International Journal of Educational Management and Innovation
Vol.6, No.2, May 2025, pp. 202~218
e-ISSN: 2716-2338
DOI: 10.12928/ijemi.v6i2.11547

Risk Mitigation Through Integration COSO-Enterprise Risk Management and ISO 31000 in Higher Education

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Article Info
Article history
Received September 9, 2024
Revised May 20, 2025
Accepted June 2, 2025

Keywords: Risk assessment, Risk mitigation, ISO 31000, COSO-ERM, Higher education

ABSTRACT
Background. [Higher education institutions are given targets to meet key performance indicators (KPI) and to meet study program accreditation instruments. Several new requirements in study program accreditation make it difficult for universities to achieve their targets. Risk management can help organizations reduce risks that hinder them from achieving performance targets. This study aims to identify risks and provide risk assessments to produce mitigation proposals for the Department of Higher Education.
Materials. The risk management framework used in this study is integration through ISO 31000 with COSO-ERM, where risk management is carried out comprehensively internally and externally. This research involved experts from a university in Central Java designing risk impact parameters, assessing risks, and designing risk mitigation.
Results. The results of this study indicate that the residual risk assessment resulted in 8 low-category risks, 7 medium-category risks, 7 high-category risks, and 1 extreme-category risks. The risks given control (residual) increased by seven risks, and mitigation proposals must be provided. Then, 9 risks exceeded the tolerance limits set by top management, so recommendations for risk mitigation had to be proposed to achieve the Institution's performance targets.
Conclusion. Risk Management can be applied to universities to achieve the set goals or targets. The integration of COSO-ERM and ISO 31000 methods can complement the stages in risk management, especially in risk identification, risk analysis, and setting risk tolerance limits in risk assessment so that the risk mitigation designed is in line with the targets to be achieved by the university.

1. INTRODUCTION

The world of education faces various challenges in competition between universities, including university management, teaching and learning processes, and educational values (Kadarisman, 2017). The Ministry of National Education has established three pillars of the strategic plan, namely: (1) equalizing and expanding access to education, (2) improving quality, relevance, and competitiveness, and (3) strengthening governance, accountability, and public image (PIH, 2005). To increase competitiveness, universities must comply with

applicable policies and produce graduates with the required abilities and skills (Fernandes & Singh, 2022). This can be achieved if universities have international-level university standards to produce high-quality graduates, superior quality, and the ability to compete in the global market (Prasetyo, 2018).

Accreditation is critical to ensuring the quality of a study program or Institution (Duarte & Vardasca, 2023). However, there are still several study programs at a university, both private and state, that are still accredited "C" and "Good". One of the state universities in Indonesia has difficulty meeting several standards in study program accreditation (Adisaputera et al., 2018). This is due to the limitations of universities in meeting the standards or criteria in the accreditation instruments that have been set. In the education sector, accreditation is a tool for quality assurance that aims to make the learning system more accountable and transparent (Addas, 2020). Therefore, all parties are needed to achieve these targets. The quality assurance and accreditation system can ensure that minimum quality standards can be met (Dugarova et al., 2016). Universities have not yet established policies and quality standards to improve performance (Asad et al., 2023). Therefore, there is a need for performance-based instruments as quality standards to improve institutional performance.

Risk management can help organizations achieve the goals that are targeted for achievement (Sobel & Reding, 2004; Wang et al., 2010). Proper risk identification and mitigation can help organizations anticipate risks and capture opportunities in their business processes, helping organizations achieve their targets and objectives. Risk, in general, is an impact that occurs due to ongoing or future events (Ramadhan et al., 2020). An educational organization must have an excellent system to reduce risk because every educational organization certainly has risks that can interfere with achieving goals (Rosih et al., 2015). A risk management process is needed to reduce the occurrence of potential risks. Risk management is implementing general management to identify, measure, and determine the causes and impacts of an institution's uncertainty (Handayani et al., 2017). The implementation of risk management is permanently attached to standard rules or frameworks. Several previous studies on the application of enterprise risk management in higher education have been conducted, some of which use the COSO ERM framework approach (Barreto et al., 2023; Harjoni et al., 2024).

Barreto et al. (2023) stated that the COSO enterprise risk management system is partially by educational institutions, and risk management allows the internal control system to control the primary operations in educational institutions. Meanwhile, Harjoni et al. (2024) developed the COSO framework to help higher education organizations identify potential risks that may arise to determine various strategies to avoid, accept, or reduce these risks. A literature review of the application of enterprise risk management systems in higher education found that there

is still a need for a risk management framework design for more effective and accurate implementation, such as the latest COSO and ISO 31001 (Perera et al., 2020).

Another framework is the implementation of Enterprise Risk Management (ERM), which is carried out to realize organizational targets by controlling emerging risks (Sirait & Susanty, 2016). Based on the explanation of the two frameworks above, the COSO-ERM and ISO 31000 approaches have advantages and disadvantages. The COSO-ERM risk management framework integrates risk with the organization's strategic and performance objectives. At the same time, ISO 31000 ensures that the risk management process is carried out transparently and credibly and ensures that leaders involve stakeholders in providing feedback and experts for risk assessment (Kluwer, 2024). So, applying the COSO-ERM risk management framework by referring to the ISO 31000 standard can help organizations design the right strategy for managing risk. Based on this, this study uses two integrated frameworks: the COSO Standard of Enterprise Risk Management Integrated Framework and ISO 31000. Based on initial observations made at a state university in Central Java, nine criteria requirements still needed to be met in the accreditation standards that had been set. Therefore, there is still a need to improve the quality assurance system to improve the accreditation. The integration of the two frameworks is needed to implement risk management focused on the internal and external aspects of the Study Program based on the department's strategic objectives. An effective risk management process in an organization must begin with reviewing current risk conditions (Zou et al., 2010). So, risk identification refers to the failure to achieve strategic targets in the last period.

The proposed risk mitigation is carried out by providing risk treatment so that it can handle the problems that occur. Several previous studies have not described the risk assessment framework in higher education in detail; several studies have conducted assessments in general. Research on ISO 31000:2018 risk management has been conducted by measuring the level of organizational readiness or maturity level toward the awareness of universities in implementing risk management (Marliyah et al., 2023). Research that had previously been conducted focused on the readiness of universities to implement risk management and had not yet reached the stage of identifying and assessing risks. Other researchers use a risk management approach to improve the quality of education by designing strategies and mitigating the risks found (Sulastri & Nugraha, 2024). However, the mitigation has not been based on the priority of risks that need to be addressed based on the risk assessment. Therefore, this study was undertaken to provide a risk assessment framework in higher education by designing more specific risk impact assessment criteria.

2. METHODS

Data was collected from various sources in the Faculty of Engineering at a state university in Central Java. Primary data were obtained through interviews and brainstorming with several sources, while secondary data were in the form of Strategic Plan and Strategic Plan Evaluation documents. The initial stage involved integrating COSO-ERM with ISO 31000 (ISO, 2018). This framework integrates the more general shortcomings of ISO 31000, especially in identifying risks. Regarding COSO-ERM, objective targets are set first to identify risks based on organizational achievements. Risk assessment refers to the stages in ISO 31000, which are more detailed in analyzing risk levels and determining risk tolerances agreed upon by the organization. In addition, the involvement of experts and stakeholders plays a role in designing a risk assessment framework that refers to the requirements of leadership commitment in the ISO 31000 standard. The integration results are shown in Table 1.

Table 1. Comparison COSO -ERM and ISO 31000 (Gjerdrum & Peter, 2011)

COSO-ERM (A)	ISO 31000:2018 (B)	Integration Results
Internal Environment	Clause 6.3 Scope, context, criteria	A and B integrated: Context Identification
Objective Setting	-	Objective Setting
Event Identification	Clause 6.4.2 Risk Identification	A and B integrated: Risk Identification
Risk Assessment .	Clause 6.4.2 Risk Identification Clause 6.4.3 Risk Analysis determine the level of risk Clause 6.4.4 Risk Evaluation	A and B integrated: Risk Assessment
Risk Response	Clause 6.5 Risk Treatment	A and B integrated: Risk Treatment

2.1. Risk Identification

Risk identification is determined based on the achievement of unit or study program targets in the last period, especially unit targets that still need to achieve performance targets. Risk is determined through observation and interviews with study program managers and university faculty. Two types of risk are identified: inherent risk (risk that causes destructive potential) and control risk (risk after taking action to control risk) (Tuovila, 2024).

2.2. Risk Risk Analysis (Risk Assessment)

Risk assessment involves assessing the likelihood and impact of inherent and residual risk. Therefore, before conducting a risk assessment, it is necessary to determine a scale to measure probability or likelihood and impact.

Likelihood Criteria

Likelihood parameters consist of two assessments, namely quantitative and qualitative. Quantitative assessments are compiled based on the achievement of strategic targets, while qualitative assessments are based on how often the risk of the event occurs in the study program. Table 2 is the risk likelihood parameter used to assess inherent and residual risks.

Table 2. Parameter of Likelihood

Rating	Description	Qualitative	Quantitative	Probability
1	Very rarely	Events arise only under certain circumstances	Strategic plan achieved ≥ 100% within one year	< 20%
2	Seldom	Events can occur at the same time	Strategic plan achieved 90% - < 100% within 1 year	20% - < 50%
3	Moderate	Events should occur at the same time	The strategic plan was achieved ≥ 100% within one year but had the potential not to be achieved	50% - < 70%
4	Often occur	Events may arise in most situations	Strategic plan achieved 80% - < 90% within 1 year	70% - < 90%
5	Almost always happens	Events are expected to occur in most situations	Strategic plan achieved < 80% within one year	> 90% - < 100%

The occurrence level used as the basis for risk assessment is divided into five assessment scales from 1 to 5, with each assessment level category having been modified according to organizational needs conducted through a poll with faculty and study program managers (Watson, 2011).

Impact Criteria

This study designed the risk impact criteria and parameters through focus group discussions with top management and university risk experts. This was done because each organization has a different level of maturity, so the starting point for implementing risk is different. The risk impact criteria and parameters were also designed to prevent overly general impact assessments, which are not on target. Therefore, the risk impact criteria and parameters were intended to make it easier for top management to assess the risk impact in more detail.

2.3. Risk Evaluation and Control

Based on the likelihood and impact criteria previously set using a scale of 1 to 5, top management or study program managers will be asked to assess each identified risk, both for inherent risk and residual risk, as a follow-up to controlling risk. Risk control is carried out by setting a risk tolerance approved by top management and experts. The basis for determining tolerance is the organization's maturity level in implementing risk.

3. RESULTS AND DISCUSSION

3.1. Objective Setting

In objective setting or goal setting, the study program pays attention to four aspects of the goal, namely:

Strategic Objective

The target setting is based on the study program's vision and mission so that study program objectives emerge. The study program prepares strategic targets to achieve goals or targets. Strategic targets of the Institution and department were prepared for 2020 - 2024. In this period, the study program is focusing on improving targets that have not been achieved in the last period.

Operating Objective

Operational determination is carried out to utilize the resources owned by the study program effectively and efficiently. The study program will focus on meeting the accreditation assessment requirements. Lecturer resources are divided to carry out documentation and recapitulation to meet various accreditation requirements. Then, the activity plan will be carried out using the Study Program Strategic Plan and activities running in the previous year.

Reporting System

The study program reporting system is readily available and has an open nature between fellow lecturers. Meanwhile, the study program financial report has been available and compiled together to produce accurate fund transparency.

Compliance Objective

The study program's compliance with the Republic of Indonesia Government Regulation Number 4 of 2014 is an example regarding the implementation of higher education, the establishment of study programs, and the implementation of higher education.

3.2. Context Identification

Identifying internal and external contexts is carried out based on the strategic objectives of the Study Program in 2020-2024. This stage determines the category of internal context.

3.3. Risk Identification

This stage explores all inherent and residual potential risks in the business process of study programs in higher education. Initial risk identification is carried out by conducting interviews with top management.

3.4. Risk Assessment and Controlling

Risk assessment is carried out by referring to the likelihood and impact criteria set. The likelihood criteria are in Table 2. So, the next step is to design criteria to determine the impact. The impact criteria and parameters were developed based on discussions conducted by experts, with the design results shown in Table 3. This is the initial stage for determining the parameters of risk impact assessment.

Table 3. Risk Impact Parameters

Impact Criteria	Scale 1 (Very Low)	2 (Low)	3 (Medium)	4 (High)	5 (Very High)
Accreditation	Supports superior scores but does not meet the mandatory	It supports excellent scores and meets the mandatory requirements of	It supports an excellent score but needs to meet the mandatory requirements of very	Supporting good scores, fulfilling mandatory requirements, or significantly impacting	Supporting a good score or not meeting the mandatory requirements is good or has a

Impact Criteria	Scale 1 (Very Low)	2 (Low)	3 (Medium)	4 (High)	5 (Very High)
	superior requirements or has no effect on accreditation	excellence or has little impact on accreditation, but it needs to be addressed.	good or has a normal impact on accreditation, so it needs to be considered.	accreditation can harm the study program.	considerable influence on accreditation and is detrimental to the study program.
Strategic Objectives (compliance)	Targets are ≤ 1 year late or have no impact on strategic objectives	Targets are two years late or have little impact on strategic objectives but can be ignored	Targets are three years late or have a normal effect on strategic objectives and need to be considered	The target is four years late or significantly impacts strategic objectives and can harm the study program.	The target is ≥ 5 years late, significantly impacts strategic objectives, and is detrimental to the study program.
Key Performance Indicator (IKU) Achievement	The average IKU achievement is 90% - 100% or does not affect IKU achievement.	The average IKU achievement is 80%—90%, or it has a negligible effect on it but can be ignored.	The average IKU achievement is 70%—80%, or it has a normal effect on it and needs to be considered.	The average achievement of IKU is 60%—70%, or it can impact the accomplishment of IKU and be detrimental to the study program.	The average achievement of IKU <50% or has a considerable influence on the achievement of IKU and is very detrimental to the study program
Reputation	The number of students interested has dropped <5% or has no impact on reputation.	The number of student applicants drops by 5% - < 10% or has a negligible impact on reputation but needs to be addressed.	The number of students interested has dropped by 10% - less than 15% or has an average impact on reputation and needs to be considered.	The number of students interested has decreased by more than 15%, which has significantly impacted reputation and can be detrimental to the study program.	The number of students has remained the same, significantly impacting the reputation and detrimental to the study program.
Clustering of Higher Education Institutions	Achieving achievements at the international level or not affects the clustering of higher education institutions.	Producing achievements at the national level or having a small influence on the clustering of higher education institutions can be ignored.	Producing achievements at the provincial level or having a regular influence on the clustering of higher education institutions and needing to be considered	Producing achievements at the university level or having little influence on the clustering of higher education institutions can be detrimental to study programs.	There are no achievements, or it significantly influences the clustering of higher education institutions and is very detrimental to the Study Program.
College Ranking Achievement	International Cooperation > 50% or does not affect the achievement of University rankings.	International cooperation is already less than 50%, or it has a minor influence on achieving the university ranking, but this needs to be addressed.	National Cooperation (50%) and local cooperation (50%) are expected to influence achieving university rankings and need to be considered.	Local collaboration is more important than national collaboration and significantly influences university rankings, but it can also be detrimental to study programs.	All collaborations are still local or considerably influence the achievement of university rankings and are very detrimental to study programs.
Human Resources (Level of student satisfaction with lecturers)	Producing an excellent level of student satisfaction with lecturers or not affecting human resources	Produces a good level of student satisfaction with lecturers or has little impact on human resources	Producing a level of student satisfaction with lecturers that is sufficient or has a normal influence on human resources	This results in low student satisfaction with lecturers, which significantly impacts human resources and can harm the study program.	It produces a level of student satisfaction with lecturers that could be more satisfactory, significantly influences human resources, and is very detrimental to the study program.
Stakeholder Complaints (general user satisfaction)	Produces a graduate user satisfaction score of 3.5 – 4 or has no impact on stakeholder complaints	Produces a graduate user satisfaction score of 3 – 3.5 or has a small but negligible effect on complaints from interested parties	Produces a graduate user satisfaction score of 2.5 – 3 or has a normal impact on complaints from stakeholders and needs to be considered	Produces a graduate user satisfaction score of 2 – 2.5 or significantly impacts stakeholder complaints and can harm the study program.	Produces a graduate user satisfaction score < 2 or has a significant impact on complaints from stakeholders and can be detrimental to the study program.

The challenge in implementing the designed risk management framework is determining the risk impact parameters shown in Table 3 to be used by stakeholders to conduct risk

assessments. Organizations need experts in risk management and agreement from top management to create the risk impact parameter matrix. However, with increasing risk management experience in the future, matrix design and framework implementation will become easier.

The purpose of this control activity is to improve all risks. Risk assessment is conducted through focus group discussions using the likelihood and impact assessment criteria in Tables 2 and 3. Inherent risk is performed based on the risk conditions before control, or current risk is implemented. In contrast, residual risk assessment is assessed based on risk estimates after implementing the risk control system. Risk assessment is conducted by department managers, consisting of department heads, department secretaries, laboratory heads, and department quality assurance. Table 4 shows the inherent risk value given a risk level category.

Table 4. Results of Risk Assessment and Controlling.

Risk Code	**Inherent Risk**					**Residual Risk**				
	Risk Description	**Likelihood**	**Impact**	**Risk Level**	**Category**	**Control**	**Likelihood**	**Impact**	**Risk Level**	**Category**
R1	Unavailability of tutors for *soft skills activities* (Solidworks or Excel)	3	3	9	*Medium*	Excel training for lecturers	3	3	9	*Medium*
R2	The budget for soft skills activities was not realized according to the target	4	4	16	*High*	Drafting a Cost Budget	1	3	3	*Low*
R3	Lecturers lack opportunities for international research	4	4	16	*High*	Designing research targets with external funding sources in study	3	4	12	*High*
R4	Lecturers' research writing skills are still low	4	2	8	*Medium*	National-level research proposal writing training for lecturers	3	1	3	*Low*
R5	The standards for lecturers' scientific work that can be published in	5	1	5	*Medium*	There is not any	5	1	5	*Medium*

Risk Code	Inherent Risk					Residual Risk				
	Risk Description	Likelihood	Impact	Risk Level	Category	Control	Likelihood	Impact	Risk Level	Category
	reputable international journals have yet to be met.									
R6	The low number of lecturers involved in research through external funding	3	3	9	*Medium*	There is not any	3	3	9	*Medium*
R7	Difficulty in arranging student activity schedules involving alumni	2	3	6	*Medium*	Inviting alumna to PKKMB activities	2	2	4	*Low*
R8	Lack of alumna interest in participating in student activities organized by study programs and faculties	4	1	4	*Low*	Inviting alumna to PKKMB activities	2	2	4	*Low*
R9	Lack of completeness of laboratory-related data	3	3	9	*Medium*	Laboratory management training refers to the ISO/IEC 17025 standard	2	2	4	*Low*
R10	The low number of lecturers applying for Intellectual Property Rights (IPR)	5	5	25	*Extreme*	The training was held by the Institute for Research and Community Service (LPPM)	5	5	25	*Extreme*
R11	The number of lecturers with doctoral qualifications	1	4	4	*Medium*	Making plans for further study for lecturers, providing	1	2	2	*Low*

Risk Code	Inherent Risk					Residual Risk				
	Risk Description	Likelihood	Impact	Risk Level	Category	Control	Likelihood	Impact	Risk Level	Category
	is less than 25%					mentoring for lecturers who are going to get a doctorate				
R12	Lack of Lecturers with functional positions of Lecturer, Senior Lecturer, and Professor	1	3	3	*Low*	Monitoring lecturers' academic positions	1	3	3	*Low*
R13	Availability of Basic Science Courses and Mathematics Courses < 20 credits	1	3	3	*Low*	Attending the BKSTI (The Indonesian Industrial Engineering Higher Education Organizing Cooperation Agency) workshop	3	2	6	*Medium*
R14	Lack of investment in laboratory equipment	3	3	9	*Medium*	Submitting additional milling and 3D printing machine equipment	3	4	12	*High*
R15	There has been no K3 assessment of laboratory facilities and infrastructure	4	4	16	*High*	There is not any	4	4	16	*High*
R16	The number of research projects involving students is less than 75% of the research projects submitted.	5	3	15	*High*	Monitoring student involvement in lecturer research activities	1	2	2	*Low*
R17	The number of community service	4	3	12	*High*	Monitoring student involvement	5	2	10	*High*

Risk Code	Inherent Risk					Residual Risk				
	Risk Description	Likelihood	Impact	Risk Level	Category	Control	Likelihood	Impact	Risk Level	Category
	projects involving students is less than 75% of the number of community service projects submitted.					in lecturer community service activities				
R18	Students are not motivated to take part in competitions	3	2	6	*Medium*	Holding alumna-sharing activities related to competition experiences	4	4	16	*High*
R19	Lack of competence in participating in national-level competitions	3	3	9	*Medium*	Lecturer's guidance in preparing for the competition	3	4	12	*High*
R20	The student pass rate for certain subjects is still too low	3	2	6	*Medium*	Evaluation related to student pass rates in certain courses	1	4	4	*Medium*
R21	The length of the final assignment preparation process	4	3	12	*High*	Evaluation of the implementation of the Final Assignment, socialization of the Final Assignment timeline	3	2	6	*Medium*
R22	The study period for graduating students is too long	4	3	12	*High*	MBKM Program	2	4	8	*Medium*
R23	The number of courses developed based on research/PK	3	3	9	*Medium*	Monitoring activities related to research/PKM	5	2	10	*High*

Risk Code	Inherent Risk					Residual Risk				
	Risk Description	Likelihood	Impact	Risk Level	Category	Control	Likelihood	Impact	Risk Level	Category
	M is less than three courses									

3.5. Risk Evaluation

Based on Figure 1, the description of the results of the residual risk level that passes the tolerance line contains ten risks. Therefore, the ten risks must be given risk mitigation proposals, namely R3, R10, R14, R15, R17, R18, R19, and R23.

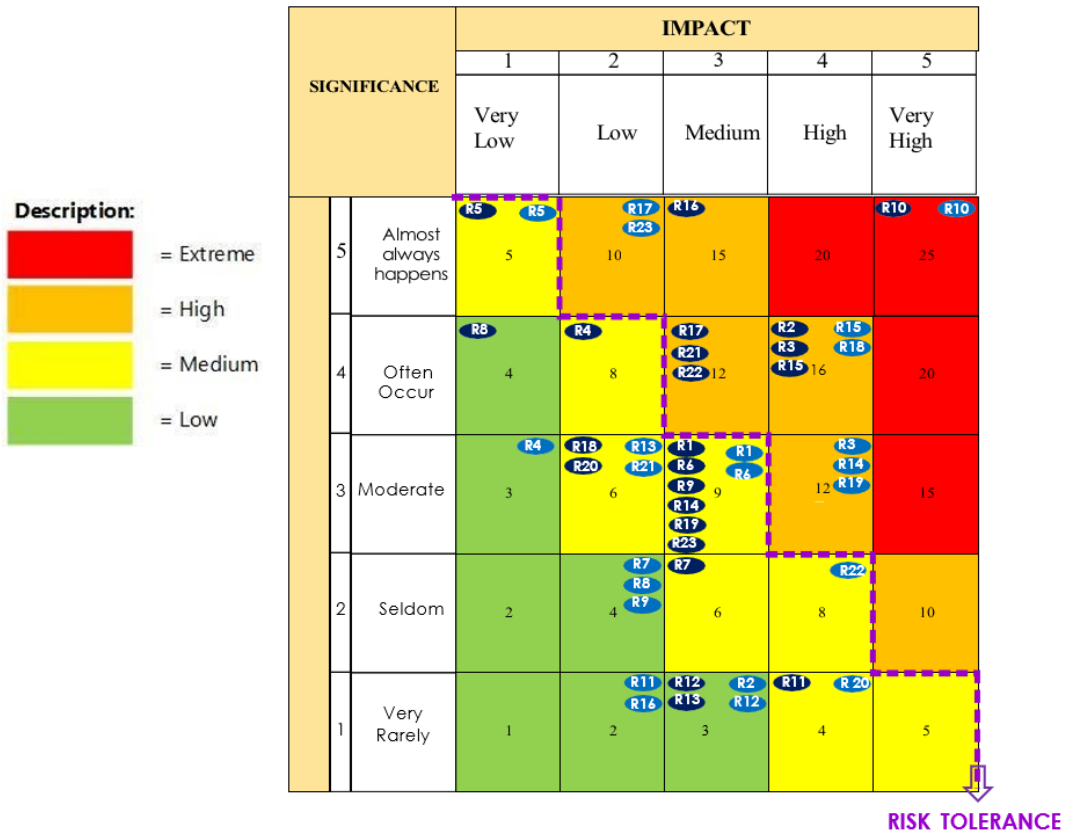

Figure 1. Risk Folder

Next, a comparison of inherent and residual risks is conducted. The results of this comparison are based on the controls that have been carried out. Table 5 shows the seven risks that experienced an increase in risk levels. These results indicate that the risk control measures are still not on target, so further mitigation is needed. Based on the comparison of inherent and residual risks, five risks have increased risk levels after control, namely R13, R14, R18, R19, and R23. The four risks are included in the risk category above the tolerance limit shown in Figure 1. Only one new risk is not included

in the risk category, namely risk R13. So, the total number of risks that need to be mitigated is nine risks.

Table 5. Comparison of Inherent and Residual Risk Increases

Risk Code	Inherent Risk Level	Residual Risk Level	Information
R13	*Low*	*Medium*	Go on
R14	*Medium*	*High*	Go on
R18	*Medium*	*High*	Go on
R19	*Medium*	*High*	Go on
R23	*Medium*	*High*	Go on

3.6. Risk Treatment and Mitigation

At this stage, it is carried out based on the results of the risk map and risk control that have been carried out previously. This risk handling is based on the location of the residual risk level below or above the risk tolerance line and the rise and fall of risk when control has been given. The description of risk handling is shown in Table 6. Risk mitigation is planned based on discussions with top management and other stakeholders.

Table 6. Risk Mitigation Plan

Risk Objective	Risk Code	Risk Description	Risk Treatment	Risk Mitigation
Reputable international publications detected by Scimago	R3	Lecturers lack opportunities for international research	*Reduce*	Assistance was provided in preparing proposals and research achievements, and lecturers participated in journal writing training activities.
Amount of IPR	R10	The low number of lecturers applying for IPR	*Reduce*	Participating in workshop activities from LPPM
Study Program Accreditation	R13	Availability of Basic Science Courses and Mathematics Courses < 20 credits	*Reduce*	The university has added four compulsory courses: Anatomy and Physiology, probability Theory, Introduction to Materials Science, and Differential Equations.
	R14	Lack of investment in laboratory equipment	*Reduce*	Budget submission for complete equipment laboratory (CNC machine procurement)
	R15	There has yet to be a K3 assessment of laboratory facilities and infrastructure.	*Reduce*	Increasing the number of SOPs (Laboratory SOP, SOP Use of tools, and SOPs Tool repair)
The number of community service activities involving students	R17	The number of community service projects involving students is less than 75% of the number of community	*Reduce*	Monitoring student involvement in lecturer service

Risk Objective	Risk Code	Risk Description	Risk Treatment	Risk Mitigation
		service projects submitted.		
Number of students achieving national-level achievements	R18	Students are not motivated to take part in competitions	*Reduce*	Sharing activities with alumna/students who have competition experience
	R19	Lack of competence in participating in national-level competitions	*Reduce*	Assistance should be provided in preparing for the competition, and information should be provided well before the competition.
Number of on-time graduates	R23	The number of courses developed based on research/PKM is less than three courses.	*Reduce*	Monitoring related to research/PKM

4. CONCLUSION

Impact assessment parameters have eight categories: accreditation, strategic objectives, IKU achievement, reputation, clustering of Higher Education Institutions, achievement of Higher Education rankings, human resources (student satisfaction level), and complaints from interested parties parameters (general user satisfaction). The impact category is carried out based on the average value of the impact scale ≥ 4.00. The likelihood assessment parameters consist of two assessments, namely quantitative and qualitative.

The results of risk identification obtained based on data on the failure to achieve the strategic targets of the department were 23 risks. Then, an inherent risk assessment was carried out before risk control. Furthermore, the residual risk assessment resulted in a risk level with a low category of 8 risks, medium of 7 risks, high of 7 risks, and extreme of 1 risks. It is known that the risks given control have decreased the residual risk level by 8, increased by 5, and constant risk level by 10.

9 risks that have exceeded the risk tolerance limit and experienced an increase in risk level are given recommendations for mitigation. This mitigation plan is expected to improve the monitoring and evaluation of the Industrial Engineering Department against the strategic target plan that has been prepared. This research contributes to higher education stakeholders' ability to use and develop assessment matrices (risk impact parameters). Academics can also develop a risk assessment framework in risk management research in higher education and institutions with similar business processes.

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