Jurnal Agrinika: Jurnal Agroteknologi dan Agribisnis
Volume 09, Issue 01 (2025)
E-ISSN: 2721-2807

Operational Risk Management Analysis Using Enterprise Risk Management (ERM) at PT Petrokimia Gresik

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Keywords:
Enterprise risk management (ERM);
Operational risk;
Risk management.

Submited:
19-09-2024

Accepted:
08-03-2025

Published:
29-03-2025

ABSTRACT

This research aims to overcome operational risks that may occur using the Enterprise Risk Management (ERM) approach. The approach used to implement Enterprise Risk Management (ERM) in this study is SNI ISO 31000: 2018. The process of designing risk management goes through the stages of risk identification, risk analysis, risk evaluation, and risk treatment; the method used in this study is qualitative descriptive with quantitative additions. That means descriptive qualitative methods are used for each stage of completion except the risk level assessment stage. This analysis was carried out at PT Petrokimia Gresik, precisely in the Production Department III A part ZA II. The problem in this study is that several risks can hinder the ZA fertilizer production process. The results of the analysis that have been carried out are 10 operational risks, namely Communication mistakes by the employees, Work accidents, Performance / low-productivities by the employees, Mistakes in operating production tools, Unsuitable product quality with the requested specification quality, ZA fertilizer that is not on target, Flawed storage of ZA fertilizer, Low availability of raw materials, Production reports failure and Production tools disturbance. Of the 10 risks identified, there are 8 risks at a low level (low), 2 risks at a medium level (medium) and 1 risk at a high level (high). Efforts to treat risks in the low (low) and medium (medium) level categories are to accept or restrain the risk from increasing and provide additional treatment. Meanwhile, for high-level risks, preventive and mitigation strategies are carried out to reduce the possibility and impact of these risks by doing some area maintenance to renovate the savings storage. Also, clumping fertilizer will be consulted in the quality control section.

1. Introduction

Operational risks result from deviation from broken systems and procedures, the failure of human resources technology, organizational structure, or other factors (Manuputty et al., 2022). This causes many problems, so prevention efforts are needed to reduce the business probability. There are ways to manage and control risks by setting risk management so they will be managed and controlled. Risk management is a strategy to identify, manage, and evaluate risks in a company that has the purpose of ensuring damage to the company. Risk management has a standard, ISO 31000:2018, to protect and create value suitable to the type of risks and industry specifications of certain sectors. The implementation of Enterprise Risk

Management (ERM) has become a way to help manage and minimize the risks that can harm the business. Risk management with Enterprise Risk Management (ERM) in the agricultural industry has a significant impact. By implementing ERM, the agricultural industry can identify, assess, and manage risks associated with the production, storage and distribution of agricultural products. This can help reduce losses, improve operational efficiency, and improve product quality. Implementation of ERM in the agricultural industry involves several steps, such as risk identification, risk assessment, strategy development, and implementation and monitoring. By implementing ERM effectively, the agricultural industry can increase stakeholder trust, including that of consumers and investors, and improve its ability to face changes and uncertainties.

According to Arsanti (2021), Enterprise Risk Management (ERM) is defined as a combination of activity and strategy that results in a negative reduction of many risks. A negative reduction of many risks can happen in financial risk, operational, and business strategies that are planned and created by the company. A survey by Touche (2009) says that 59% of 111 companies surveyed applied Enterprise Risk Management (ERM), and 23% of companies are still planning on that, according to (Azar et al., 2024). This study aims to analyze the impact of Enterprise Risk Management (ERM) implementation on operational performance and company value in the Indonesian agricultural sector. The results of the study indicate that ERM implementation has a positive impact on operational performance and company value. In the agricultural industry, there are several examples of risks that need to be managed. Weather risks can affect the production and quality of agricultural products. In addition, the risk of pests and diseases can also affect the production and quality of agricultural products. The risk of harvest delays can affect the quality of agricultural products and reduce income. Finally, the risk of regulatory changes can affect the operations of the agricultural industry and reduce income. By managing risks effectively, the agricultural industry can improve operational performance, reduce losses, and increase company value. PT. Petrokimia Gresik is part of the Indonesian Fertilizer Holding Company, which produces many kinds of fertilizer and chemical product solutions for the Indonesian agroindustry. Products that are made by PT. Petrokimia Gresik is divided into 3, subsidy fertilizer (NPK phonska and urea), non-subsidy fertilizer (ZA fertilizer (Zwavelzure Ammonia), phosphate (Phosgreen), NPK, ZK (Zwavelzure Kali), and organic fertilizer petrogenic) and non-fertilizer (petro phonic, petro CAS, agriculture calcium Kebomas, Petro Gladiator, probiotic, and chemicals).

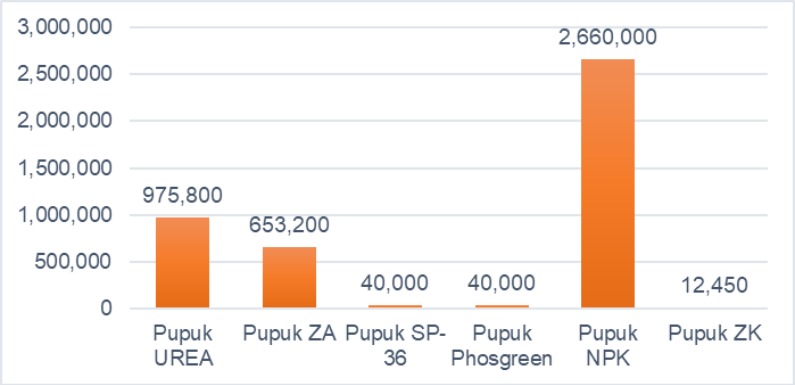

Figure 1. Annual Fertilizer Production (ton)

Based on picture 1, 1 shows that non-subsidy fertilizer products that are consumer demands are ZA fertilizer with 652.200 tons per year. ZA fertilizer is also called ammonium

sulfate or (H4)2SO4. This non-subsidy fertilizer has a higher price than subsidy fertilizer, but the contents are much more complete, so the harvest result and farmer's income are higher.

On production process and chemicals, PT. Petrokimia Gresik has an SVP Industry I, II, III that are responsible to the Production Director in the regulation of production factors production department I, IIA/IIB, IIIA/IIIB, responsible to SVP Industry I, II, and III in the regulation of production factors so that can achieve production targets in every unit. Production department IIIA is a department that is responsible for the regulation of production factors, and it has 3 parts units: the ZA II factory, the phosphoric Acid factory, the sulfuric acid factory, and Service Units (SU) utilities. ZA II factory is responsible for OP panels, OP Raction and filtration, OP Drying Cooling, OP Carbonation, OP Neutr and evaporation, and OP Centrifuge & Cond CT. in times of production process in ZA factory has some risks that are often found, so it causes some impacts on production process such as shortage of raw materials, decreasing production rate, damaging in raw materials handling tools, damaging in deducting system products, failure system of CO2 compressor also work accident. Based on the explanation, this research has implied risk management with the approach of Enterprise Risk Management (ERM) in ZA II factory Production Department IIIA PT. Petrokimia Gresik to identify and analyze risk and opportunity monitoring. This research titled "Operational Risk Management Analysis in PT. Petrokimia Gresik" hopes to help overcome the problems and also give a proposal for smoothing the company production process.

2. Methodology

This research is about Operational Risk Management Analysis using Enterprise Risk Management (ERM) in PT. Petrokimia Gresik purposively with considering production data non-subsidy ZA broad in the archipelago. PT. Petrokimia Gresik is placed in Jenderal Ahmad Yani St., Ngipik, Karangpoh, Gresik subdistrict, Gresik Regency, East Java. This research will be done from March to April 2024. The sampling method uses a non-probability sampling technique. The reason for selecting samples using non-probability sampling techniques is because of all the staff who can be interviewed; there are no more than 50 people, so all of them can be selected as samples. According to Sugiyono (2019), the non-probability sampling method is based on probability law, so it will not give the same chances for every element or population that is chosen to become a sample. The kind of sample that is used in this research is a census of all the staff in the Production Department IIIA in ZA II production. ZA II Staff production is 37 people consisting of 1 AVP, 4 ZA II supervisors, and 4 north foremen on OP. Reaction and Filtration are also OP. Drying and cooling, then 4 south foremen on OP. Carbonation, OP. Neutralization & Evaporation and also 24 executors.

The sampling method is using primary and secondary data. Primary data is based on live observation and interviews with the samples. Meanwhile, the secondary data is based on literature reviews such as reports, journals, and also old research. This data analysis method is a descriptive qualitative analysis of the context setting, using in-depth interviews by the company. The risk evaluation goes through 3 steps that are risk identification, risk analysis, and risk evaluation. The stages of reviewing the risk are:

1) Identification stage

The identification stage and risk validation are done to know and ensure the risks that the company is meeting. The identification process comprehensively covers all the context and business processes related to targets. The sampling method in the identification stage is through in-depth interviews, literature studies, company data, and questionnaires. The

validation stage and risk elimination are done by managing the results of in-depth interviews and questionnaires results.

2) Risk evaluation level stage

Some surveys were conducted using questionnaires to measure and map the risk level based on the impacts and the risk probability in the IIIA Department. The analysis method refers to the level and risk map. The probability skills and the impact can be seen in Table 1:

Table 1. Scale of risk probability

Scale	Information	Guidance
1	Very low (*Improbable*)	Assumption events never or never will happen
2	Low (*Remote*)	Very Rare happening events, with 1-2 times a year
3	Average (*Occasional*)	Rare happening events, with 1-3 times a month
4	High (*Probable*)	Often happening events, with once every week
5	Very high (*Frequent*)	Very often happening events, with once every week

After identifying the risk probability, the risk analysis is done based on the risk's impact or potential. The impact of the risk is measured using a 1-5 scale. The risk impact can be seen in Table 2 below.

Table 2. Scale of risk impact

Scale	Information	Guidance
1	Neglected (*Negligible*)	Risk impacts are very small and can be ignored
2	Small (*Marginal*)	Small risk impacts and can be handled by doing first aid because the damage is small and can be handled by waiting on a routine maintenance schedule
3	Average (*Serious*)	Average risk impacts damage can cause production delay
4	Big (*Critical*)	Big risk impacts and damage so it will need to be diverted to other
5	Large (*Catastrophic*)	Very high-risk impacts that can cause total damage

The level of probability determination and impacts using geometric mean formula. This calculation gives a better average mean because it can eliminate the data deviation from the respondents' evaluations in the questionnaires. Calculate the aggregate value from the individual evaluation using the geometric mean formula below.

$$GM = \sqrt[n]{(x_1)(x_2)\dots(x_n)}$$

Information:

GM : average measurement

n : number of samples

X : measurement data

This geometric mean is used to determine the value of the possible risk and the value of the risk impact. After knowing the whole probability and impacts, the next method is a Likert scale of 1-5 using the risk measurement method referring to the National Standardization Agency of Indonesia (2018). The Likert scale in this study was used to determine which risks fall into the low to high level of probability and impact categories. The risk measurement with scale 1 represents the probability level / smallest impacts; meanwhile, scale 5 represents probability / higher risk. The next stage is mapping the risk, referring to the Godfrey risk map (1996) (National Standardization Agency of Indonesia, 2018).

Risk level can be categorized into 4 categories. Category 1 is “Low” and is marked as green. Category 2 is “Medium” and is marked as yellow. The third category is “High” and is marked as orange. Finally, the last category is “Extreme”, which is marked in red. Axis x in the risk map shows the level of happening probability risk in a company. The level of probability is categorized into 5 stages. They are “Importable” (happening probability in a big situation), “Remote” (probably happen at some times), “Occasional” (can happen at some times), “Probable” (can happen in an extraordinary situation), and “Frequent” (estimated happens most times). Axis y in the risk map shows the impact risks that are happening in a company. The level of impact can be categorized into 4 stages, including: “Negligible”: unbothered operational company activities, financially undamaging, unbothered public interest or media activity; “Marginal”: bothering operational company activities, not or minimal financial damage and media; “Serious”: causing trouble for the operational company, financial loss, limited media reports; and “Critical”: causing small trouble in the operational company, multiple financial losses, media reports, anger and complaints from stakeholders and or clients, also criticism from society.

The data analysis method that is used is descriptive statistics to choose the accepting level and risk treatment. The last stage for risk evaluation is to evaluate operational risk to determine the acceptance risk, which refers to Godfrey acceptance risk (1996) (National Standardization of Indonesia, 2018). Meanwhile, the stage of activity formulation of risk treatment that has been set needs more continuous treatment through prevention action to reduce the risks. The collected data from company studies in the literature was analyzed using Flanagan and Norman risk response. The stages to establish the acceptance and risk actions are:

a. Risk acceptance

The analysis of risk acceptance is determined by the risk value obtained by multiplying the probability and risk impact. The risk criteria that need to be handled are unacceptable and undesirable risks.

Table 3. Risk Acceptance Level

Risk Acceptance	Level	Explanation
Unacceptable	Extreme	The risk consequences cannot be accepted and must be removed
Undesirable	High	The risk consequences are unexpected and should be avoided
Acceptable	Medium	The risk consequences can be accepted
Negligible	Low	The risk consequences can be fully accepted

b. Risk treatment

Risk treatment or risk mitigation is an action that reduces every probable risk. The risks that are happening cannot vanish but can be reduced, so the rest of the risk (residual risk) and risk response will be shown. The risk response is a reaction from what the company did in decision-making that is affected by every risk attitude from decisions can be seen in Table 4:

Table 4. Risk Treatment Level

Acceptance risk level	Level	Responses
Unacceptable	Extreme	Risk avoidance
Undesirable	High	Risk transfer
Acceptable	Medium	Risk reduction
Negligible	Low	Risk-retention

3. Results and Discussion

PT. Petrokimia is one of the biggest companies in Gresik, and it is located in Jl. Jend Ahmad Yani, Gresik 61119, East Java. This company makes fertilizer products, chemical products, and services such as construction, design, tools, and engineering. The fertilizer products that PT Petrokimia produces are divided into 2 kinds, which are subsidy fertilizer and non-subsidy. PT Petrokimia Gresik's vision is to “Highly competitively become a fertilizer manufacturer and chemical products, and its products are likeable by the consumers”. Its missions include: 1. Supporting national supplies for fertilizer to aim food self-sufficiency program; 2. Improving the business results to support operational activities and company business development; and 3. Spreads business potential to support the national chemical industry and actively support community development.

3.1. Risk Management Process

The risk management process is a systematic step that helps manage the risk systematically in a structured and controlled manner. This research used Enterprise Risk Management (ERM) based SNI ISO 31000:2018. The coverage of implementation for the risk management process systematically begins with communication and consultation, context setting, to be continued in risk evaluation. The risk evaluation stage consists of 3 phases: risk identification, risk analysis, and risk evaluation. The last stage of the risk management process is formulating the risk action.

3.1.1. Communication and Consultation

In this research, the authors communicated and consulted with the staff production department. III A ZA II fertilizer section consists of 1 AVP, 4 ZA II Supervisor, and 4 North foreman OP. Reaction and filtration and OP. Drying & Cooling, and then 4 South Foreman OP. Carbonation, OP. Neutralization & Evaporation and also 24 executors. Based on the communicating results and interviews from multiple risks that often happen in III A Production Department ZA II fertilizer production section in PT. Petrokimia Gresik.

3.1.2. Context Setting

This research began with communication, consultation, context setting, and risk evaluation. The integrated risk management execution needs a solid foundation that understands the internal and external company environment. The internal and external context settings in this research are:

a. The internal context refers to the process of striving for company achievements. This research contains three company factors: human resources, insistence on knowledge, skills, and work ethic from the ZA III A Production Department employees. The next internal process was related to the failure process or work procedures in the ZA III A production department of PT Petrokimia Gresik.

b. The external context is related to unexpected incidents in the company. Natural disasters (wildfire, landslide, and earthquake) and reputation decreases are part of the external environment.

The parties involved in this research are 1 AVP, 4 ZA II Supervisors, and 4 North Foreman OP. Reaction and filtration and OP. Drying and Cooling, and then 4 South Foreman OP. Carbonation, OP. Neutralization & Evaporation. Twenty-four executors are actively involved in every operational activity so that the ZA III A Production Department will have an understanding of operational activity and operational risk management.

3.2. Risk evaluation

The risk management book ISO 31000:2018 explains that risk evaluation is a structured approach to analyzing the risks in the targeted organization. The risk evaluation is divided into 3 separate phases: risk identification, risk analysis, and risk evaluation. The risk evaluation stages are:

3.3. Risk Identification

Risk identification is the first stage, which aims to find, describe, and portray the obstruction or increase the company's ability to reach the targets. The risks component is collected in operational risk, risk accidents, and consequences or potential impact in 18 kinds of operational risk happen in ZA II III A Production Department PT Petrokimia Gresik. Every risk that has been found will be analyzed and will be validated. The validation result counts from the total and percentage; more than 50% will be taken and evaluated; meanwhile, the risk that is below 50% will be eliminated. After the validation and elimination, the company will face 10 operational risks; the identification results can be seen in the table below.

Table 5. Identification of operational risk

Operational Risk Area	Risk Code	Operational Risk Identification	Risk Potential Impact
Human resources	R01	Communication mistakes by the employees	Inefficiency in times and forces
	R02	Work accidents	Uncomfortable work environment
	R03	Performance/low-productivities by the employees	Inefficiency in times and forces
	R04	Mistakes in operating production tools.	Production delay
Internal process	R05	Unsuitable product quality with the requested specification quality	The production target has not reached its maximum and consumer's request
	R06	ZA fertilizer that is not on target	Does not meet the consumer's request
	R07	Flawed storage of ZA fertilizer	Decreasing ZA fertilizer production value
	R08	Low availability of raw materials	Lack of ZA fertilizer productivity
	R09	Production reports failure	Inaccurate production results
	R10	Production tools disturbance	The disturbance of ZA fertilizer production process

The following is an explanation of operational risks based on literature studies and interviews with internal parties of the company:

1. Employee communication errors

The risk of work communication errors is in the form of unclear information or instructions, which causes confusion and misunderstanding. Based on the results of the interview, this risk occurs due to an uncomfortable work environment, which results in miscommunication with fellow employees. In addition, it also occurs due to employee errors (human error) who do not convey information clearly. Another cause of employee communication error is language differences between employees, which result in misunderstandings and technical problems such as unsent e-mails. The consequences faced are time and energy efficiency.

2. Work Accidents

The risk of work accidents is an event that occurs in the workplace that results in injury, illness, or even death to employees. This occurs due to human error, which includes negligence, fatigue, and lack of skills. The negligence in question is not paying attention to safety procedures and ignoring important steps that can cause accidents. Employees who are tired or stressed tend to be unfocused. This lack of skills means that the operator does not comply with the existing SOP. Slippery surfaces due to the production process during the filtration process and the pungent smell of ammonia during the production process can also be factors that cause accidents.

3. Low employee performance/productivity

The risk of low employee performance/productivity is a situation where an employee does not meet the expected standards in duties and responsibilities. This occurs due to a lack of motivation in the form of rewards and job satisfaction. Lack of employee training causes employees to feel unprepared to face employee challenges. In addition, there is an unbalanced workload and an unsupportive environment; tasks are given that are not in accordance with employee abilities, coupled with inadequate facilities and conflicts between employees, creating an unconducive atmosphere. The potential impact of this risk is Inefficiency of time and energy.

4. Errors in operating production equipment

This is due to the lack of knowledge of employees in the operations department in operating production equipment due to lack of training. Lack of concentration, fatigue, and operator experience in operating production equipment also cause operational errors. In addition, it can be caused by a lack of care and maintenance so that equipment damage occurs, and parameter settings or equipment configurations that do not comply with product specifications can cause errors in production. This risk will affect the quality of the product produced and production efficiency, which ultimately disrupts the production flow, leading to work accidents that have the potential to threaten work safety.

5. Product quality that does not comply with the requested quality specifications

This is caused by errors in product quality that do not comply, such as several delays in the delivery of raw materials, operator errors in operating production equipment and inadequate storage space, regarding operator errors in operating production equipment due to lack of employee training. Inadequate fertilizer product storage space is also a cause of product quality that does not comply. This is related to research from Haryani et al. (2018), which states that improper storage, such as high humidity or unstable temperatures, can

damage products, especially food and other sensitive products. This can result in decreased quality and even contamination.

6. The amount of ZA fertilizer production does not meet the target

This occurs due to several obstacles, including the availability and quality of raw materials, disruptions to production equipment during the production process, and environmental factors. Lack of availability of raw materials due to late delivery, lack of inventory management, and lack of quality raw materials cause disruptions in the production process.

7. The storage place for ZA fertilizer products is not ideal

This risk occurs because there is a leaky roof, so rainwater enters and hits the fertilizer it can, causing shrinkage in the fertilizer. Improper storage due to exposure to humidity, extreme temperatures, or sunlight can cause chemical reactions that damage fertilizer components, which can reduce fertility. Likewise, high-humidity ZA fertilizer can absorb moisture from the air, causing clumping and decreased quality. In addition, temperatures that are too high or too low can affect stability and quality. Poor ventilation can cause dust deposits that damage fertilizer.

8. Lack of availability of raw materials

The raw materials for ZA fertilizer itself are urea and ammonium sulfate. The lack of availability of raw materials occurs due to employee negligence in recording and checking the need for raw materials, which should be. So, the shortage of raw material requirements resulted in the amount of ZA fertilizer produced not meeting the target. In addition, the factor that caused the shortage of raw materials was the delay in the production of urea and ammonium sulfate from Production Department I. Production Department I is the department responsible for making and supplying raw materials for products produced by PT Petrokimia Gresik.

9. Failure of the production recording system

The failure of this production recording system caused the data entered to change from the actual condition. This happened because of human error/employee error in inputting data. In addition, there was a software failure or bug that could cause this error to cause data not to be recorded and lost.

10. Disruption of production equipment

This happened because the management and maintenance of production equipment had not checked or controlled the equipment. In addition, incorrect equipment settings can cause malfunctions or damage and improper use of production equipment due to a lack of operator training. Fatigue is also a factor that affects the disruption of production equipment because tired operators cannot monitor and operate the equipment effectively.

3.3.1. Risk Analysis

The measurement results of the probability can be seen on Figure 2.

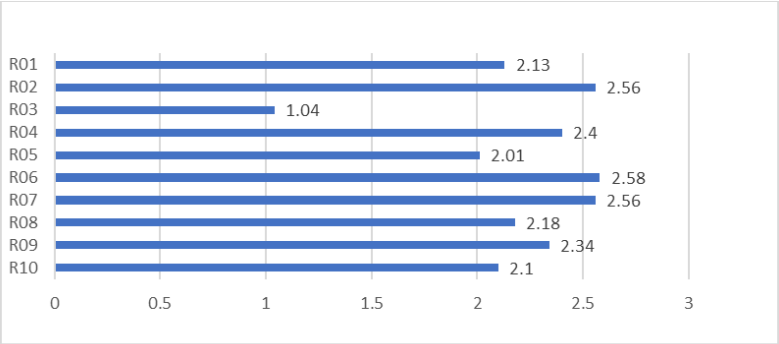

Figure 2. Risk Probability Level

The calculation result on risk level rarely happens in performance/ low employee productivity (R03), Communication mistakes by the employees (R01), risk mistakes in operating production tools (R04), risk unsuitable product quality with the requested specification quality (R05), lack of raw material availability risk (R08), failure of production reports systems risk (R09) and disturbance in production tools risk (R10). Based on the results of the risk probability level, Communication mistakes by the employees (R01) are a risk that often happens. This is because every week, the III A production department holds a discussion.

The risk that has the highest probability with the occasionally happen category is a work accident (R02), the risk of ZA fertilizer not being on target (R06), and Flawed storage of ZA fertilizer risk (R07). This happens because the policy made by Occupational Safety and Health set as much as possible to reduce work accidents in PT Petrokimia, especially in the III A Production Department. Other than that, the employees must be given directions about using complete APD and the dangers in the area.

The risk of ZA fertilizer production numbers not being on target (R06) is often present. This is due to delays in raw material delivery and operator mistakes in the production process, even though PT Petrokimia can fulfil consumers' requests.

The risk impact level is a tolerance level of tolerable loss by the company. The measurement of the risk impact can be seen in picture 3.

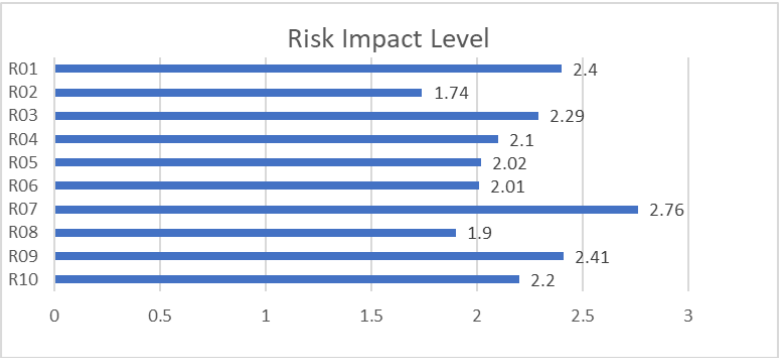

Figure 3. Risk Impact Level

The measurement shows that there is one risk that has a medium-level impact: Flawed storage of ZA fertilizer (R07) with a value of 2,76. The small risks are communication mistakes by the employees (R01), work accident risks (R02), performance / low employee productivity (R03), Mistakes in operating production tools risk (R04), Unsuitable product quality with the

requested specification quality risk (R05), ZA fertilizer that is not on target risk (R06), Low availability of raw materials risk (R08), Production reports failure (R09), and Production tools disturbance (R10). The results of the probability and impact level analysis of 10 risks can be seen in the table below.

Table 6. Operational risk Level

Risk Code	Operational Risk Identification	*P*	*I*	*P,I*	Risk Level
R01	Communication mistakes by the employees	2,13	2,4	2,2	*Low*
R02	Work accidents	2,56	1,74	3,2	*Medium*
R03	Performance / low-productivities by the employees	1,04	2,29	1,2	*Low*
R04	Mistakes in operating production tools.	2,4	2,1	2,2	*Low*
R05	Unsuitable product quality with the requested specification quality.	2,01	2,02	2,2	*Low*
R06	ZA fertilizer that is not on target	2,58	2,01	3,2	*Medium*
R07	Flawed storage of ZA fertilizer	2,56	2,76	3,3	*High*
R08	Low availability of raw materials	2,18	1,9	2,2	*Low*
R09	Production reports failure	2,34	2,41	2,2	*Low*
R10	Production tools disturbance	2,1	2	2,2	*Low*

The risk code placed in the box is defined as a merge value of impact and probability. Mapping the risk result in Figure 4:

Catastrophic	1					
Critical	2					
Serious	3			R07		
Marginal	4		R01, R04, R05, R08,R10	R02, R06		
Negligible	5	R03		R09		
		1	2	3	4	5
		Improbable	Remote	Occasional	Probable	Frequent

Figure 4. Risk mapping

Based on the figure above, the operational risk level in ZA III A production department PT Petrokimia Gresik. R01, R02, R03, R04, R05, R08, R09, and R10 are risks that have low levels placed in the colour green. This low level means it has a small probability and also small impacts.

3.3.2. Risk Evaluation

The risk evaluation is done to obtain information about risks that affect the company targets. This acceptance risk has been analyzed based on risk level, and the result analysis can be seen in Table 7.

Table 7. Risk Acceptance Level

Risk Code	Operational Risk Identification	Risk Level	Risk Acceptance
R07	Flawed storage of ZA fertilizer	*High*	*Undesirable*
R02	Work accidents	*Medium*	*Acceptable*
R06	ZA fertilizer that is not on target	*Medium*	*Acceptable*
R01	Communication mistakes by the employees	*Low*	*Negligible*
R02	Work accidents	*Low*	*Negligible*
R03	Performance/low-productivities by the employees	*Low*	*Negligible*
R04	Mistakes in operating production tools	*Low*	*Negligible*
R05	Unsuitable product quality with the requested specification quality	*Low*	*Negligible*
R08	Low availability of raw materials	*Low*	*Negligible*
R09	Production reports failure	*Low*	*Negligible*
R10	Production tools disturbance	*Low*	*Negligible*

The analysis of acceptance levels R01, R02, R03, R04, R05, R08, R09, and R10 shows that each is a high acceptance level or a risk that can be neglected. R02 and R06 is an acceptable risk level. One undesirable risk is R07.

3.4. Risk Treatment Effort

The risk management strategy set to manage the operational risk in ZA III A Production Department PT Petrokimia Gresik contains prevention and mitigation. The risk efforts activity on low and medium as a response to risk retention and risk reduction can be seen in Table 8

Table 8. Risk Treatment

Risk Code	Operational Risk Identification	Risk Acceptance	Risk Treatment	Treatment Effort
R02	Work accidents	*Acceptable*	*Reduction*	Minimizing with tighter safety officer in giving direction towards the dangers and make sure using the safety tools for the employees
R06	ZA fertilizer that is not on target	*Acceptable*	*Reduction*	Minimizing by checking a very raw materials stock and production tools
R01	Communication mistakes by the employees	*Negligible*	*Retention*	Doing a follow-up communication and combining verbal and nonverbal communication
R03	Performance / low-productivities by the employees	*Negligible*	*Retention*	Doing some training on for the employees
R04	Production tools disturbance	*Negligible*	*Retention*	Giving training and how to operate production tools
R05	Unsuitable product quality with the requested specification quality.	*Negligible*	*Retention*	Loos for the source of the trouble and fix the value
R09	Production reports failure	*Negligible*	*Retention*	Double-checking before doing the production process
R10	Production tools disturbance	*Negligible*	*Retention*	Announce the tools to management and production maintenance.

Based on the risk level analysis, Unsuitable product quality with the requested specification quality is at a high level. Because of that, risk treatment in a way to reduce the probability and risk impact by doing some area maintenance to renovate the savings storage and also clumping fertilizer will be consulted in the quality control section.

4. Conclusion

Based on the results from the analysis, there are 10 operational risks. Eight risks are on the low level, 2 on the medium level, and 1 on a high level. The risk treatment effort in this research is to accept or hold the risk so it will not increase and give more treatment on operational risks low and medium. Meanwhile, treatment efforts for high-level (high) risks are carried out with preventive strategies and mitigation strategies against risks to reduce the possibility and impact of these risks by consulting internal parties with maintenance parties to renovate the ZA fertilizer storage area in terms of building durability to the desired temperature humidity and fertilizers that clump are further consulted to the quality control department. This research is to help PT Petrokimia Gresik, especially the ZA fertilizer section, overcome problems that occur, even if they are small. Likewise, the next researcher is expected to analyze more deeply in addition to operational risk, namely from upstream to downstream, such as financial risk, strategic risk, market risk and others.

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