

-RESEARCH ARTICLE-

SYSTEMATIC RISK MANAGEMENT PRACTICES AND FINANCIAL SUSTAINABILITY: THE MEDIATING ROLE OF DECISION-MAKING EFFECTIVENESS

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—Abstract—

Study aim to investigate the influence of systematic risk management practices on financial sustainability through improving decision-making effectiveness. The study also investigated the moderating role of risk culture. Data was collected from employees of manufacturing company's using convenient sampling technique. Used SPSS and Smart PLS software for descriptive and inferential statistics. PLS-SEM results shown that risk management process and risk management methods and activities have positive and significant effect on financial sustainability and decision making effectiveness. This indicates that structured risk systems provide managers with reliable information, leading to more informed and effective strategic and operational decisions. Furthermore, decision making effectiveness also positively influence to financial sustainability, which is highlighting its central role in strengthening financial outcomes. Mediation analysis confirms that decision-making effectiveness partially mediates the relationship between risk management practices and financial sustainability, suggesting that risk management improves sustainability both directly and indirectly through enhanced decision quality. Lastly, risk culture also significantly moderates between decision-making effectiveness and financial

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sustainability. Study with these findings is contributed a integrated framework where risk management practices, decision-making effectiveness, and risk culture collectively increases the financial sustainability of manufacturing firms. These findings provide important theoretical and practical implications for strengthening risk-based management systems in manufacturing organizations. Study limitations and future directions were also discussed.

Keywords: Risk management, Risk culture, Financial sustainability, Decision-making effectiveness.

INTRODUCTION

In the current dynamic competitive environment, financial sustainability is a critical objective for organizations to compete in national and international markets (Arpaci, 2023). It consisted of the company's ability to achieve a long-term financial position and to ensure the continuity of operations to achieve strategic objectives (Dey et al., 2018; Elkington, 1994). Along with this significance, for most of the firms, achieving financial sustainability is particularly challenging due to the high capital intensity, operational uncertainties, supply chain complexities, and fluctuating market demands (Lam, 2018). The financial sustainability of the companies is effective when the companies are unable to manage their risks which may reduce profitability, cash flow problems, or even organizational failure (Arena et al., 2010). The risk management consists of a systematic framework for identifying and controlling risks that impact the organizational objectives (Glette-Iversen et al., 2023). Therefore, the researchers growing interest in understanding the mechanisms and practices that can enhance financial sustainability.

To improve the financial sustainability of the companies, risk management is an important factor that refers to structured processes and activities organizations use to identify, assess, mitigate, and monitor risks (COSCO., 2017). Risk management consisted of both formal processes, such as risk policies and frameworks, and various practical methods, which helps to improve the company's financial sustainability (Eyinate et al., 2025). An effective management of risk is an integral factor to improve financial sustainability because this helps to the companies to allocate resources as per their requirements (Florio & Leoni, 2017). From the risk management, researchers identified that the risk management process increases the financial sustainability through reducing uncertainty, improving capital preservation, and enabling better allocation of financial resources (Hoyt & Liebenberg, 2011; McShane et al., 2011; Talha et al., 2026). Moreover, Badalov et al. (2025) empirically found that companies with effective management of risk enhance their financial performance and reduce variability in earnings. Equally, risk management methods and activities always provide the tactical tool which enable in risk identification and

mitigation (Fraser & Simkins, 2016), which increases the company's financial sustainability (Rafi-Ul-Shan et al., 2018). Prior studies also identified that strong management of risk significantly improves the company's financial sustainability (Gordon, 2018; Sunaryo et al., 2025). Consequently, this research identified the influence of the risk management process and techniques on financial sustainability.

Even though risk management directly increases the company's financial sustainability. Researchers identified that a company's financial sustainability increases when the company has effective decision-making (Sujith et al., 2022). Decision-making effectiveness refers to the ability of managers to make timely and rational decisions, which helps in enhance financial sustainability (Elbanna et al., 2015). Other researchers also identified that effective decisions improve the company's production scheduling to investment planning, which increases the company's financial sustainability (Gong et al., 2019). Other studies also identified that decision-making effectiveness is integral components that improves the company's long-term financial sustainability (Siegrist et al., 2020). Better decisions increase the optimal utilization of assets, proactive risk mitigation, and strategic resource utilization (Nutt, 2008). When the managers have better decisions based on the sound data then companies are able to achieve financial sustainability (Ren, 2022). An effective risk management process improves the quality of managerial decisions by providing accurate information about the potential threats (Bromiley et al., 2015; Glette-Iversen et al., 2023), and increases the company's financial sustainability. Because the risk management process provides the informational foundation that enables to the companies to improves financial performance of the companies (Barney, 1991). Furthermore, risk management tools and activities also increase the financial sustainability through supporting effective managerial judgments (Landi et al., 2022). Risk management methods and tools also provide effective data and simulations, which directly improve decision-making to improve the financial sustainability (Aro, 2024). Brustbauer (2016) study also found that risk methods contribute to financial performance through improved decisions on investments and operations. These prior studies identified theoretically by demonstrating that decision-making effectiveness mediates between risk management and financial sustainability, highlighting the mechanism through which risk practices create organizational value.

Prior studies also suggested that risk culture plays a crucial role in increasing the influence of decision-making effectiveness on financial sustainability (Sujith et al., 2022). Other researchers also identified that risk culture is a more important factor to improve the better decision making, which leads to improved company financial sustainability (Osman & Lew, 2021). Because the risk culture refers to the norms, values, and behaviors which shape how the companies perceives better decisions which increase the company's financial sustainability (Powers et al., 2016). Literature supported that companies with strong risk management processes and effective decision-making capabilities, financial sustainability may remain suboptimal of

employees and managers lack a culture that promotes proactive risk consideration (Kazbekova et al., 2022). A strong risk culture embeds risk awareness throughout decision hierarchies, ensuring that decisions are risk-informed and aligned with strategic and ethical priorities (Batiuk & Kuzyk, 2025). Sheedy and Griffin (2018) study also found that companies with strong risk cultures achieve better risk-adjusted performance because managerial decisions reflect proactive risk considerations. These prior studies shown that risk culture is important factor to improve the effective decision making which leads to improve the financial sustainability which highlighted the importance of risk culture for moderator in the current study.

Along with an abundance of literature on impact of risk management on financial sustainability, various gaps still existed in the prior literature. Firstly, extant studies have majorly concentrated on the direct effect of risk management on financial performance, while ignored impact on financial sustainability (Badalov et al., 2025; Florio & Leoni, 2017; Gordon, 2018; Jagrič et al., 2025; Talha et al., 2026). On the other hand, prior studies also have limited attention to the mediating effect of decision-making effectiveness, despite its critical role in translating risk-related information into strategic and financial sustainability (Bromiley et al., 2015; Rafi-Ul-Shan et al., 2018; Talha et al., 2026). Moreover, the relationship between the decision-making effectiveness and financial sustainability is not clear which identified that a relationship should be tested with the moderating variable (Obi-Anike et al., 2023). The risk culture moderating effect has been overlooked in the prior literature, even though organizational culture could significantly impact how risk management practices and decisions impact financial sustainability (Obi-Anike et al., 2023; Powers et al., 2016).

More importantly, there is limited empirical evidence that simultaneously integrates both mediating and moderating mechanisms within a single framework (Badalov et al., 2025; Florio & Leoni, 2017; Gordon, 2018; Jagrič et al., 2025). This lack of a comprehensive moderated-mediation approach restricts a deeper understanding of how and under what conditions risk management contributes to financial sustainability, particularly in manufacturing companies where risk exposure is fundamentally high (Giannakis & Papadopoulos, 2016; Lin et al., 2026). In this regard, this research addresses the gaps through examining the direct, mediating, and moderating effects in an integrating framework that provided a strong risk management and financial sustainability understanding in the context of manufacturing companies (Lin et al., 2026). With the practical perspectives, the study results contributed that company's managers should not only effectively implement structured risk management processes, methods, and activities, but they should also enhance decision-making capabilities and foster a strong risk culture to achieve long-term financial sustainability. The study also contributed to bridging the gap in empirical research on financial sustainability, which is providing both guidance and evidence-based strategies for practitioners and policymakers.

RESEARCH HYPOTHESIS

Risk Management Process and Financial Sustainability

The risk management (RM) process consists of a systematic framework for identifying and controlling risks that impact the organizations objective (Lin et al., 2026). It include the continuous improvements of risk exposures, escalation procedures, and strategic risk responses (Lin et al., 2026). Researchers identified that RM process increase the financial sustainability through reducing uncertainty, improving capital preservation, and enabling better allocation of financial resources (Hoyt & Liebenberg, 2011; McShane et al., 2011). Lin et al. (2026) empirically found that companies with the management of risk enhances the financial performance and reduced variability in earnings. Frigo and Anderson (2011) study also documented that organizations integrating risk processes at strategic levels outperformed peers in long-term financial measures. Lajili and Zéghal (2005) study also observed that companies with structured risk processes demonstrated higher solvency ratios and lower volatility in returns. Hoyt and Liebenberg (2025) study also found that companies with advanced RM practices had better capital adequacy and reduced downside risk during economic downturns. These prior studies identified that companies with the systematic RM process significantly increase the financial sustainability and hence hypothesis is,

H1: *Risk management process significantly improve the financial sustainability.*

Risk Management Methods and Activities and Financial Sustainability

RM methods and activities always provide the tactical tool which enable in risk identification and mitigation (Fraser & Simkins, 2016). This practical mechanism helped to firms in monitoring exposures and adjusting operational strategies, which collectively support financial sustainability by minimizing unexpected losses and improving cash flow predictability. Sharifi and Naimzad (2026) study also found that companies with extensive RM practices experienced higher stability in cash flows. Stulz (2008) emphasized that advanced quantitative risk methods, including Value at Risk (VaR) and stress testing, are associated with stronger risk-adjusted returns in financial institutions. Singh and Kushwaha (2026) study also found that companies using rigorous risk control techniques experienced lower default rates and more stable earnings. Arena et al. (2010) concluded that risk methodologies positively influence both market valuation and operational sustainability. Sadineni (2026) study also found that risk scoring and internal control activities improve profitability and reduce volatile financial performance. This increases the company's financial sustainability. These prior studies emphasized that RM methods and activities improve the financial sustainability, and the hypothesis is,

H2: *Risk management methods and activities significantly improve the financial*

sustainability.

Risk Management Process and Decision-Making Effectiveness

The RM process increase decision making (DM) effectiveness through embedding structure risk information into managerial decision frameworks (Crawford & Jabbour, 2024). Effective DM increases the manager's ability in making high quality choices under different uncertainties that align with organizational objectives (Simon, 1977). Literature supported that risk process improves the firm's availability towards risk information, standardized criteria, which improve the decision rationality and outcomes (Hillson, 2009; March, 1987). Cucinelli et al. (2026) empirically found that companies with robust risk governance procedures demonstrated better strategic decision outcomes due to comprehensive risk insights. Bromiley et al. (2015) study also found that RM process minimizes the behavioral biases which is leads to improve accuracy in forecasting and resource allocation. Yahaya (2026) study also observed that companies with the better risk governance structures better credit, liquidity which improves the company's overall DM process. Sadineni (2026) study also reported that risk information systems improve managerial judgment by clarifying potential trade-offs which increases the better DM. These findings highlighted that RM process lays the foundation for improved decision quality through providing structured risk data which increase the DM effectiveness and accordingly hypothesis is,

H3: *Risk management process significantly improve the decision making effectiveness.*

Risk Management Methods and Activities and Decision-Making Effectiveness

RM methods and activities provides various tools and techniques which is being directly support in the decision making through identifying potential hazards and simulating outcomes under different scenarios (Osazefua Imhanzenobe, 2020). Various techniques likes a risk mapping, sensitivity analysis which helps to the managers in anticipating future conditions to improve company's financial system. Such kind of tool reduces ambiguity which improve the transparency in DM of various financial structures (Bazerman & Moore, 2012). Gordon et al. (2009) study also reported that risk analytics and documentation tools improve the quality of corporate decisions by providing better insight into possible risk outcomes. Kuo et al. (2023) study also found that companies which are implementing advance financial techniques then it made to improve high quality strategic decisions. Ellis et al. (2014) study also identified that risk reporting mechanisms strengthen board oversight, leading to more informed governance decisions. In financial institutions, Sunaryo et al. (2025) documented that quantitative risk tools lead to more effective capital and portfolio decisions. These studies highlighted that practical risk methods increase the managerial DM through providing structured and evidence-based information and accordingly hypothesis is,

H4: *Risk management methods and activities significantly improve decision making effectiveness.*

Decision making effectiveness and financial Sustainability

DM effectiveness is an important factor which improves the company's long-term financial sustainability (Kuo et al., 2023). Better decisions increase the optimal utilization of assets, proactive risk mitigation, and strategic resource utilization (Nutt, 2008). When the managers have better decisions based on the sound data then companies are being able to achieve the financial sustainability (Osazefua Imhanzenobe, 2020). Papadakis and Barwise (2002) found that firms with more effective decision processes achieve higher profitability and lower risk of failure. Cao et al. (2025) study also found that decision-making quality positively influences financial performance across dynamic market environments. Kuo et al. (2023) study also found that better DM on credit and capital planning improves solvency and reduces non-performing loans. González-Prida et al. (2025) found that banks emphasizing analytical decisions based on risk data had stronger profitability and reserve ratios. These studies confirm that effective DM is not just a managerial aspiration but a strategic driver of financial sustainability and accordingly hypothesis is,

H5: *Decision making effectiveness significantly improves the financial sustainability.*

Mediating Role of Decision-Making Effectiveness

It has been identified in the literature that a company's RM process increases its financial sustainability when managerial decisions are better (Kuo et al., 2023). Because the risk management process provides the informational foundation that enables to the companies in better DM which in turn improves the financial performance of the companies (Sahoo et al., 2025). This is reason, DM functions as the mechanism through which risk processes affect sustainability. Bromiley et al. (2015) found that risk frameworks improve firm performance primarily by enhancing the quality of strategic decisions. Nagayo et al. (2025) study also found that risk governance structures influence financial resilience through intermediary decision outcomes. Cao et al. (2025) further study also found that companies with better risk management processes improve the values creation of the companies through effective budgeting, forecasting, and investment choices. In banking, Sahoo et al. (2025) showed that risk governance improves financial performance through risk-informed decision making. In other study also identified that companies which has effective risk management process then it leads to improves the effectiveness DM of managers to increase financial sustainability (Karami, 2020). These findings indicate that decision-making effectiveness translates risk process strengths into financial sustainability gains and accordingly hypothesis is,

H6: *Risk management process significantly improves financial sustainability with mediating effect of decision-making effectiveness.*

Furthermore, RM tools and activities also increase the financial sustainability through supporting effective managerial judgments (Krysiak, 2009). RM methods and tools also provide effective data and simulations which directly improves the better DM to improve the financial sustainability (Chan & Wong, 2015). Brustbauer (2016) study also found that risk methods contribute to financial performance through improved decisions on investments and operations. Sahoo et al. (2025) DM effectiveness and sustainability further study also observed that the use of risk analytics leads to higher quality decisions that ultimately improve financial outcomes. Nagayo et al. (2025) reported that firms with extensive risk tools were better at selecting profitable opportunities and avoiding losses. In other study found that companies which have better RM methods then companies have good DM effectiveness (Kuo et al., 2023) and authors argued that it could leads to improve the financial sustainability and accordingly hypothesis is,

H7: *Risk management methods and activities significantly improve financial sustainability with mediating effect of decision-making effectiveness.*

Moderating Role of Risk Culture

The relationship between the decision-making effectiveness and financial sustainability is not clear which identified that a relationship should be tested with the moderating variable which is suggested by Lu (2021). Various authors suggested various variables to improve the financial sustainability through moderating variables (Sujith et al., 2022). Among those, risk culture is more important factor to improve the better DM, which leads to improve the company financial sustainability (Osman & Lew, 2021). Because the risk culture refers to the norms, values, and behaviors which shape how the companies perceives better decisions which increase the company's financial sustainability (Powers et al., 2016). A strong risk culture embeds risk awareness throughout decision hierarchies, ensuring that decisions are risk-informed and aligned with strategic and ethical priorities. (Sheedy & Griffin, 2018) study also found that companies with strong risk cultures achieve better risk-adjusted performance because managerial decisions reflect proactive risk considerations. Kazbekova et al. (2022) study also further found that companies with strong risk culture were more financially stable during crises due to disciplined DM which increases the financial sustainability. Batiuk and Kuzyk (2025) study also documented that risk culture in the organization increase relationship between governance practices and financial performance. In various prior studies also found moderating influence of risk culture which increases the strength of risk culture as moderating variable for the current study and accordingly hypothesis is,

H8: *Decision making effectiveness significantly effect to financial sustainability with moderating effect of risk culture.*

RESEARCH METHODS

Research used the quantitative research approach because it has the ability to test hypotheses, generalize findings to a larger population, and provide reliable and replicable results, which is particularly important in management and Mechanical research (Attneave & Arnoult, 1956). On the other hand, research used the cross sectional research design, where data is being collected on a single point to examine the study relationship. This research design was being used because this is a cost effective, and is being suitable for analyzing the relationship between variables without requiring long-term data collection. In addition, the researchers selected an explanatory research approach to explore causal relationships among study variables. The explanatory research is being effective because it goes helps to identifying the underlying mechanisms of relationships and supporting theory testing in empirical studies (Golzar et al., 2022). In this regards, the researchers has been selected the quantitative, cross sectional and explanatory research approach for the current study.

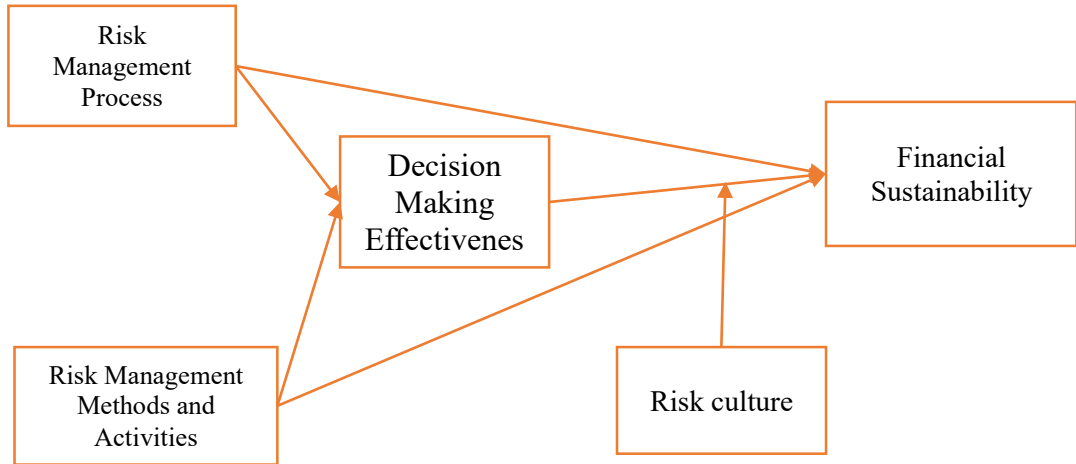
Sampling Methods

Study population is being consisted of employees who are working in manufacturing companies because these employees are directly involved in risk and production department making them suitable respondents. Furthermore, researchers employed the convenient sampling technique for selecting the sample of the study because this sampling has ability to provide more effective practicality, accessibility, and efficiency in reaching respondents (Golzar et al., 2022). On the other hand, this sampling technique is being in the organizations when the sample size is not known and probability sampling is being not effective because of the time, organizational access, and resource limitations (Etikan, 2016). Using the convenient sampling technique, 350 questionnaires were distributed among the manufacturing company's employees where 280 responses were returned, because the questionnaire was distributed through the online, therefore all 280 responses were effective for the study analysis and effective for study (Hair Jr et al., 2017).

Research instrument

The study's research instrument of five point was adopted from prior studies. The risk management process was comprises from 6 items, and risk management methods and activities comprise 8 items. Each of these item was measured by (Jagrič et al., 2025). Risk culture comprises from 3 items (Oziri & Knox, 2025). Decision-making effectiveness was also comprised of 3 items of (ISLAM et al., 2024). Lastly, financial sustainability was adapted from 5 items of (Ur Rahman et al., 2020). Each of the above item measured on a five-point Likert scale. The constructed variables are in

Figure 1.

**Figure 1:** Research Framework

Demographic Results

In the demographic. From the gender perspectives, most of the respondents belong to the males (70.7%), while females represented 29.3%, reflecting the typical managerial composition of manufacturing organizations. In terms of age, most managers were between 36 and 45 years (42.1%), indicating that respondents possessed sufficient professional maturity and experience to understand organizational risk management practices. Regarding managerial experience, most respondents had 11–15 years of experience (37.1%), suggesting that the sample consisted of experienced professionals capable of evaluating decision-making effectiveness and financial sustainability issues.

Table 1: Demographic Profile

Variable	Category	Frequency	Percentage
Gender	Male	198	70.7%
	Female	82	29.3%
Age	25–35 years	88	31.4%
	36–45 years	118	42.1%
	46–55 years	74	26.5%
Managerial Experience	5–10 years	96	34.3%
	11–15 years	104	37.1%
	Above 15 years	80	28.6%
Education Level	Bachelor	94	33.6%
	Master	146	52.1%
	PhD	40	14.3%

Educationally, most respondents held Master's degrees (52.1%), indicating a highly educated sample capable of understanding strategic risk management concepts. The

above results are in [Table 1](#).

Measurement Model

The study results are depicted in two measurement and structural models through employing Partial Least Square (PLS)-Structural Equation Modeling (SEM) using Smart PLS. Here, the measurement model represents the constructs reliability and validity based on recommended threshold values in PLS-SEM literature. It is has been shown in the [Table 2](#) that all factor loading values are greater than 0.70 which is confirming adequate indicator reliability ([Hair et al., 2021](#)). Additionally, the Cronbach alpha values are above 0,70 which is indicating strong internal consistency reliability ([Dolinting & Pang, 2022](#)). In the same vein, composite reliability of constructs is being ranges from 0.907 to 0.928, which is exceeding the recommended threshold of 0.70, which further confirms construct reliability ([Hair et al., 2021](#)).

Table 2: Convergent Validity

Construct	Alpha	CR	AVE
Risk Management Process (RMP)	0.884	0.915	0.683
Risk Management Methods & Activities (RMM)	0.891	0.919	0.694
Decision Making Effectiveness (DME)	0.879	0.912	0.675
Financial Sustainability (FS)	0.903	0.928	0.721
Risk Culture (RC)	0.871	0.907	0.662

Furthermore, average variance extracted (AVE) values are greater 0.50 ([Fornell & Larcker, 1981](#)). These results fill the criteria for convergent validity in [Table 2](#).

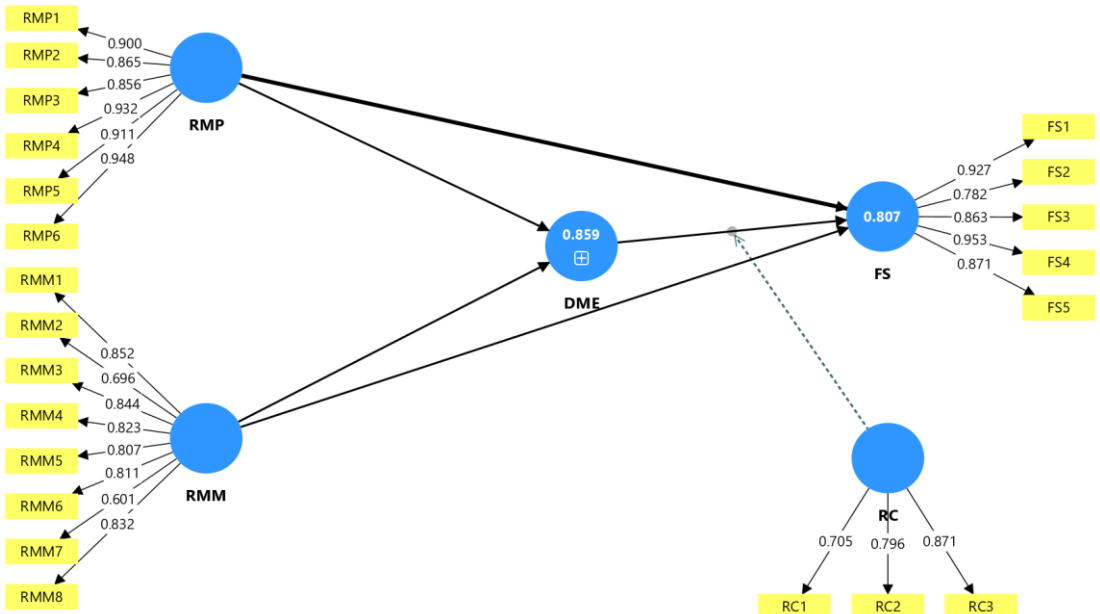


Figure 2: Factor Loadings

Discriminant Validity

This section shown the discriminant validity of the constructs which shown that construct should have discrimination with other constructs. Discriminant validity was tested through the Fornell and Larcker where each diagonal values should be greater than below value which is calculated from the square root of AVE (Fornell & Larcker, 1981). Each diagonal value is greater than from below value and values are predicted in Table 3.

Table 3: Discriminant Validity

Variable	RMP	RMM	DME	FS	RC
RMP	0.826				
RMM	0.521	0.833			
DME	0.564	0.592	0.821		
FS	0.603	0.618	0.667	0.849	
RC	0.488	0.501	0.533	0.557	0.814

Structural model Results

After testing the measurement model, next step is to test the study hypothesis. The structural model results shown that risk management practices significantly improved both of financial sustainability and decision making effectiveness. Risk management process significantly influence to financial sustainability ($\beta = 0.241^{***}$, SE = 0.061, t = 3.95), supporting H1. In the same vein, the risk management methods and activities positively and significantly increases the financial sustainability ($\beta = 0.268^{***}$, SE = 0.058, t = 4.62), supporting H2. Furthermore, risk management process significantly improves decision making effectiveness ($\beta = 0.312^{***}$, SE = 0.064, t = 4.87), supporting H3, while risk management methods and activities also show a significant positive effect on decision making effectiveness ($\beta = 0.287^{***}$, SE = 0.060, t = 4.78), supporting H4. Decision making effectiveness also significantly improves financial sustainability ($\beta = 0.356^{***}$, SE = 0.066, t = 5.39), supporting H5. The positive beta values indicate strong positive relationships, while the small standard error values indicate the stability and precision of the estimates. The *** indicates significance at $p < 0.001$. On the other hand, mediation results shown that decision making effectiveness partially mediated between risk management process and financial sustainability ($\beta = 0.111^{***}$, SE = 0.031, t = 3.58), supporting H6. In the same vein, decision making effectiveness significantly mediates between risk management methods and financial sustainability ($\beta = 0.102^{***}$, SE = 0.029, t = 3.51), supporting H7. Additionally, the moderation results indicate that risk culture significantly strengthens the relationship between decision making effectiveness and financial sustainability ($\beta = 0.149^{**}$, SE = 0.052, t = 2.86), supporting H8.

Table 4: Hypothesis Results

Relationship	Beta	Std Error	t value	p value
RMP → FS	0.241	0.061	3.95	0.000
RMM → FS	0.268	0.058	4.62	0.000
RMP → DME	0.312	0.064	4.87	0.000
RMM → DME	0.287	0.060	4.78	0.000
DME → FS	0.356	0.066	5.39	0.000
RMP → DME → FS	0.111	0.031	3.58	0.000
RMM → DME → FS	0.102	0.029	3.51	0.000
DME×RC → FS	0.149	0.052	2.86	0.004

The moderation effect shows significance at $p < 0.01$ at **. The above results are in Table 4.

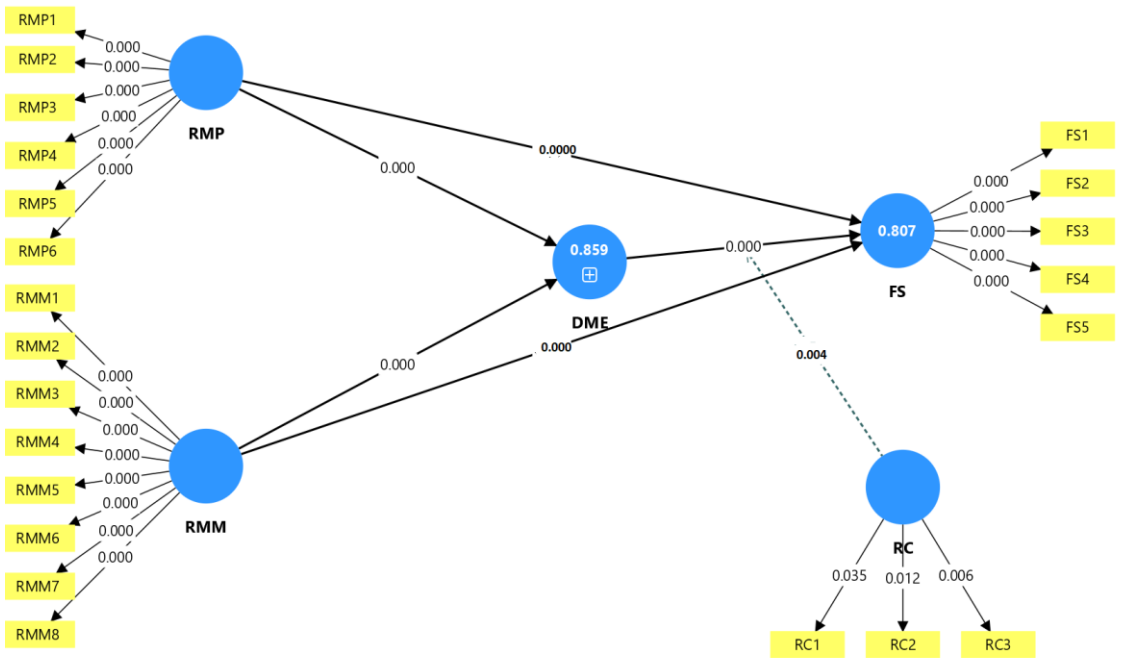


Figure 3: Structural Model

R and Q Square

This section shown the R Square and Q Square results. Decision making effectiveness R square values is 0.859 which is indicating the risk management process and risk management methods explain 85.9% various in the decision making effectiveness. This represents moderate explanatory power. Correspondingly, the value of R^2 for financial sustainability is 0.807, indicating that risk management practices and decision making effectiveness explain 80.7% of the variance in financial sustainability. This indicates substantial explanatory power according to SEM guidelines. The Q^2 values for decision making effectiveness (0.301) and financial

sustainability (0.342) are greater than zero that is showing the high predictive relevance of model. This indicates that the model has good predictive capability. Above values in [Table 5](#).

Table 5: R Square and Q Square values

Endogenous Variable	R ²	Q ²
Decision Making Effectiveness	0.482	0.301
Financial Sustainability	0.567	0.342

DISCUSSION

The study objective was to test the influence of the risk management process, methods, and activities on the FS of manufacturing companies through decision-making effectiveness with moderating of risk culture. The study identified that risk management process positively and significantly improves the manufacturing company's financial sustainability. This result shows that manufacturing companies are adopting systematic risk identification, risk assessment, and risk monitoring procedures, which are helping to achieve stable financial sustainability. Therefore, the results suggested that structured risk processes help firms minimize financial uncertainty and maintain long-term sustainability. The results is significantly important for the manufacturing firms because these companies faces various operational risk like as supply chain disruptions, equipment failures, production delays, and fluctuating raw material costs. Effective risk management processes allow firms to anticipate such risks and reduce their financial consequences. As a result, companies can maintain stable cash flows and improve long-term financial planning. Prior studies found same findings where suggested that risk management processes significantly improve financial performance and organizational sustainability ([Brustbauer, 2016](#); [Florio & Leoni, 2017](#); [Nagayo et al., 2025](#)). These findings guided that manufacturing companies should have proper risk management procedures, and should have continuous risk monitoring system that could lead to improve the FS of manufacturing companies.

Further findings shown that risk management methods and activities also significantly increase the FS of manufacturing companies. This results shown that manufacturing companies have practical risk management tools like as risk audits, internal controls and operational risk assessments which is significantly increases the company's financial sustainability. The finding is significant because the manufacturing companies depends on operational efficiency and production continuity where practical risk management techniques allows firms to reduce operational losses and improve efficiency. When risks are effectively controlled through proper methods, firms can avoid unexpected financial shocks and maintain profitability. The result is consistent with the prior studies where they shows that practical risk management techniques enhances the FS through increasing operational control and reducing losses

(Gordon et al., 2009; Hoyt & Liebenberg, 2011; Sahoo et al., 2025). Thus, findings emphasizes that companies with the effective risk management activities have a stronger FS and therefore it is suggested that manufacturing companies should invest in modern risk management tools, adopt preventive maintenance strategies, and strengthen internal control systems to ensure financial sustainability.

Further findings shown that risk management process is significantly increase the decision making effectiveness of manufacturing companies. The results highlighted that manufacturing companies has adopted a systematic risk analysis procedures, managers are able to make more informed and effective decisions. This is the reason, this result is important because decision making in manufacturing involves complex choices related to production planning, inventory management, technology investments, and supplier selection. Effective risk processes provide managers with reliable information, reducing uncertainty and improving decision quality. Findings are consisted with the previous where they found that better risk management process increase the decision making effectiveness (Bromiley et al., 2015). Similarly, enterprise risk management studies confirm that firms with strong risk processes demonstrate better strategic decisions (Sax & Andersen, 2019). Thus, based on these findings, it is suggested that manufacturing companies should have proper integrated risk analysis in their decision support system and to encourage managers to use risk reports when making strategic decisions. Firms should also train managers in risk-based decision techniques that could increase the firm's sustainability and achieve a competitive advantage. Further results also highlighted that risk management methods and activities positively and significantly improve the financial sustainability. This result shown that that practical risk management tools improve managerial judgment and strategic choices. The results is significant because a proper risk management tool uses allows managers to evaluate the alternative methods with more effective way which reduces the loss to improve financial sustainability. The result is consistent with prior studies of where they highlighted that the use of risk assessment techniques improves organizational decision processes and operational efficiency (Glette-Iversen et al., 2023; Sahoo et al., 2025). Equally, the decision making effectiveness also positively and significantly improves the financial sustainability. This result suggested that an effective managerial decisions always leads to improve the financial planning which increases the FS of the companies. Therefore, these findings are more significantly important for the manufacturing companies where they highlighted that companies are largely depends on the managerial decision then companies effectively increase their financial sustainability. The findings are relevant with the prior studies where they found the same results (Begum & Rahman, 2025). Thus, based on these findings, it is argued that manufacturing companies should strengthen decision support systems, use financial forecasting tools, and implement strategic planning frameworks that could increase the company's financial sustainability.

Further indirect mediating effect results show that decision making effectiveness

partially mediates the relationship between risk management process and financial sustainability. This result shows that manufacturing companies have stronger risk management process to improve the FS because they improve their effective managerial decision quality. This is the reason, the result is important for the manufacturing companies because it explains how risk management creates value inside manufacturing firms. Risk management improves information quality, which improves decisions, and better decisions improve financial outcomes. This shows that decision effectiveness is a key mechanism linking risk management to financial success. The results is supported by the prior studies where they highlighted that risk management enhances firm performance through internal capabilities such as decision making and strategic planning (Arena et al., 2010). Further indirect effect result also shown that decision making effectiveness is significantly partially mediated by risk management methods and activities and companies FS. This result suggested that risk management tools increase the FS when these companies increase managerial decision making effectively. Result is supporting with the study of (Gleißner & Berger, 2024), where they emphasized that risk management tools in the company's increase the FS when they are embedded in managerial decision processes (Gates et al., 2012). The findings are further in line with the studies where found the significant mediating effect of decision making effectiveness (Shahwan, 2018), and these findings are highlighting the significance of decision making effectiveness a significant mediating variable for the current study.

Finally, the results show that risk culture significantly moderates the relationship between decision making effectiveness and companies FS. This results shown that manufacturing companies with the stronger risk culture are able to achieve the better financial benefits through effective decisions. This finding is important because even strong risk systems may fail without supportive organizational culture. When employees understand risk responsibilities and management promotes risk awareness, decision implementation becomes more effective. This finding is supported by previous studies indicating that risk culture strengthens the effectiveness of risk management systems and improves firm performance (Powers et al., 2016). Other prior studies also used the risk culture a moderating variable and found a significant moderating effect (Selamat & Ibrahim, 2018), which is supporting the strengthening of risk culture as a moderating variable for the current study. Based on these findings, it is concluded that companies with a strong risk culture tend to achieve better performance outcomes because risk awareness becomes part of organizational behavior. Manufacturing firms should therefore promote risk awareness training, develop risk communication systems, and encourage leadership support for risk management practices to improve financial sustainability.

IMPLICATIONS

Several theoretical implications are in the current study findings. Firstly, study result

contributed in the prior literature through confirming that both of risk management practices increases manufacturing companies FS which has limited attention in the prior literature. Therefore, this contribution is important because prior studies paid limited attention on sustainability. Secondly, study findings also contributed in existing theories through establishing the mediating role of decision-making effectiveness between risk management practices and financial sustainability. This contribution extends the understanding of the underlying mechanism through which risk management creates organizational value. Third, the significant findings contributed to the organizational risk management literature by confirming the moderating role of risk culture between decision-making effectiveness and financial sustainability. This contribution is particularly important because the interaction effect of risk culture has rarely been tested in manufacturing sector research. Collectively, the significant findings contributed to the integration of risk management theory, decision theory, and organizational culture theory by providing a comprehensive empirical framework explaining how risk management improves financial sustainability.

Several practical contributions are for manufacturing managers and industry practitioners. First, the significant findings contributed to managerial practice by demonstrating that effective risk management processes and methods can substantially improve financial sustainability. This contribution suggests that manufacturing firms should develop structured risk management frameworks and integrate risk evaluation into financial and operational strategies. Second, the significant findings contributed practical insights by showing that decision-making effectiveness plays a crucial mediating role, suggesting that firms should strengthen managerial decision capabilities through training, analytics, and decision support systems. Third, the significant findings contributed to organizational practice by highlighting the importance of risk culture as a moderating factor that strengthens the relationship between decision making and financial sustainability. This contribution suggests that organizations should promote risk awareness, develop risk communication policies, and embed risk responsibility into organizational culture.

CONCLUSION AND FUTURE DIRECTIONS

The study concluded that risk management process and risk management methods and activities have positive and significant effect on financial sustainability and decision making effectiveness. This indicates that structured risk systems provide managers with reliable information, leading to more informed and effective strategic and operational decisions. Furthermore, decision making effectiveness also positively influence to financial sustainability, which is highlighting its central role in strengthening financial outcomes. Mediation analysis confirms that decision-making effectiveness partially mediates the relationship between risk management practices and financial sustainability, suggesting that risk management improves sustainability

both directly and indirectly through enhanced decision quality. Lastly, risk culture also significantly moderates between decision-making effectiveness and financial sustainability. Study with these findings is contributed a integrated framework where risk management practices, decision-making effectiveness, and risk culture collectively increases manufacturing companies financial sustainability. These findings provide important theoretical and practical implications for strengthening risk-based management systems in manufacturing organizations.

Various limitations are which needs to be addressed in further study. Firstly, study tested the risk management practices on primary data, while other risk management practices like credit risk, market risk, sovereign risk etc. could be measured on secondary data. Therefore, future longitudinal data based be conducted to increase the strength of risk management research area. Secondly, study was limited on manufacturing which has different working environment as compare to banking sector, where study results could not be generalized on banking sector. Therefore, future research could be conducted on banking sector to improve the research generalizability. Lastly, study used cross sectional data design, future research could be explored on longitudinal design to increase variation in results.

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