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Key Success Factors of Risk Management in the Procurement Process to Support the Domestic Product Utilization Enhancement Program

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Abstract: The domestic product usage policy can be strategically implemented through government procurement activities. In order to guarantee that every step of the procurement process is transparent, accountable, and in accordance with the direction of the domestic product usage policy, risk management is an essential component. The objective of this research is to determine and rank various key success factors (KSFs) for risk management in the procurement process in government institutions. This research was conducted in two stages, namely: (1) literature review, to identify the suitable KSF in a government context, and (2) Analytic Hierarchy Process (AHP), to prioritize KSFs based on the highest weight value. This study found that the priorities of KSFs for risk management in the procurement process to support the domestic product utilization enhancement program are (1) management commitment, (2) risk-aware culture, (3) business process integration, (4) adequate resources, (5) effective communication, and (6) training.

Keywords: key success factor, risk management, procurement, domestic product.

INTRODUCTION

One of the strategic steps to create national economic resilience is through policies that encourage the use of local products in various sectors, including government procurement of goods and services. This policy has long been implemented by many countries, such as India, Brazil, and the United States. For example, the Indian government has had a “Make in India” program since 2014 whose main goal is to make India a global manufacturing hub (Sinkuq et al., 2023). One of the policies of the “Make in India” program is prioritizing local components in government procurement. The United States government also has a “buy American” procurement policy that aims to use domestic components in public projects (Brammer & Walker, 2011). The American government has also made reports on various investment policies in various countries. The report states that many ASEAN countries encourage investment by requiring products sold to have domestic content. For example, the Thai

government has considered a domestic preference approach in the government procurement process. In March 2021, Thailand announced the "Made in Thailand" initiative, which directs government agencies to purchase at least 60 percent of their goods from local manufacturers.

In Indonesia, the use of domestic products has been supported by a strong regulatory framework. One of them is Presidential Instruction Number 2 of 2022 concerning the domestic product utilization enhancement program (Program Peningkatan Penggunaan Produk Dalam Negeri / P3DN) through the implementation of government procurement of goods and services. In addition, in accordance with Presidential Decree Number 24 of 2018, the President has formed a special team to increase the use of domestic products. In general, The P3DN program aims to strengthen national economic independence by reducing dependence on imported products. This program is expected to strengthen the national industrial structure by increasing the use of capital goods, raw materials, components, technology, and human resources from within the country (Ministry of Industry of the Republic of Indonesia, 2020).

Research Problem

The Indonesian government has committed to continue to encourage the use of domestic products in every project funded by Ministries, Institutions, Regional Governments, or other entities that use public funds. Although the policy of using domestic products has been in place for a long time, Indonesia's import value has not experienced a significant decline as stated in Law of the Republic of Indonesia Number 3 of 2014.

Government procurement of goods and services has a crucial role in supporting the development of a country (Darmada, 2022). More specifically, government procurement of goods and services also plays a vital role as an instrument to realize the P3DN policy, especially through the obligation to prioritize local products that have a high domestic component level (TKDN). The large budget and frequency of procurement of goods and services that often occur in the Government have a significant impact on the potential risk of deviation during the procurement process. In line with this, Government Regulation of the Republic of Indonesia Number 60 of 2008 concerning the Government Internal Control System (SPIP) in Article 13 paragraph 1 explains that the heads of government agencies are required to conduct risk assessments. In other words, the government also needs to implement risk management in the procurement process of goods and services so that potential obstacles that may arise in the procurement process can be managed properly, including paying attention to the use of domestic products.

Risk management in the procurement process is an important aspect to ensure that all stages from planning needs, selecting suppliers, to implementing contracts run transparently, accountably, and in line with P3DN policies. When risks are not managed systematically, the potential for failure to support the use of domestic products increases. Risks can include non-conformity of product specifications, late delivery, inability of local suppliers to meet demand, and potential deviations in the auction process. Therefore, risk identification and control are key to achieving P3DN goals.

Studies related to risk management in the government procurement process have been studied by several researchers. These studies include Yuhanah & Rohana (2021) which examined the risk of e-purchasing in the procurement process of goods and services at the Bandung State Polytechnic; Sihotang (2022) which identified various risks in the procurement process of goods at the Metrology, Climatology & Geophysics Agency (BMKG); Setiyarto & Rapiyadi (2022) which examined risk management in the planning of procurement of goods and services at the Ministry of Energy and Mineral Resources; Mamesah et al. (2022) which analyzed the risks and mitigation of construction service procurement in South Minahasa Regency; Maulana et al. (2021) which assessed the risks in the procurement of goods and services at the Public Housing and Settlement Area Service of Tolitoli Regency; and Wulandari

(2013) which examined risk management in the procurement system of goods and services at Gadjah Mada University (UGM). Although there have been many previous studies studying risk management in the implementation of government procurement of goods and services. To the author's knowledge, there has been no research that specifically discusses the key success factors (KSFs) of risk management in the procurement process in order to support the P3DN Program.

Research Objective

Based on the research problem, this study aims to explore more deeply the key factors that determine the success of risk management in the procurement process of goods in government institution. This study is important as a basis for formulating procurement strategies that are not only in accordance with the principles of efficiency and effectiveness, but also in favor of domestic products. The results of the study are expected to be a real contribution in strengthening the governance of procurement in the public sector that supports national strategic programs such as P3DN

METHODS

Research Object

This study examines the KSF of risk management in the procurement process in order to support the P3DN program. The object of this study was National Research and Innovation Agency (BRIN). BRIN as the only research institution owned by the Indonesian government has a strategic role in supporting the implementation of P3DN. This is because the need for laboratory equipment, research materials, and supporting infrastructure often requires the procurement of specific and high-tech goods. In these conditions, the challenges in procurement based on domestic products become increasingly complex. Therefore, strengthening risk management is crucial to anticipate and manage various potential obstacles in the procurement process. In addition, it is applied to ensure that all procurement activities remain in line with the objectives of the P3DN program.

BRIN was chosen as the object of this research because BRIN has committed to implementing risk management with the stipulation of the Decree of the Head of BRIN Number 208/I/HK/2022 dated June 28, 2022 concerning guidelines for risk management in the BRIN Environment. In addition, this institution has also committed to implementing the P3DN program with the establishment of the P3DN team in BRIN.

In 2024 and 2025, BRIN managed a goods expenditure budget of Rp2.946.303.810.000,00, and a capital expenditure budget of Rp2.846.444.645.000,00. This budget can be optimally utilized as a market opportunity for domestic products through the procurement of goods and services mechanism. The BRIN's expenditure budget for the two years are presented in Table 1.

Tabel 1. BRIN Expenditure Budget 2024 and 2025

No.	Items	2024	2025
1	Employee Expenditure	2.963.774.429.000	2.995.814.941.000
2	Goods Expenditure	1.353.799.713.000	1.423.192.494.000
3	Capital Expenditure	1.592.504.097.000	1.423.252.151.000
	Total	5.910.078.239.000	5.842.259.586.000

Source: Data OM-SPAN for January 2025 and 2024

Based on data on the lkpp.bigbox.co.id site, the amount of domestic product procurement planning in 2024 at BRIN reached IDR1.615.553.494.190,00 or equivalent to 54,83% of the goods and capital expenditure budget of IDR2.946.303.810.000,00. The realization of the implementation of domestic products was recorded at IDR890.801.625.268,00 or 55,14% of

the domestic product planning value. Meanwhile, in January 2025, the domestic product planning value at BRIN was only IDR334.912.324.354,00, which is still very small compared to the goods and capital expenditure budget of IDR2.846.444.645.000,00, or only 11,77%. This condition is a concern for BRIN to further increase the procurement of domestic products to support the P3DN program. For this reason, BRIN needs to implement comprehensive risk management in the procurement process to identify, manage, and reduce potential risks that can hinder the achievement of domestic product procurement targets. This step is important to ensure that the implementation of the P3DN program runs efficiently, transparently, and in accordance with applicable regulations, so that it can increase contributions to the national economy.

Research Design

The design of this study can be seen in Figure 1. The first stage is the identification of key success factors. The purpose of the first stage is to obtain the KSFs of risk management that are suitable for the procurement process in government research institutions in order to support the P3DN program. To achieve this goal, this study conducted a literature study that discussed the key success factors of risk management. The results of the literature study identified six KSFs. A more detailed explanation of these factors is discussed in the results section of this study.

After the first stage has been completed, the next stage is to weight the KSFs. The weighting method is carried out using the Analytic Hierarchy Process (AHP). AHP is a structured method that combines mathematical and psychological principles to solve complex decision-making problems through a systematic hierarchical framework, where criteria are determined first, then alternatives are evaluated based on pairwise comparisons considering the principles of reciprocity, homogeneity, dependence, and expectations to determine the priority of each criterion (Tavana et al., 2023). We use AHP because this method is believed to be a reliable, rigorous, and robust technique for obtaining and measuring subjective assessments in multi-criteria decision-making (Tavana et al., 2023). In addition, this method has also been proven to be recognized in determining the weight of KSFs in various fields, such as Zaid et al., (2025), AbuMoeilak et al. (2023), and Oluleye et al., (2021). In addition, the advantage of AHP is that it does not require a large number of respondents. In this context, this is in accordance with the characteristics of the research object which only involves a few respondents.

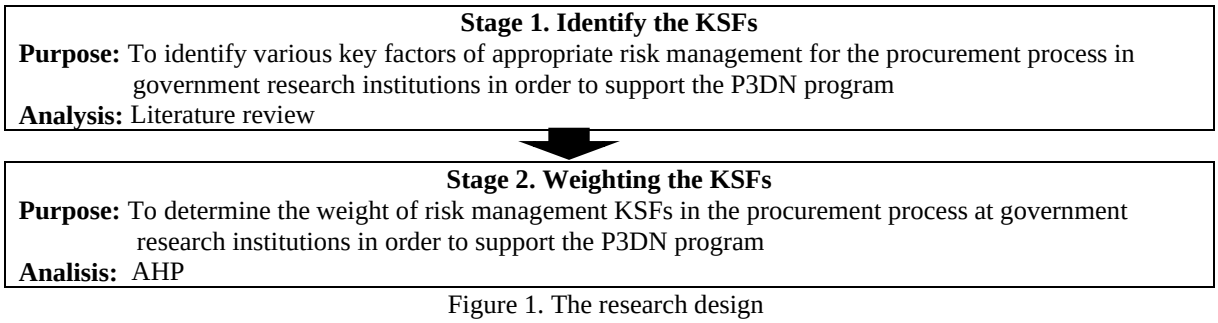


Figure 1. The research design

The AHP process in this study consists of three steps. The first step is data collection. In this study, a paired comparison questionnaire was used in the data collection process. The questionnaire was filled out by 6 respondents, consisting of 1 employee from the P3DN team, 1 employee from the procurement proposer, 1 employee from the commitment-making officer (PPK), 1 employee from the selection working group, 1 employee from the government internal supervisory apparatus (APIP), and 1 employee from the risk owner. They are actors in the procurement risk management process at BRIN. Because the respondents are actors in this

process, they should be able to understand the KSFs for procurement risk management to improve the P3DN program at BRIN. The paired comparison questionnaire consists of two parts. The first part contains the respondent's profile. The second part contains questions that compare two KSFs. Based on the six KSFs that have been previously identified, the questionnaire asked 15 paired comparison questions to each respondent. The paired comparison scale used is a 9-point importance scale with details as in Table 2.

Table 2. Importance scale of AHP

Intensity of Importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective
3	Moderate important	Experience and judgement slightly favour one activity over another
5	Strong importance	Experience and judgement strongly favour one activity over another
7	Very strong or demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
2,4,6,8	Intermediate values	When compromise is needed
Reciprocals of above	If activity *i* has one of the above nonzero numbers assigned to it when compared with activity *j* , then *j* has the reciprocal value when compared with *i.*	A logical assumption

Source: Saaty (2008)

After the data is collected, the next step is data analysis. In this study, data analysis was carried out using Expert Choice 11 software. This analysis will show the weight for each KSFs. The last step is the calculation of the inconsistency ratio. The purpose of this step is to determine the level of inconsistency of the data obtained. If the inconsistency ratio shows above 10 percent, the second stage of this study must be repeated (Saaty, 2008).

RESULTS AND DISCUSSION

Results

The KSFs of Risk Management in the Procurement Process to Support P3DN

Management Commitment. Management commitment is a fundamental pillar in the successful implementation of risk management (Zhao et al., 2013). The literature has explained that the effectiveness of risk management is closely related to the level of involvement and support from top management (Oliveira et al., 2018). In general, management commitment can be interpreted as the attitude and behavior of leaders supporting the implementation of risk management and becoming role models in the workplace (Alazzabi et al., 2023). This definition explains that management commitment can be manifested in various forms, such as the formation of a risk-aware culture, integration of risk management into strategic planning, and consistent resource allocation (Yaraghi & Langhe 2011; Phu 2017). When management is committed, they will ensure that risk management is not treated as a side activity but as an important part of the organization's business process that will also influence them in decision making (Yaraghi & Langhe 2011). Therefore, management commitment is an internal driving force for the implementation of risk management in the organization (Oliveira et al., 2018).

Management commitment is crucial in risk management because it plays a direct role in strategic decision-making (Zhao et al., 2013). The attitudes and behaviors of leaders shape the organization’s overall approach to risk. When top management demonstrates a proactive attitude toward risk management, such as participating in risk assessments, supporting risk

management policies, and ensuring that risk considerations are factored into all major decisions, it can set a clear expectation that risk management is a priority for everyone in the organization (Zhao et al. 2013). This top-down approach helps create a unified focus on risk management, ensuring that it is embedded in the organization's culture and not simply viewed as a compliance exercise (Phu, 2017).

Management commitment is essential to ensuring the availability of adequate resources dedicated to the effective implementation of risk management activities (Yaraghi & Langhe 2011). Risk management requires not only financial investment but also time, expertise, and technology. Committed leadership is more likely to allocate the resources necessary to develop a robust risk management framework, provide training to staff, and implement an effective risk monitoring system. Without adequate resources, risk management efforts can be shallow, leaving the organization vulnerable to unforeseen risks. The literature highlights that when management prioritizes resource allocation for risk management, it significantly improves the organization's ability to effectively identify, assess, and mitigate risks (Alazzabi et al., 2023).

Management commitment plays a critical role in fostering resilience in organizations (Alijoyo & Munawar, 2019). The dynamic nature of risks ranging from operational and financial to strategic and reputational requires continuous attention and adaptation (Zhao et al., 2013). Committed management ensures that risk management practices are not static but evolve in response to changing circumstances (Phu, 2017). This includes periodically reviewing and updating risk management policies, learning from past incidents, and fostering a culture of continuous improvement. The literature suggests that organizations with strong management commitment to risk management are better equipped to anticipate, respond to, and recover from risks, thereby enhancing their overall resilience and long-term sustainability (Alazzabi et al., 2023).

Risk-Aware Culture. A risk-aware culture is a critical element for the implementation of effective risk management in an organization (Phu, 2017). A risk-aware culture refers to shared values, beliefs, knowledge, and behaviors related to risk across an organization (Oliveira et al., 2018). When an organization fosters a strong risk-aware culture, it ensures that risk awareness and risk management practices are embedded in the daily activities of all employees, from top executives to frontline staff (Akram & Pilbeam, 2015). Embedding this risk management culture means that every decision, action, and process within the organization is approached with a conscious consideration of potential risks, which significantly enhances the organization's ability to effectively manage and mitigate those risks (Zhao et al., 2013).

The importance of a strong risk-aware culture lies in its ability to influence individual and collective behaviors related to risk-taking and risk avoidance (Oliveira et al., 2018). In organizations with a strong risk-aware culture, employees tend to feel responsible for identifying and addressing risks, rather than viewing risk management as solely the responsibility of a designated department (Akram & Pilbeam, 2015). This widespread sense of ownership and accountability is important because it ensures that risks are identified and managed at the earliest possible stage, reducing the likelihood of adverse outcomes. Organizations with a strong risk-aware culture tend to experience fewer surprises and perform better in risk management, as employees at all levels are vigilant and proactive in their approach to risk (Akram & Pilbeam, 2015).

A strong risk-aware culture supports effective communication and transparency around risk-related issues (Zhao et al., 2013). By creating a risk-aware culture, employees feel empowered to speak up about potential risks without fear of retaliation, and there are clear and open lines of communication regarding risk management throughout the organization (Akram & Pilbeam, 2015). This transparency is essential to ensure that information about risks flows freely and that decisions are made with a full understanding of the potential risks involved (Akram & Pilbeam, 2015). The literature suggests that in organizations with a strong risk-aware

culture, this openness leads to better risk identification, more informed decision-making, and a more coordinated response to risk events (Akram and Pilbeam, 2015).

Establishing a strong risk-aware culture contributes to organizational resilience by enabling continuous learning and adaptation (Akram & Pilbeam 2015). Organizations with a strong risk-aware culture not only focus on risk prevention and mitigation but also learn from past experiences to improve future risk management practices. This includes conducting a comprehensive review of risk events, sharing lessons learned across the organization, and continually refining risk management strategies (Akram & Pilbeam 2015). The literature emphasizes that a commitment to learning and improvement is a key factor in building organizational resilience, as it ensures that the organization is better prepared to handle known and emerging risks over time (Akram & Pilbeam, 2015). Therefore, a risk-aware culture must be present in every employee and at all levels of the organization, and embedded in the organizational culture (Phu, 2017).

Effective Communication. Effective communication is a key factor in the successful implementation of risk management in an organization (Oliveira et al., 2018). Communication is the backbone of risk management, enabling the flow of accurate and timely information across all levels of the organization (Zhao et al., 2013). In other words, when communication channels are clear, open, and well-established, communication ensures that risk-related information such as potential threats, risk assessments, and mitigation strategies reach the right people at the right time. This timeliness is essential to enable rapid decision-making and appropriate risk responses, minimizing the potential impact of identified risks (Zhao et al. 2013).

Effective communication is essential to ensure that all stakeholders have an aligned understanding and approach to risk management (Yaraghi & Langhe 2011). This alignment includes internal stakeholders, such as employees and management, as well as external stakeholders, such as suppliers, customers, and regulatory bodies (Yaraghi & Langhe 2011). When risk-related information is communicated clearly and consistently, it helps build a shared understanding of the risks the organization faces and the strategies implemented to manage them (Yaraghi & Langhe 2011). The literature emphasizes that this shared understanding is essential for coordinated action, reducing the likelihood of miscommunication, confusion, or conflicting responses to risk events (Zhao et al. 2013).

Effective communication will create relevant and reliable risk information in organizational risk management (Phu, 2017). In addition, effective communication can also make risk information delivered transparently at all levels in an organization Phu (2017). Transparency of risk information will benefit the organization, such as: (1) encouraging employees to give their opinions, (2) encouraging experts to provide views, and (3) positive feedback in developing risk management strategies (Phu, 2017).

Business Process Integration. One of the key factors for the success of risk management is the integration of risk management into business processes (Zhao et al. 2013). One of the failures of risk management implementation is the separation of the risk management process from the existing business processes in the organization. As a result, the implementation of management is considered a mining job for its employees. In fact, the implementation of risk implementation should be in accordance with existing business processes. When the implementation of risk management is in line with the organization's business processes, risk management should no longer be a mining job, but rather integrated with the organization's business processes (Zhao et al. 2013). This integration allows for a proactive approach to risk, where potential problems are addressed early in the process, reducing the likelihood of significant disruption, and increasing the organization's ability to achieve its strategic goals (Phu, 2017).

One of the key factors for the success of risk management is the integration of risk management into business processes (Zhao et al. 2013). One of the failures of risk management implementation is the separation of the risk management process from the existing business processes in the organization. As a result, the implementation of management is considered a mining job for its employees. In fact, the implementation of risk implementation should be in accordance with existing business processes. When the implementation of risk management is in line with the organization's business processes, risk management should no longer be a mining job, but rather integrated with the organization's business processes (Zhao et al. 2013). This integration allows for a proactive approach to risk, where potential problems are addressed early in the process, reducing the likelihood of significant disruption, and increasing the organization's ability to achieve its strategic goals (Phu, 2017).

One of the key benefits of integrating risk management into business processes is that it drives a more comprehensive and consistent approach to managing risk (Phu, 2017). By embedding risk management into every level of decision-making, organizations can ensure that risk considerations are factored into all strategic and operational decisions. The literature emphasizes that this holistic approach leads to more aligned risk management practices across the organization, reducing the risk of gaps or overlaps in risk coverage (Phu. 2017). It also enables organizations to respond to risk more effectively, as they have a clear understanding of how risk impacts different aspects of the business and can develop coordinated mitigation strategies (Zhao et al., 2013).

Training. Training is a critical component in the successful implementation of risk management practices in an organization (Phu, 2017). The literature consistently underlines the importance of equipping employees at all levels with the knowledge, skills, and competencies necessary to identify, assess, and manage risks effectively (Alijoyo & Munawar 2019). When an organization invests in comprehensive risk management training, it ensures that its workforce is prepared to recognize potential risks and understand the appropriate procedures to address them (Yaraghi & Langhe 2011). This readiness is key to minimizing the impact of risks and ensuring that risk management strategies are implemented consistently and effectively across the organization.

One of the key benefits of ongoing training and development in risk management is increased risk awareness across the organization (Zhao et al., 2013). Regular training programs help instill a culture of risk awareness, where employees are continually reminded of the importance of risk management and their role in the process. The literature suggests that organizations with a strong emphasis on training tend to have a more proactive approach to risk management, as employees are better informed and more confident in their ability to handle risk-related challenges (Alijoyo & Munawar 2019). This proactive attitude can lead to earlier risk identification and more effective mitigation strategies.

Training plays a critical role in keeping an organization’s risk management practices up-to-date on new industry technologies, practices, developmentsa nd regulatory requirements (Accettola, 2024). The risk landscape is constantly evolving, with new risks emerging from technological advances, regulatory changes, and market dynamics. By providing ongoing training, organizations ensure that their employees are aware of the latest developments in risk management and are equipped to adapt to these changes. The literature highlights that continuous learning and professional development are critical to maintaining the relevance and effectiveness of risk management practices in a rapidly changing environment (Zhao et al., 2013).

Adequate Resources. The availability of adequate resources is a key factor for the success of risk management implementation (Oliveira et al., 2018). The availability of resources can include funds, qualified staff, knowledge, expertise, and supporting tools and techniques (Phu, 2017). This factor is important because the availability of sufficient resources allows for the

improvement of the risk management process and effectiveness, while the lack of resources can significantly hinder the implementation of risk management (Zhao et al., 2013).

Previous studies have emphasized the importance of human resources as a key element in implementing risk management in organizations (Phu, 2017). Qualified personnel, with the right competencies and experience, are essential to ensure the success of risk management implementation (Oliveira et al., 2018). Employees in the risk management department usually have the expected qualifications, while in other departments there is often a gap between the desired qualifications and the available qualifications (Yaraghi & Langhe 2011). This gap can lead to a decrease in the effectiveness of risk implementation and result in suboptimal decisions in risk management (Zhao et al., 2013). Therefore, organizations need to ensure that each employee also has qualifications related to risk management.

In addition to adequate personnel, allocating the right time and funds for the risk management process is also an element that should not be ignored (Zhao et al., 2013). Without sufficient time and funding support, even qualified staff will not be able to implement risk management techniques and tools effectively (Oliveira et al., 2018). Consistent and efficient utilization of resources plays an important role in strengthening the risk management process (Phu, 2017). Therefore, it is important for management to not only focus on providing adequate funds, but also pay attention to allocating time and developing skilled staff. This will support the improvement of the quality of risk management techniques and tools applied in the organization. Without adequate resources, the implementation of risk management will be difficult to achieve maximum success.

Ranking of the KSFs of Risk Management in the Procurement Process to Support P3DN

The ranking of key success factors of risk management in the procurement process in order to support P3DN was employed by AHP. Furthermore, Expert Choice 11 software was used in this analysis. The data of this study were obtained from 6 participants who filled out the paired comparison questionnaire. Based on the participants' answers, we have obtained a paired comparison matrix for each key success factor. The matrix can be seen in Table 1.

Table 1. Pairwise comparison matrix for each KSFs

KSFs	MC	RAC	EC	BPI	TR	AQ
MC		2.093	3,608	1,969	5,747	3,177
RAC			3,714	1.513	3,460	1,552
EC				-1,122	1,157	-1,570
BPI					2,840	1,201
TR						-1,525
AQ						

Note: MC = Management commitment; RAC = Risk-aware culture; EC = Effective communication; BPI = Business process integration; TR = Training; and AQ = Adequate resources



Figure 2. Importance weight for each KSFs

After the pairwise comparison matrix was compiled, the next step was to conduct an analysis to obtain the weight of the importance of each key success factor in implementing risk management. Based on the results of data processing using the AHP method, the weight of importance of the six factors is obtained as shown in Figure 3. From these results, it can be seen that management commitment was the most dominant factor in supporting the success of risk management in the procurement process of goods in order to support P3DN, with a weight of 0.358. This value shows a significant difference compared to other factors. The next factor with the second highest weight was risk-aware culture, with a weight of 0.222. Further, other factors that also contribute to success, but with lower weights, were: business process integration (0.148), adequate resources (0.120), effective communication (0.087), and training (0.065). The results of the weight calculation using the AHP method showed that the consistency ratio value is 2 percent. Referring to Saaty (2008), the consistency ratio value is considered acceptable if it is below the threshold of 10 percent. Thus, the assessment given by the participants can be categorized as consistent. The results of the analysis can be seen in Figure 2.

Discussion

Risk management in the procurement process to support the P3DN Program at BRIN is a strategic step to ensure that each stage of procurement runs transparently, efficiently, and accountably. This risk management process includes: (1) risk identification, (2) risk analysis, (3) risk evaluation, and (4) risk mitigation planning and implementation. All of these stages aim to minimize potential obstacles in supporting the use of domestic products. In the implementation, the success of risk management is not only determined by the methods or tools used, but is also greatly influenced by various supporting factors. Therefore, it is important to pay attention to and evaluate key success factors so that the procurement process in accordance with the P3DN policy can be implemented optimally and sustainably. The findings of this study identified six KSFs for risk management in the procurement process to support the P3DN program at BRIN. Based on their priority weights, the six factors were: (1) management commitment, (2) risk-aware culture, (3) business process integration, (4) adequate resources, (5) effective communication, and (6) training. The relationship between the six factors in risk management in the procurement process to support the P3DN Program at BRIN can be seen in Figure 3.

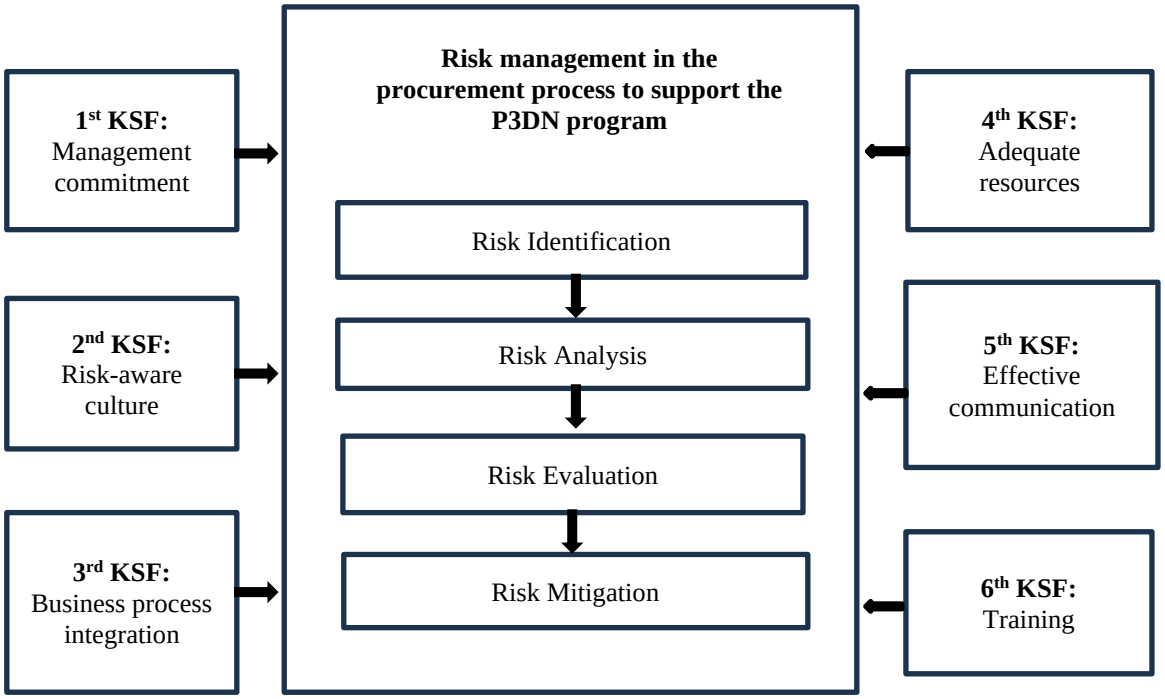


Figure 3. The KSFs of risk management in the procurement process to support the P3DN Program

The results of this study indicated that management commitment is the most dominant KSFs in implementing risk management in the procurement process to support P3DN at BRIN. This result was in line with previous studies, such as Alazzabi et al., (2023), Oliveira et al., (2018), and Zhao et al. (2013). This finding indicated that the active role and real support of top management are very influential in ensuring the effectiveness of risk management. In the context of the P3DN program, management commitment also plays an important role in encouraging preference for domestic products through favorable procurement policies, increasing cross-unit coordination, and monitoring compliance with regulations. Management commitment is not only reflected in policies and strategic directions, but also in resource allocation, implementation supervision, and setting an example for all levels of the organization. Without a strong commitment from the leadership, the implementation of risk management has the potential to become merely an administrative procedure without any real impact on procurement decision making.

The results of this study indicated that management commitment is the most dominant key success factor in implementing risk management in the procurement process to support P3DN at BRIN. These results were in line with previous studies, such as Alazzabi et al., (2023), Oliveira et al., (2018), and Zhao et al. (2013). These findings indicated that the active role and real support of top management are very influential in ensuring the effectiveness of risk management. In the context of the P3DN program, management commitment also plays an important role in encouraging preference for domestic products through favorable procurement policies, increasing cross-unit coordination, and monitoring compliance with regulations. Management commitment is not only reflected in policies and strategic directions, but also in resource allocation, implementation supervision, and setting an example for all levels of the organization. Without a strong commitment from the leadership, the implementation of risk management has the potential to become merely an administrative procedure without any real impact on procurement decision making.

After considering the management commitment factor, the second priority is to build a risk-aware culture. The importance of a risk-aware culture was also supported by Phu (2017), Oliveira et al. (2018), and Akram & Pilbeam (2015). These results indicated that risk awareness must be embedded in the mindset and behavior of all parties involved in the procurement process at BRIN. A risk-aware culture reflects the extent to which individuals and organizations proactively recognize potential risks, understand their impacts, and take mitigation actions before the risks develop into bigger problems. In the context of procurement, this is very important to minimize the potential for supply failure, specification non-conformity, and deviations from P3DN regulations. Therefore, building a risk-aware culture through education, open communication, and employee empowerment is a strategic step in increasing the effectiveness of risk management and supporting the optimization of the use of domestic products in a sustainable manner.

The third ranking factor that must be considered is business process integration. The importance of this third factor was in line with previous studies, such as Zhao et al. (2013) and Phu (2017). These results explained that integration between functions and stages in the business process is crucial to ensure that risk management is carried out comprehensively and not fragmented. Business process integration allows for consistent information flow, effective coordination between units, and data-based decision making and risk analysis. In the context of procurement, this includes integration from needs planning, supplier evaluation, to reporting on the use of domestic products. Lack of integration can lead to overlapping tasks, process delays, or failure to detect potential risks. Therefore, building an integrated procurement system

that is aligned with the objectives of P3DN is an important prerequisite for creating transparent, efficient, and results-oriented governance.

Adequate resources are in fourth place as a key factor in the success of risk management in the procurement process to support the P3DN program at BRIN. These results reinforced previous findings (Oliveira et al., 2018; Phu, 2017; Zhao et al., 2013). These findings confirmed that the effectiveness of risk management is highly dependent on the availability of resources that include human, financial, technological, and supporting infrastructure aspects. Without sufficient resource support, the process of identifying, analyzing, mitigating, and monitoring risks cannot run optimally. In the context of procurement, this means the need for competent human resources in understanding procurement risks, an information system that supports data integration and P3DN reporting, and a sufficient budget to fund risk mitigation efforts. Therefore, BRIN needs to ensure proportional and sustainable resource allocation as part of an effective risk management strengthening strategy that is in line with the policy of using domestic products.

The last factor that can be considered is training. The importance of this factor have also been supported by Phu (2017), Alijoyo & Munawar 2019, and Yaraghi & Langhe (2011). Although in the lowest position compared to other factors, training still has a strategic role in building the understanding and skills of the apparatus in identifying, assessing, and handling risks systematically. Continuous and relevant training helps ensure that all parties involved in procurement have adequate competence, understand P3DN policies, and are able to apply risk management principles in daily practice. The low weight of training in this study may indicate that this aspect has not been fully maximized or is still considered a complement, not a top priority. Therefore, in the future, training needs to be strengthened so that it can become a foundation for increasing organizational capabilities in managing risks effectively and supporting the success of P3DN implementation at BRIN.

CONCLUSION

Government procurement activities have a strategic role as a tool to implement the P3DN policy. Risk management in the procurement process is a crucial element to ensure that each stage, from planning needs, selecting providers, to contract implementation, is carried out transparently, accountably, and in accordance with the direction of the P3DN policy. This study aims to identify and prioritize various key factors that influence the success of implementing risk management in the procurement process of goods in government-owned research institutions. This study found that in order of priority the key factors for the success of risk management in the procurement process to support the P3DN program at BRIN, namely: (1) management commitment, (2) risk-aware culture, (3) business process integration, (4) adequate resources, (5) effective communication, and (6) training.

Although this study produced interesting findings. The results of this study cannot be generalized widely because this study was only conducted by one government agency. Further research can be conducted in other government agencies to strengthen the findings of this study. The results of this study can be a preliminary study for further research related to the success factors of implementing risk management in the procurement process to support the P3DN program in government agencies.

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