve the problems faced at Lanius. According to Sekaran and Bougie, applied research is research conducted in certain settings with specific objectives to resolve existing problems in the situation [7]. In addition, this study uses primary and secondary data. Primary data were collected through interviews and questionnaires while secondary data were obtained through document studies.

This study uses several data processing techniques in accordance with the stages in the framework of the analysis conducted. The stage of determining the external context, the data processing technique used is a descriptive analysis of the macro environment, PESTEL. In addition, the determination of the external context also uses stakeholder analysis using a stakeholder typology matrix. The determination of the internal context is composed by using a 7S McKinsey descriptive analysis. At the risk assessment stage, risk identification is carried out using the Risk Breakdown Structure (RBS) approach through Work Breakdown Structure (WBS) and root cause analysis to determine the cause of the identified risk event. Furthermore, risk analysis is determined through the determination of likelihood and impacts if risks occur with qualitative analysis. The calculation of impact criteria uses a quantitative approach that refers to the risk dictionary that has been established at the criteria determination stage. After that, at the risk evaluation stage, a risk rating analysis is carried out based on a risk map to determine the magnitude of the risk quantitatively, which is the basis for developing risk management priorities. The risk management matrix analysis is used to determine the risk management plan.

The Lanius risk management maturity level (RMML) questionnaire uses the Risk Maturity Model measurement tool compiled by Robert J. Chapman [8]. This questionnaire consisted of 42 statements in which respondents were asked to give answers "yes" or "no" based on the company's actual description.

### IV. RESULTS AND DISCUSSION

#### A. Design of Risk Management System

The design of a risk management system created in this study uses the ISO 31000: 2018 approach. This is because ISO 31000 has been adopted as the Indonesian National Standard for risk management that best meets the 7 criteria set by the RIMS (Risk and Insurance Management Society).

Risk management design at Lanius consists of interrelated parts. The first part contains the principles that consist of eight principles. The second part of the risk management design contains a risk management framework. The first framework is Leadership and Commitment. Implementation of risk management requires leadership and commitment to align risk management with the organization's strategy, goals, and culture. The leadership and commitment starts from the top leadership of Lanius, namely the Directors and Board of Commissioners. In addition, the Board of Directors and the Board of Commissioners need to determine one member of the Board of Directors who is a Risk Leader and assigns tasks to build risk leadership at all levels of the organization to build a culture of risk awareness. Thus, every risk owner is able and ready to become a risk leader for his work environment.

Commitment to implementing risk management is outlined in the Risk Management Policy. The draft Risk Management Policy for Lanius contains several things, including: the purpose of implementing risk management; and the division of responsibilities and accountability in the risk management implementation. The Risk Management Policy must be signed by the President Director and the President Commissioner.

The second framework is integration. Risk management must be an inseparable part of Lanius's organizational goals, governance, leadership and commitment, strategy and operations. Integrating risk management will depend on understanding the organizational structure and organizational context. Therefore, an understanding of the external and internal context is needed to identify risks that can hinder the achievement of organizational goals. In addition, risk management must be carried out in every part of the organizational structure and everyone in the Lanius organization.

Organizational governance consists of structures and processes. The structure shows the authority and accountability laid out at every level of the Lanius organization. Meanwhile, the process of demonstrating the mechanism for exercising authority and accountability is carried out. Thus, it can be concluded that integration includes determining the authority and accountability of management, roles and responsibilities of supervision and ensuring risk management is an inseparable part of all aspects of the organization.

The proposed risk management structure has been made. the Board of Commissioners is a corporate organ that has supervisory duties, including risk management supervision.

The Board of Directors is a corporate organ that has full accountability in managing corporate risk. The Risk Committee is a committee formed by the Board of Directors and headed by one of the Directors appointed. This committee works across functions which is responsible for implementing the implementation of risk management in corporate.

The Risk Management Work Unit is an independent part of business operations and other operations. This unit has the function of developing and monitoring the implementation of risk management carried out by all business units and other operations in the company. This unit is also responsible for the company's risk management report including the effectiveness of the risk management framework, implementation of the risk management roadmap, the company's risk profile, risk management performance and the progress of work plans and risk management. The tasks of this work unit generally consist of 13 tasks. First, design a risk management policy to be approved by the Directors and Board of Commissioners. Second, prepare risk management manuals and procedures for approval by the Directors. Third, compile a risk management implementation map (road map) to get approval from the directors and make a detailed description of the plan to be implemented. Fourth, develop risk criteria, including risk appetite criteria, risk limits and risk tolerance to obtain Board of Directors approval. Fifth, designate the appointment of a risk owner, risk control owner and risk officer at the division level or, if necessary, the level below it for later to be approved by the Directors through a Board of Directors Decree. Sixth, plan and organize tiered training on risk management from the Board of Directors and Board of Commissioners to the executive level in the field. Seventh, support the implementation of risk management throughout the organization in stages in accordance with the plans, capabilities and competencies of the unit. Eighth, conduct monitoring and review of the process of risk management implementation. Ninth, support the integration process of risk management in business and organizational processes. Tenth, periodically report risk management to the Board of Directors and taking corrective actions on the findings of the monitoring and review conducted. Eleventh, build an internal risk management communication forum to improve communication and information exchange, and towards fostering a risk awareness culture. Twelfth, carry out improvement organizational capabilities in risk management. Last, specifically design a risk awareness culture development program within the organization together with a program of compliance with rules and regulations.

Operational units (Corporate Strategy, Business Development, Finance, HRandGA, etc.) must be firmly established with clear accountability of positions: Risk Owner who is the leader of the work unit, Risk Control Owner which is the head of subunits under a work unit that controls the achievement of subunit targets that have an impact on the achievement of work units and Risk Officer or Risk Champion is a work unit specifically designated to assist in the management and implementation of risk management in the unit.

The Internal Auditor is tasked with conducting a risk management audit which consists of three types. Firstly, Conformance Assessment to check whether all elements of existing risk management standards are going well. Secondly, the Risk Maturity Assessment to examine the effectiveness of

risk management implementation. Thirdly, Control Effectiveness Assessment to check whether the existing risk control has been carried out effectively in accordance with the previously determined specifications.

The third framework is design. The results of the framework design process are risk management process procedures.

1) *Communication and consultation:* The purpose of communication and consultation is to help stakeholders understand risks, as the basis for decision making and the reasons why certain actions are taken. Communication and consultation procedures have been developed. In general, this procedure has 11 stages which are carried out by each role such as Risk Management Work Unit, risk committee, and Board of Commissioners. The input to this process is a risk management policy document and the output is a risk management communication and consultation plan document. In addition, a format and template related to the role of each part in carrying out the communication and consultation process are also arranged, namely the RACI matrix. "R" / Responsible which means who has the responsibility, "A" / Accountable which means who has the right to make the final decision, "C" / Consulted which means who should be consulted, and "I" / Informed which means who should be informed of the application of risk management.

2) *Scope, context and criteria:* The purpose of establishing scope, context, and criteria is to design a specific risk management process according to the needs of its users to support effective risk assessment and appropriate risk treatment. The procedure for determining Scope, context, criteria has been designed as many as 10 stages carried out by each role such as risk work unit, risk committee, and board of commissioners. Acting as input to this process are the Long Term Corporat Plan document, structure, and the Lanian system, while the output of this process is a document of scope, context, and criteria.

3) *Risk assessment:* Risk assessment is the entire process from risk identification, risk analysis, to risk evaluation. Risk assessments must be carried out systematically, repeatedly and in collaboration with relevant parties, based on the views and knowledge of stakeholders regarding risk. Risk assessment must use the best available data and information. The risk assessment procedure consists of 18 stages carried out by the risk owner, risk work unit, the risk committee and the board of commissioners. The organizational structure and business process documents of each department act as input, while the risk register document is the output of this process.

4) *Risk treatment:* Risk treatment aims to select and implement options to deal with risks. This is done to reduce the likelihood or impact of a risk. This process has 16 stages carried out by the function, risk owners, risk committees, and the board of commissioners. Acting as input in this process are risk register documents and risk management forms so as to produce output in the form of risk management documents.

5) *Monitoring and review:* Monitoring and Review aims to guarantee and improve the quality of the effectiveness of the planned implementation of the risk management process,

implementation, and the expected final results. Regular monitoring and regular review or review of the risk management process and the final results must be part of the risk management process, with clear assignments of responsibilities. This process has 9 stages carried out by the risk work unit function, risk owner, risk committee, board of commissioners, and internal audit. Acting as input are documents of scope, context and criteria; risk register; a risk management document which, after being processed, will produce output in the form of data from the results of monitoring and reviewing the implementation of risk management at Lanius.

6) *Recoding and reporting*: The risk management process and its various outputs must be documented and reported through appropriate mechanisms. Recording and Reporting has the aim to provide information for decision making and improve risk management process activities. The recording and reporting process has 7 stages carried out by the risk owner unit, risk owner, risk committee, and board of commissioner functions. The input of this process is the monitoring and review data. The output of this process is the documents and reports on the implementation of risk management that has been approved by the board of commissioners.

### *B. Risk Management Assessment*

At this stage a risk management maturity assessment is carried out which refers to the Chapman model. The assessment through a questionnaire related to the current level of risk management maturity at Lanius has been carried out. The respondents of this assessment are three people from the Corporate Strategy division, consisting of the Division Head, Risk Management Manager and Analyst. In general, the organization, the level of risk management maturity of Lanius is at level 2 (basic). At this level, risk management is made for business improvement. This was said by Lanius 's management representative to the research team that the design of risk management aims to make Lanius 's business processes more efficient. In addition, the application of risk management at Lanius is also expected to be a consideration in making investment decisions.

### *C. Implementation of a Risk Management System*

1) *Scope, context, criteria*: The scope of risk management only applies to Lanius, not yet integrated with its subsidiaries. This is because the risk management implementation in Lanius is still in the early stages of development. In addition, the characteristics of the parent business, in this case Lanius, are quite different from the business processes of the subsidiary. Lanius is an investment company in the energy sector while its subsidiary is a pure energy company. Thus, the process of risk identification to risk management will only focus on risks owned by Lanius.

In determining the external context, the PESTEL analysis (politics, economy, social, technology, environment, legal) is an analysis used to assess environmental conditions at a macro level. This analysis aims to understand various conditions that can be opportunities or threats for companies, especially in Indonesia. Based on the results of the PESTEL analysis, there are many threats to macroeconomic conditions against Lanius,

especially in the legal field. This is because there are quite a number of government regulations governing energy and investment policies that have the potential to pose a threat to investment companies in the energy sector such as Lanius. Therefore, Lanius must be agile and brave in capturing every investment opportunity and preparing for mitigation in the event of a policy change at any time.

In addition to the PESTEL analysis, there is also a stakeholder analysis. The mapping of the stakeholders of Lanius is needed to see the relationship of Lanius with various external parties, because Lanius as an investment company in the energy sector is very closely related to many parties in conducting its business, where these companies have the interests of each of them and vice versa. This can potentially lead to a variety of risks if this relationship is not well understood by Lanius, which will disrupt the organization's process of doing business. Therefore, the stakeholder mapping process is one of the important processes in Lanius's risk identification process. Lanius as an investment company in the energy sector which has a vision of wanting to become a sustainable ASEAN-level energy investment company has many stakeholders, namely primary and secondary stakeholders. Primary stakeholders are stakeholders who are directly related to Lanius in running their business. Primary stakeholders owned by Lanius are creditors (financial institutions), owners (PT PP (Persero)), partner companies, and tender providers (optional). The stakeholders who are not directly or secondary stakeholders are local government, mass media, government, and other competitors (optional).

Determination of the internal context of Lanius was carried out using the 7S McKinsey method which consisted of analysis of the company's strategy, structure, system, style, staff, skills and shared values. Based on the results of internal analysis using the 7S McKinsey method, in general, the internal condition of Lanius has been in line with the expected vision. The thing that needs to be the focus of attention in achieving its vision is the organizational structure. Lanius has a risk management function which is under the Strategic Corporate department. Indeed, one of the functions of risk management is as a navigator so that corporations can carry out the right strategy in achieving company goals. However, to carry out integrated risk management, ideally there is a risk committee at the neck of the president director as the highest decision maker in the company. Risk management is taken into consideration in making every important decision. Thus, risk management not only functions as a guiding company in carrying out strategies in order to achieve the expected goals, but also as a facilitator of all risk owners of each element at the corporate level related to the improvement and updating of risk management policies, corporate strategies, and risk appetite. Aside from the structural aspect, another thing that deserves attention in Lanius's internal is that the risk management, legal and internal audit systems have not functioned synergistically. Ideally the three units can collaborate synergistically in terms of implementing business strategies, operational excellence, and sustainable growth. The risk management unit collaborates with the law in creating a prevention and mitigation system. As for the compliance system, internal and legal audits should collaborate synergistically. Meanwhile, risk management and internal audit collaborate in measuring and evaluating the application of risk management at Lanius.

Furthermore, the determination of criteria uses the probability of risk events ranging from 0% - 90% or uses qualitative criteria in the form of frequency of events for 4 years. Based on these criteria, the likelihood of a risk event consisting of designations almost does not occur, rarely, sometimes, often, and almost certainly occurs with levels in a row 1,2,3,4 and 5. The time period used is within 4 years. This is based on Lanius's RJPP which has a deadline until 2022. The Lanius risk impact criteria can be seen from several categories or aspects, namely: financial, operational, reputation, human resources, strategic, and legal.

Risk matrix is a matrix that shows the level of impact and the level of likelihood of a risk. The multiplication between the level of impact and the level of likelihood indicates the magnitude of the risk. The amount of risk can also indicate the level of risk.

The risk level of Lanius is categorized into 4 levels, namely low, medium, high, and very high. Making a risk map refers to the risk appetite of PT PP Holding as a holding company. PT PP Holding itself has a 4x4 risk map with risk levels from low, medium, high and very high. With a low risk, the range is  $\leq 2$ , moderate  $2 < x \leq 4$ , high  $6 < x \leq 8$ , very high  $12 < x \leq 16$ . Because Lanius has a 5x5 risk map, the magnitude of the risk is low, referring to the percentage of PT PP Holding. Low level has a magnitude of risk with a range of  $\leq 12.5\%$  of the highest scale (25), which is 1-3. medium level has a magnitude of risk with a range above 12.5%, which is 4 to double that amount so that a range of 4-8 is obtained. Very high levels have a range above 75% of the highest magnitude of risk, which is 19-25. And the rest goes to high levels. However, when a risk has an impact level of 5 (very significant), the risk automatically enters a very high level of risk, even though the magnitude of the risk is at a level below that. This is because the risk is beyond the risk appetite of Lanius.

Risk appetite is a limit on the level of risk that applies to each type of risk that is acceptable to the risk owner because it is believed that the significance of its effect on achieving the target is classified as low. Risk appetite and the establishment of a risk tolerance line are obtained based on the results of the FGD (Focused Group Discussion) with the management of Lanius which in this case is a risk committee. It can be seen from the picture below, that Lanius has a risk appetite from low to high level (green to orange). The level of risk in red is an extreme level of risk that is outside the limits of Lanius's risk appetite. Meanwhile, risk tolerance is the limit for the level of risk that can be tolerated after being given risk treatment because it is believed to have been controlled. If there are risks that have been carried out, but the management of Lanius does not yet believe that these risks are well controlled and fall within the established risk tolerance limits, then those risks still need to be evaluated for their risk management activities. each. The figure 2 below is a risk analysis matrix that has been given a risk tolerance limit.

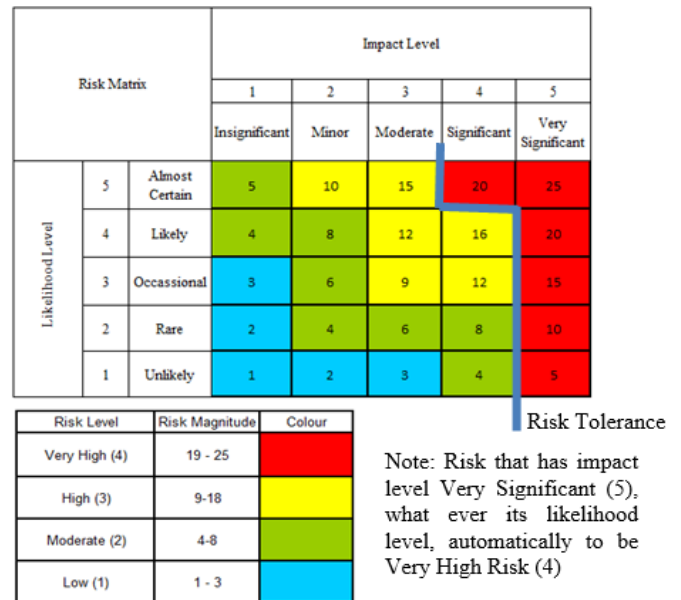


Fig. 2. Risk matrix.

2) Risk assessment: A total of 128 identified Lanius risks have been mapped based on the results of each risk analysis. That all risk then be analyzed and plotted to the risk matrix. The result of risk analysis generate the risk map that showed in Figure 3. All risks are spread into four levels of risk, namely: low (1), moderate (2), high (3) and very high (4). In accordance with Graph 5.8, the risk of Lanius has 34% low level risk, 33% medium level risk, 26% high level, and 8% very high level risk. The risks that fall within the tolerance limit of Lanius are 92% consisting of low, medium and high levels of risk. While risks that are outside the tolerance limit of Lanius are extreme risks that have very high levels with a percentage of 8%. A total of 10 risks enter into a very high level (4) with a percentage of 8%. These risks consist of 50% strategic risk (5 events), 40% financial risk (4 events), and 10% legal risk (1 event).

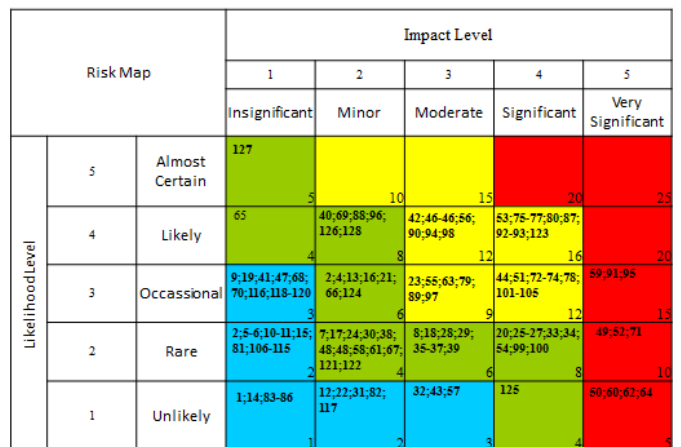


Fig. 3. Risk map of lanius.

3) Risk treatment: Risk management is needed to reduce the level of likelihood and the level of impact of a risk. Lanius extreme risk management is adjusted to the location of risk in

the quadrant of the risk management principle matrix. Based on a matrix of risk management principles, a risk management plan is formulated against these extreme risks. Based on the matrix, there are four general types of risk treatment, namely: accept, transfer or share, reduce or mitigate, and avoid. After treat these risks, it is expected to reduce the level of likelihood / level of impact / both.

Risk Map			Impact Level					
			1	2	3	4	5	
			Insignificant	Minor	Moderate	Significant	Very Significant	
Likelihood Level	5	Almost Certain	127	5	10	15	20	25
	4	Likely	65	40;69;88;96;126;128	42;46;46;56;90;94;98	53;75;77;80;87;92;93;123	16	20
	3	Occasional	9;19;41;47;68;70;116;118-120	2;4;13;16;21;66;124	23;55;63;79;89;97	44;51;72;74;78;101-105	12	15
	2	Rare	2;5-6;10-11;15;81;106-115	7;17;24;30;38;48;48;58;61;67;121;122	8;18;28;29;35-37;39	20;25-27;33;34;49;52;54;59;71;91;99;99;100	8	10
	1	Unlikely	1;14;83-86	12;22;31;82;117	32;43;57	125;80;60;62;64	4	5

Fig. 4. Expected risk map.

The figure 4 is a expected risk map after extreme, high, and moderate risk categories are treated. Extreme category risk consists of 10 risks and when risk is treated, all extreme category risks are expected to go down to a moderate level. For risks in the high category which amounted to 33 risks after treatment, all risks are expected to decrease in risk level from high level to moderate level. As for the medium category risks, amounting to 43 risks after treatment, it is also expected to decrease in risk level from moderate to low level. As for the risks with a low category do not require special treatment, but Lanius can accept it as risks that are not too significant for Lanius.

**V. CONCLUSION**

The design of the risk management system at Lanius includes policies that are made and must be signed by the president director and the chief commissioner; proposed risk management structure; various recording templates used as tools to implement risk management at Lanius; and design procedures that have been made to carry out risk management processes based on ISO 31000: 2018 such as: communication and consultation procedures; procedures for determining the scope, context, criteria; risk assessment procedures; risk management procedures; monitoring and review procedures; and recording and reporting procedures.

The results of the assessment stated that the level of risk management maturity at Lanius was identified at level 2, namely Basic. This shows that risk management is implemented in order to improve business internally at Lanius.

A total of 128 Lanius’s risks have been identified consisting of 57% strategic risk, 32% financial risk, 5% HR risk, 2% legal risk, 2% reputation risk, and 1% operational risk. In terms of its level, Lanius has 34% low level risk, 33% moderate level, 26% high level, and 8% very high level. In addition, a treatment plan for risk with very high, high and medium levels has been prepared to reduce the level of likelihood and the level of

impact. Therefore, after treatment, it is expected that as many as 33 high risks (26% of total risks) will go down to moderate levels. Meanwhile, a total of 43 moderate risks (33% of total risks) are expected to drop to a low level after the treatment plan is carried out.

**ACKNOWLEDGMENT**

The author suggests several things to Lanius as an investment company in the energy sector. Firstly, Lanius should make risk management as a protective instrument for the organization in achieving each of its goals so that the culture of risk awareness can be optimally internalized in every body of the organization, not only as an act of compliance as part of GCG (Good Corporate Governance) implementation.

Secondly, Lanius established risk management work unit, consisting of representatives from each of the existing departments and placed the risk committee position directly under the neck of the Board of Directors, and also formed a risk monitoring committee within the board of Commissioners in the organizational structure. It aims to optimize the performance of risk management as an integrated part in one organization of Lanius.

Third, the Internal Auditor, Legal and Risk Management departments collaborate with each other to help Lanius achieve its organizational goals. The risk and legal management department is expected to collaborate with each other in preparing prevention and mitigation measures for Lanius, the legal and Internal Audit departments are expected to collaborate with each other in compliance matters, and the risk management department and Internal Audit are expected to collaborate also in measuring and evaluating the performance of risk management at Lanius.

Fourth, With the identification of extreme (very high) risks at Lanius, it is recommended to set the Key Risk Indicator (KRI) for each of these risks. This is to facilitate monitoring and review of each extreme risk as well as to evaluate the effectiveness of the risk management plan that has been made.

Fifth, as we know, 90% of Lanius's employees are millennial generation. The author suggests that Lanius should prepare a strategy or steps to maintain the integrity / maintain the solidity of the employees as an anticipatory step to suppress high employee turnover in the organization, this is due to the millennial generation character who is more loyal to change than the organization ("job hopper").

Sixth, the author recommends that Lanius create a roadmap related to the application of risk management in its organization for the next 3 years. The roadmap contains matters that have become targets of successful implementation of risk management in the organization. To facilitate the achievement of these targets, Lanius should make a quick win per month as a step towards achieving the target roadmap that has been made.

Seventh, after the risk management design is implemented in the company, the authors suggest that Lanius can provide incentives and sanctions for each individual / employee level related to the performance of risk management in each of their departments which aims to further increase the risk awareness of each of these individuals.

## REFERENCES

- [1] J. O'Connor and I. McDermott, *The Art of Systems Thinking: Essential Skills for Creativity and Problem Solving*. London: Thorsons, 1997.
- [2] G.B. Davis, *Kerangka Dasar Sistem Informasi Manajemen*. Jakarta, Indonesia: PT. Pustaka Binaman Pressindo, 1984.
- [3] J. Fitzgerald, *Fundamentals of Systems Analysis: Using Structured Analysis and Design Techniques*. New York: John Wiley and Sons, 1987.
- [4] K.C. Laudon and J.P. Laudon, *Management Information Systems (Fifth ed.)*. Montreuil: Pearson, 2017.
- [5] R. McLeod and J. Elanor, *System Development: A Project Management Approach*. New York: John Wiley and Sons, 2002.
- [6] R.G. Murdick, J.R. Claggett and J.E. Ross, *Information Systems for Modern Management*. New Delhi: Prentice-Hall, 1984.
- [7] U. Sekaran and R. Bougiee, *Research methods for business a skill-building approach*. Chichester: Wiley, 2007.
- [8] R.J. Chapman, *Simple Tools and Techniques of Enterprise Risk Management*. Chichester (England): John Wiley and Sons, 2011.