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Risk Management Analysis on the Achievement of Performance Indicators

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ABSTRACT

Control of non-communicable diseases, especially diabetes mellitus, is a priority in public health programs. A key performance indicator for this program is the "Percentage of people with diabetes mellitus whose blood sugar is controlled at the Health Center/FKTP." Despite existing policies and guidelines, a research gap remains in how risk management analysis on the achievement of performance indicators can identify and address barriers in primary healthcare. This study employs a descriptive qualitative approach with a case study on diabetes program implementation in first-level health facilities. To identify risks, a cause-and-effect analysis (fishbone diagram) maps factors across human resources, methods, materials, environment, measurement, technology, financing, and society. The analysis revealed several factors causing performance gaps: unreliable data reporting systems (notably hospitals unconnected to the ASIK application and health centers in signal-poor remote areas), budget cuts due to efficiency policies, disrupted monitoring and evaluation, and periodic system shutdowns for maintenance. Collectively, these challenges explain why the 2023 achievement was only 2.76% against a 58% target. This study contributes to public health management by showing how systematic risk management analysis on the achievement of performance indicators can reveal operational obstacles that traditional evaluations miss.

KEYWORDS *Risk Management; Diabetes Mellitus; Performance Indicators*

INTRODUCTION

The lifestyle and diet of the Indonesian people have undergone many changes from the past to the present. Lifestyle changes and unhealthy diets give rise to various health problems, one of which is diabetes mellitus (Andersen et al., 2022; Aprillia, 2020; Habib et al., 2022; Parizadeh & Arrieta, 2023; Taraszewska, 2021). According to data from the IDF Diabetes Atlas, the number of people with diabetes mellitus in Indonesia is increasing. In 2011, the number of people with diabetes mellitus was recorded as 7,292,100. This figure increased to 20,426,000 in 2024 and is projected to reach 28,584,000 in 2050. The number of deaths was recorded at 149,872 in 2011 and increased to 131,644 in 2024. Indonesia is among the 37 countries and regions in the Western Pacific Region. This country ranks fifth in the world with the highest number of diabetics aged 20–79 years.

Diabetes mellitus is a chronic disease that has the potential to cause various serious complications if not treated or controlled properly (Galicia-garcia et al., 2020; Lehrke & Marx, 2017; Widyaningsih & Ahsani, 2021). According to research by Paramita et al. (2021), all patients diagnosed with type 2 diabetes mellitus also suffer from additional medical conditions, such as coronary heart disease, high blood pressure, or heart valve disorders.

Diabetes not only impacts individual health, but also places a huge burden on health care systems and economies, especially in resource-constrained countries (Lim et al., 2021; Rosano et al., 2017; Yusnitaari et al., 2018). Research by Cho et al. (2018) concludes that recent

estimates of diabetes prevalence rates, diabetes-related deaths, and health care costs show a large social, economic, and health care burden on global health systems.

Lifestyle has a crucial role in controlling diabetes mellitus. Murtiningsih et al. (2019) concluded that a lifestyle including consumption of fast food, high-carbohydrate foods, and sugary drinks, combined with lack of physical activity and prolonged sitting, can increase a person's risk of developing Type 2 Diabetes Mellitus (DMT2).

Regular and consistent blood sugar control is the main key to preventing complications and improving the quality of life for sufferers. Research by Hartono et al. (2022) states that counseling in diabetes mellitus management can serve as a promotional effort by health workers, especially nurses, to improve patients' ability to perform self-care to maintain stable blood sugar levels. Thus, the risk of complications can be reduced while contributing to improved public health. However, many people with diabetes mellitus still have uncontrolled blood sugar. This can be seen from the 2023 government agency performance accountability report (LAKIP). The achievement of the performance indicator for the percentage of people with diabetes mellitus whose blood sugar is controlled at health centers/FKTP is 2.76%, compared to the target of 58%. Based on these conditions, it is important to analyze factors affecting the low level of blood sugar control in people with diabetes mellitus and to formulate appropriate intervention strategies to improve disease management success.

Government organizations have a responsibility to achieve predetermined performance targets as part of efforts to maintain accountability and improve public service effectiveness (Harangozó & Zilahy, 2015; Jargal, 2018; Lewis et al., 2020). To support these achievements, comprehensive planning and risk management of factors affecting performance results are systematically needed. However, in practice, achieving targets often faces various obstacles and challenges. Research by Liwang et al. (2024) states that government agencies set Key Performance Indicators (KPIs) as strategic goals that must be achieved. However, the possibility of failure or non-achievement exists due to various potential risks, necessitating risk management to anticipate and manage all possibilities that could negatively impact strategic goals.

Despite growing recognition of risk management's importance in public health administration, literature reveals a significant gap in its application to non-communicable disease control programs at primary care facilities. Previous research on diabetes management has predominantly focused on clinical effectiveness, patient adherence, and health education interventions, while largely overlooking organizational and operational risks that impede performance indicator achievement. Health system performance studies typically use outcome-based evaluations without systematically identifying underlying risk factors across multiple operational dimensions. Furthermore, while ISO 31000:2018 provides a comprehensive risk management framework applicable to various sectors, its integration into public health program evaluation—particularly for specific performance indicators like diabetes blood sugar control—remains underexplored in Indonesian healthcare contexts.

This research addresses this gap by applying a structured risk management approach based on ISO 31000:2018 standards to analyze multifaceted factors contributing to the significant underachievement of diabetes mellitus blood sugar control targets at health centers. The novelty of this study lies in three key aspects: First, methodological innovation—it employs fishbone diagram analysis to systematically map risk sources across eight dimensions

(human resources, methods, materials, environment, measurement, technology, financing, and society), offering a more comprehensive view than traditional program evaluations that focus on isolated factors. Second, contextual application—it specifically examines risks within the operational framework of primary healthcare facilities (FKTP), where most diabetes patients receive care, rather than hospital settings dominating existing diabetes management literature. Third, policy relevance—by linking risk identification directly to performance indicator achievement, the study provides actionable insights for health administrators seeking to improve accountability systems and resource allocation decisions.

Compared to existing research, this study differs fundamentally in its approach and scope. While studies such as Paramita et al. (2021) and Hartono et al. (2022) examined clinical outcomes and patient education interventions, they did not address systemic operational barriers to program implementation. Liwang et al. (2024) discussed risk management in government agencies broadly but did not apply it specifically to health performance indicators. This research fills this void by demonstrating how risk management methodologies can identify specific, addressable factors—from data reporting system failures to budget constraints—that collectively explain why well-designed diabetes programs fail to achieve their targets in practice.

Based on the background and problem formulation, the purpose of this study is to conduct an risk management analysis of the risk of non-achievement of performance indicators for the percentage of people with diabetes mellitus whose blood sugar is controlled at the health center/FKTP. The findings are expected to contribute to improved diabetes management program design, more effective resource allocation, and enhanced accountability in public health service delivery.

METHOD

This research was carried out at the Directorate of PTM located in JL. HR Rasuna Said No.4-9, Kuningan, South Jakarta. The research will be carried out for six months, starting from January to June 2025. This study employs descriptive qualitative research design with a case study approach, focusing on the implementation of diabetes mellitus control programs at first-level health facilities (FKTP). The methodological framework is grounded in ISO 31000:2018 risk management standards, which provide a systematic process for identifying, analyzing, evaluating, and treating risks within organizational contexts. The ISO 31000:2018 standard was selected as the theoretical foundation because it offers a universally applicable, principle-based approach to risk management that can be adapted to diverse organizational settings, including public health programs.

The types and sources of data used in this study consist of primary data obtained through interviews. Specifically, primary data were collected through in-depth, semi-structured interviews with key stakeholders involved in the diabetes mellitus control program implementation. Interviewees included program managers at the Directorate of PTM (n=3), data management officers responsible for the ASIK application system (n=2), and field coordinators overseeing monitoring and evaluation activities (n=2). Interview protocols were designed to elicit detailed information about risk identification, assessment practices, and challenges encountered in achieving performance indicators. Each interview session lasted approximately 45-60 minutes and was conducted in person at the Directorate offices. All

interviews were recorded with participant consent and subsequently transcribed verbatim for analysis. Meanwhile, secondary data is obtained from internal company documents, such as SK TIM, LAKIP. Secondary data sources included performance accountability reports (LAKIP) from 2021-2023, budget allocation documents, operational guidelines for diabetes management programs, technical reports on the ASIK application system, and monitoring and evaluation records from health centers. These documents provided essential context for understanding historical performance trends, resource constraints, and existing policy frameworks.

In-depth interview data collection techniques used to formulate mitigation strategies against identified risks. This research refers to the risk management process framework based on the ISO 31000:2018 standard. Data validity and reliability were ensured through triangulation—cross-checking interview findings against documentary evidence and validating interpretations with multiple informants. Member checking was conducted by sharing preliminary findings with key participants to verify accuracy and completeness of risk identification and assessment.

RESULT AND DISCUSSION

Identify Risks

In this chapter, the risk management assessment process begins with identification, analysis and evaluation, and then ends with the provision of recommendations for risk management. It is known that the business process in achieving activity performance indicators is planning, process and evaluation.

Every health program will inevitably be faced with various challenges and obstacles during its implementation, including efforts to achieve performance indicators for the percentage of people with diabetes mellitus who have controlled blood sugar levels. Uncertainty in the form of risks can have a negative impact on the achievement of the indicator's target if it is not managed appropriately. The first step in risk management is to identify various potential risks that may hinder the achievement of indicators. This risk identification aims to trace the root cause that has the potential to cause low blood sugar control achievements. This process is very important to recognize events based on the source of risk, so that targeted mitigation efforts can be carried out. The following is identification using the fishbone diagram of the Directorate of PTM:

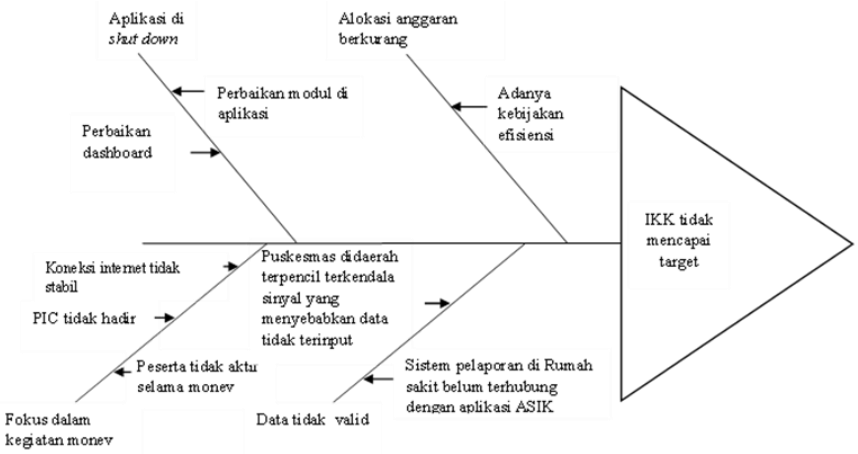

Figure 1. Identification using fishbone analysis

The following is an exploration of the causes of risk that occur in an effort to achieve indicators using the fishbone diagram method. Through the identification process, various factors causing risk were obtained along with their impact on the low achievement of these indicators. The results of this exploration are summarized in the table

In the business planning process, there is an occurrence of the risk of revising the budget allocation to be reduced where this can be caused by the existence of a budget efficiency policy. The impact is that the implementation of activities is not optimal. In the business process, there is a risk event that is invalid data, which is due to the existence of a reporting system in hospitals that has not been connected to the ASIK application, health centers in remote areas are constrained by signals that cause data not to be inputted, which has an impact on the target not being achieved. In the next business process, there is an occurrence of risk of focus in the monev activity being disrupted, it is caused by an unstable internet connection, participants are not active during the monev, the PIC is not present. This has an impact on the existence of information that is not conveyed.

In the business evaluation process, there is a risk of application shutdown. The cause is module repair in the application, dashboard repair, application maintenance. This has the impact of not being able to see data and withdrawing and entering data in the ASIK application.

Measuring Risk

After the potential risks at each stage of the business process of achieving indicators are successfully identified through a fishbone diagram, the next step is to measure the level of risk. This measurement is done using the Opportunity x Impact table.

Risk assessments are conducted based on the results of the interviews, then entered into the Opportunity x Impact table. The process of filling in the table begins with determining the value of the opportunity, then continues with an impact assessment. The value of the opportunity column is then multiplied by the value of the impact column, resulting in a total score that can be used as a reference to determine the level of significance of each risk.

The following table is presented Opportunity x Impact as a tool to measure the level of opportunity and impact of various risks contained in each stage of the business process of achieving performance indicators.

Table 1. Probability Assessment Criteria

Level of Possibility	Probability criteria		
	Non low Frequency Event		Low Frequency Event
	Probability	Number of frequencies	
Rare (1)	P ≤ 1%	< 2 times in the last 12 months	≤ events in the last 60 months
Minor Odds (2)	1% < P ≤10%	2 times to 5 times in the last 12 months	At least 1 incident in the last 60 months
Medium Odds (3)	10% < P ≤ 20%	6 to 9 times in the last 12 months	At least 1 incident in the last 36 months
Most Likely (4)	20% < P ≤ 50%	10 times to 12 times in the last 12 months	At least 1 incident in the last 24 months
Almost Sure to Happen (5)	P> 50%	> 12 times in the last 12 months	At least 1 incident in the last 12 months

Table 2. Impact Assessment Criteria Across Multiple Dimensions

Category risk	Impact Insignificant	Category risk	Impact Insignificant	Category risk	Impact Insignificant
Policy	1. Has no impact on the achievement of goals/objectives/ performance indicators in general	1. Interfering with the achievement of goals/objectives/ performance indicators	1. Significantly interferes with the achievement of goals/objectives/ performance indicators	1. A small percentage of the achievement of goals/objectives/ performance indicators fail to be implemented	1. Most of the achievement of goals/objectives/ performance indicators fail to be implemented
	2. Impact only one party	2. Impact on 2 parties	2. Impact on 3 parties	2. Impact on 4 parties	2. Impact on more than 4 parties
Reputation					
Fraud - Corruption	Financial Loss ≤1 - <5 Million	Financial Loss >5 Million- 10 Million	Financial Losses > 10 Million - 20 Million	Financial Losses > 20 Million - 100 Million	Financial Loss >100 Million
Legal	Civil <= 25 million	Civil >25 Million - 50 Million	1. Civil 50 million - 100 million	1. Criminal: ≤ 1 year or suspect/defendant: Officials under echelon II or equivalent officials	1. Criminal >1 year or suspect/defendant: Echelon II official or equivalent official
			2. Administrative: the defendant is an official under echelon II or equivalent officials	2. Civil > 100 million to 1 billion	2. Civil >1 Billion
				3. Administrative: the defendant is an echelon II official, or equivalent official	
Legal	1. Number of complaints orally (documentable)/ written to the organization ≤ 20	1. Number of complaints orally (documentable)/ written to the organization 21 – 30	1. Massive negative news on social media	1. Massive negative news on social media	1. Number of investors/grantees = 0
	2. Number of investors/grantees ≥ 5	2. Number of investors/grantees ≤ 4	2. Negative news in the local mass media	2. Negative news in the national mass media	2. Negative news in the international mass media
	3. Service user satisfaction level = Excellent	3. Service user satisfaction level = Good	3. Number of investors/grantees ≤ 3	3. Number of investors/grantees ≤ 2	
			4. Service user satisfaction level = Poor	4. Service user satisfaction level = Not Good	
Compliance	1. It does not have an impact on the	1. Interfering with the achievement of	1. Significantly interfere with the achievement of	1. Some of the objectives of the	1. Most of the objectives of the

Category risk	Impact	Category risk	Impact	Category risk	Impact
	Insignificant		**Insignificant**		**Insignificant**
	achievement of goals/activities in general	activity goals even if they are not significant	activity objectives.	activity failed to be implemented	activity fail to be implemented
	2. The impact can be handled at the stage of routine activities.	2. Threatening the efficiency and effectiveness of several aspects of activities.	2. Significantly disrupting service activities	2. Threatens the effective functioning of activities	2. Threatening the Implementation of Activities
Operational	Interruption of service for less than one working day	Service interruption for more than 1 working day to 2 working days	Service interruption of more than 2 working days to 3 working days	Service interruption for more than 3 working days to 5 working days	Service interruption for more than 5 working days

The calculated risks are then grouped according to their level of risk, with reference to the following formula

Magnitude of Risk = Probability x (Weight x Impact)

Table 3. Risk Assessment Matrix for Diabetes Mellitus Performance Indicators

No	Business Process	Risk occurrence	Source	Causes of risk	Impact	P	D	B	P x W x D
1	Planning	Budget allocation reduced	X1	The existence of a budget efficiency policy	The implementation of activities is not optimal	1	3	2	6
2	Process	Invalid data	X2	The reporting system in the hospital is not yet connected to the ASIK application	Target not met	5	5	1	25
			X3	Health centers in remote areas are constrained by signals that cause data not to be inputted		4	5	1,2	24
		Focus on monev activities is disrupted	X4	Unstable internet connection	The existence of information that is not conveyed	2	1	1	2
			X5	Participants are inactive during the monev		2	1	1	2
			X6	PIC is not present		2	1	1	2
3	Evaluation	Apps in *shut down*	X7	In-app module fixes	Unable to view data and perform data withdrawal and input in the ASIK application	1	2	1,5	3
			X8	Dashboard improvements		1	2	1,5	3
			X9	Application maintenance		1	2	1,5	3

From the table above, it is known that in the achievement of activity performance indicators, there are 4 risk events, and 9 risk causes. The risk causes are then entered into the risk map shown in the following image

Matriks 5 x 5			Dampak				
			Tdk Signifikan	Kecil	Sedang	Besar	Katastropik
			1	2	3	4	5
Kemungkinan	Hampir Pasti Terjadi	5	8	14	17	23	X2 25
	Kemungkinan Besar	4	5	10	16	19	X3 24
	Kemungkinan Sedang	3	4	9	13	18	22
	Kemungkinan Kecil	2	X6 X4 2 X5	7	11	15	21
	Jarang	1	1	X9 X7 3 X8	6 X1	12	20

Figure 2. Risk Heat Map Matrix for Diabetes Mellitus Performance Indicators

After the risk evaluation (Figure 2), the analysis identifies that two risk sources fall within the critical red zone (very high to high risk) requiring immediate attention: X2 (hospital reporting system disconnection from ASIK application) with a risk score of 25, and X3 (signal constraints in remote health centers) with a risk score of 24. These two factors are the primary drivers of invalid data, which directly undermines the accuracy and completeness of performance monitoring.

The heat map visualization employs a color-coded system where red indicates very high-level risk requiring urgent intervention, dark yellow indicates high-level risk needing prioritized attention, yellow represents medium-level risk for regular monitoring, green denotes low-level risk that can be managed through routine procedures, and blue signifies very low-level risk requiring minimal oversight. This prioritization framework enables resource-constrained health administrations to focus improvement efforts where they will yield the greatest impact on performance indicator achievement.

Comparative analysis with risk management literature reveals that the identified risk profile aligns with broader patterns observed in digital health system implementations. Studies on health information system adoption in low- and middle-income countries consistently identify data quality issues, infrastructure gaps, and interoperability challenges as primary barriers to effective performance monitoring (Adebesin et al., 2013; Kiberu et al., 2014). However, this study extends existing knowledge by quantifying the relative severity of these risks within the specific context of diabetes performance indicators, demonstrating that data system failures (X2, X3) pose substantially higher risks than procedural or maintenance-related issues.

Risk Handling or Mitigation

After risk measurement is carried out using a heat map matrix, the next stage is to handle the risks that have been identified by providing solutions or improvement efforts to

existing problems. This handling process is carried out in stages, starting from the highest to the lowest severity risk. The treatment plan is prepared based on each variable or risk factor that affects the achievement of blood sugar control in people with diabetes mellitus.

Table 4. Risk Mitigation Strategies for Priority Risks

Source	Risk Level	Handling of risks
X2	Very high	Integrate reporting data with other parties
X3	Tall	Create a system for data reporting to be done offline

CONCLUSION

This study assesses the risks associated with the non-achievement of performance indicators for blood sugar control among individuals with diabetes mellitus at health centers. The findings reveal that various factors, including budget constraints, data inaccuracies, and implementation challenges, significantly hinder the achievement of health targets. Effective risk management strategies, such as integrating data reporting systems and creating offline reporting mechanisms, are essential to enhance the effectiveness of diabetes management programs. By addressing these risks, health authorities can improve patient outcomes and ensure better control of diabetes mellitus within the population. Future research should focus on developing comprehensive intervention strategies to further mitigate identified risks and enhance overall public health performance.

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