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Strategic synergy: Artificial intelligence, organizational databases, and profitability enhancement with risk management as the mediator

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A B S T R A C T

This research aims to investigate the intricate interplay between Artificial Intelligence (AI), Organizational Databases, Risk Management, and profitability within the Indonesian banking sector. Employing a quantitative research design, the study seeks to understand the mediating role of Risk Management in the relationships among AI, Organizational Databases, and profitability. The key findings underscore the pivotal importance of Risk Management as a mediator, emphasizing the necessity for a comprehensive risk-aware strategy in optimizing the impact of AI and high-quality databases on financial performance. The research contributes theoretically by providing nuanced insights into the dynamic relationships between technology adoption, risk mitigation, and financial success. Limitations include contextual specificity and temporal constraints, acknowledging the need for caution in generalizing findings. The practical contributions involve recommendations for organizations to continuously monitor and adapt their AI implementations and risk management strategies. The study sets the stage for further research, advocating for cross-industry studies, longitudinal analyses, and in-depth case studies to enhance the understanding of these complex dynamics. Overall, this research provides actionable insights for practitioners and contributes to the ongoing discourse on the evolving landscape of technology, risk management, and financial success.

1. Introduction

In the era of ongoing globalization and digitization, the role of technology, particularly Artificial Intelligence (AI) and Organizational Databases, is becoming increasingly pivotal for organizations to achieve their business goals (Dwivedi et al., 2021; Wamba-Taguimdje et al., 2020). The rapid growth of data and business complexity necessitates companies to adopt technological

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solutions that can provide in-depth insights, enhance operational efficiency, and better manage risks (Raguseo, 2018; Y. Wang et al., 2018). One critical aspect to consider is how the implementation of these technologies can impact the profitability of a company. In this context, risk management becomes a crucial element in securing operational continuity and supporting the achievement of financial objectives (Saeidi et al., 2019). Risks that may arise from technological changes, such as data security, market uncertainties, and regulatory changes, can directly influence an organization's profitability (Mazzucato, 2016). Therefore, the use of AI and Organizational Databases is directed not only towards improving efficiency but also towards managing and mitigating potential risks (Yigitcanlar et al., 2020). Risk management plays a role in identifying, assessing, and managing risks that may arise from the implementation of new technologies (Aven, 2016). Thus, this research aims to explain the roles of AI and Organizational Databases in enhancing organizational profitability, with a focus on how risk management can serve as a bridge connecting technological advantages with financial success.

Despite the growing acknowledgment of the impact of Artificial Intelligence (AI) and Organizational Databases on organizational profitability, there is still a research gap in understanding the specific nuances of how the interplay between these technologies and risk management influences financial outcomes (Shanmugam et al., 2023; Sivarethinamohan et al., 2021; Tiwari et al., 2021). Existing studies often focus on either the benefits of AI or the significance of robust databases but may not sufficiently explore the integrated role of both in the context of risk management and its direct implications for profitability (Damioli et al., 2021; Dubey et al., 2020; Lee et al., 2023). This research aims to bridge the existing gap by offering a comprehensive exploration of how the combined implementation of AI and Organizational Databases, with risk management as a mediator, contributes to organizational profitability. The novelty lies in unraveling the intricate connections between these technological elements and demonstrating how a synergistic approach can yield unique advantages in terms of financial performance and risk mitigation.

The significance of this research lies in its potential to provide actionable insights for businesses seeking to leverage AI and robust databases while effectively managing associated risks. Understanding the specific mechanisms through which these technologies impact profitability, guided by effective risk management strategies, can empower organizations to make informed decisions, enhance resilience, and ultimately achieve sustained financial success. Therefore, the Specific Objectives are as follows:

1. Evaluate the Impact of AI on Organizational Profitability: Investigate how AI applications contribute to efficiency, decision-making, and overall financial performance.
2. Assess the Role of Organizational Databases in Financial Outcomes: Examine the influence of structured and efficient databases on operational optimization, data-driven decision-making, and cost reduction.
3. Explore the Integrated Impact of AI and Databases on Risk Management: Analyze how the combined use of AI and databases enhances risk identification, assessment, and mitigation strategies.
4. Examine the Mediating Role of Risk Management in Profitability: Investigate how effective risk management acts as a mediator, translating technological advantages into improved financial outcomes.
5. Provide Actionable Recommendations for Business Practices: Offer practical insights and recommendations for organizations to optimize the synergy between AI, databases, and risk management for enhanced profitability.

By addressing these specific objectives, the research aims to contribute to the existing body of knowledge, offering a nuanced understanding of the interconnected dynamics between AI, Organizational Databases, risk management, and organizational profitability.

2. Literature Review and Hypothesis Development

2.1 The Relationship between Artificial Intelligence and Risk Management

According to Sarker (2022), Artificial Intelligence (AI) is a computer science field related to the development of systems and algorithms capable of performing tasks that typically require human intelligence. It involves the machine's ability to learn from data, identify patterns, comprehend natural language, and make intelligent decisions without direct human intervention. Wysokińska-Senkus & Górna (2021) define Risk Management is a systematic approach to identify, evaluate, and manage risks that can affect the achievement of an organization's objectives. It includes the process of identifying potential risks, assessing their impact, and implementing strategies to manage those risks. The goal of risk management is to strike a balance between taking risks to achieve gains and protecting the organization from the potential negative impacts of those risks (Sawik, 2023). The relationship between Artificial Intelligence (AI) and Risk Management is integral to navigating the complexities of the contemporary business landscape (Habbal et al., 2024). Goel et al. (2023) assert that AI encompassing machine learning and advanced data analytics, plays a pivotal role in identifying potential risks by swiftly analyzing vast datasets, detecting patterns, and uncovering anomalies. Furthermore, AI contributes to predictive analytics, aiding in forecasting future risks based on historical data. Its ability to facilitate data-driven decision-making provides risk management with deeper insights, enabling informed strategic choices (Aljohani, 2023). Automated monitoring processes driven by AI assist in real-time risk assessment, promptly identifying changes in market conditions or business environments (Kalogiannidis et al., 2024). However, the synergy between AI and risk management requires a delicate balance, as the application of AI introduces its own set of risks, such as data security

concerns, algorithmic biases, and ethical challenges. Consequently, effective risk management strategies must encompass these aspects, ensuring organizations harness the potential of AI while prudently managing associated risks (Abbasi & Rahmani, 2023). Understanding this intricate relationship empowers organizations to optimize risk management strategies and leverage AI for sustainable success. Therefore, the proposed hypotheses are as follows:

H_1: *Artificial Intelligence impacts Risk Management.*

2.2 The Relationship between Artificial Intelligence and Profitability

Walters and Helman (2020) state Profitability is a measure of the efficiency and success of an organization in generating financial gains from its operations and business activities. It involves comparing the revenue earned with the costs incurred to gauge the extent to which an entity can achieve net profit. The implementation of Artificial Intelligence can significantly impact the profitability of an organization in several ways (Ali Mohamad et al., 2023; Moro-Visconti et al., 2023; Sandeep et al., 2022). Firstly, AI can enhance operational efficiency through the automation of routine tasks, reducing costs and time (Ng et al., 2021). Secondly, sophisticated data analysis by AI can provide deep insights into customer behavior, market trends, and potential business opportunities, guiding marketing strategies and decision-making to increase revenue (Stone et al., 2020). Additionally, AI can assist in risk management and identify profitable investment opportunities (Zekos, 2021). Overall, the relationship between AI and profitability creates the potential for improved financial performance and organizational competitiveness in an increasingly complex and dynamic market. Based on the description above, the hypotheses proposed are as follows:

H_2: *Artificial Intelligence impacts profitability.*

2.3 The Relationship between Organizational Databases and Risk Management

Grover and Kar (2017) assess that Organizational Databases serve as repositories for structured and unstructured data, offering a comprehensive view of an organization's operations, transactions, and interactions. This wealth of information becomes a critical asset in the risk management process (Shedden et al., 2016). Hart et al. (2016) explain that databases efficiently store vast amounts of data, providing a centralized and organized repository. This facilitates the retrieval of relevant information for risk assessment and decision-making. The structured nature of organizational databases allows for systematic analysis of historical data to identify patterns and trends. This aids in the identification and assessment of potential risks (Brous et al., 2020). Databases enable real-time monitoring of various operational aspects. This timely access to data allows organizations to identify emerging risks promptly and take preventive measures (Tang et al., 2019). Organizational databases play a crucial role in managing compliance and regulatory requirements. By maintaining accurate and up-to-date records, organizations can mitigate legal and regulatory risks (Georgiadis & Poels, 2021). Many organizations integrate their databases with dedicated risk management systems. This integration enhances the efficiency of risk assessment processes by providing a unified platform for data analysis (Lamine et al., 2020). Access to comprehensive data within organizational databases facilitates informed decision-making (R. Wang et al., 2023). Risk managers can utilize this information to assess the potential impact of risks and devise appropriate risk mitigation strategies. Database management systems incorporate security measures and access controls to protect sensitive information. This is crucial for mitigating the risk of unauthorized access and data breaches (Singh et al., 2019). In essence, the relationship between organizational databases and risk management underscores the importance of data-driven decision-making and proactive risk mitigation. As organizations continue to face evolving challenges, leveraging the capabilities of robust databases becomes integral to building a resilient risk management framework. Therefore, the presented hypotheses are as follows:

H_3: *Organizational Databases impacts Risk Management.*

2.4 The Relationship between Organizational Database and Profitability

Arcording to Mikalef et al. (2018) organizational databases serve as repositories for a multitude of data, offering insights that can directly impact an organization's financial performance. Organizational databases provide a structured and centralized repository of data, empowering decision-makers to base their strategic choices on comprehensive and accurate information (Cherradi et al., 2023). Informed decision-making, facilitated by data accessibility, can directly influence profitability (Buhalis & Leung, 2018). In expaination of Anshari et al. (2019), Databases house valuable customer information, enabling organizations to understand preferences, behaviors, and trends. This knowledge supports targeted marketing efforts and personalized customer experiences, ultimately contributing to increased customer loyalty and profitability. Streamlined processes and optimized resource allocation, facilitated by database insights, contribute to cost reduction and improved profitability (Purwaningsih et al., 2024a). Databases play a crucial role in managing supply chain data. Organizations can optimize inventory levels, track supply chain performance, and identify cost-saving opportunities, positively impacting profitability. Databases aid in collecting and analyzing market and competitor data. This information allows organizations to identify market trends, assess competitor strategies, and make informed

decisions to stay competitive and enhance profitability (Rubinfeld & Gal, 2017). Databases assist in managing and monitoring risks, ensuring compliance with industry regulations. Proactive risk management helps avoid financial losses and reputational damage, preserving and enhancing profitability (Vij, 2019). Furthermore, databases facilitate the tracking and measurement of key performance indicators (KPIs). Monitoring financial metrics and operational performance through databases allows organizations to identify areas for improvement and optimize processes for increased profitability. In conclusion, the relationship between organizational databases and profitability is symbiotic. Effective utilization of data stored in databases allows organizations to not only understand their internal operations better but also respond strategically to external market dynamics. The insights derived from databases empower organizations to make informed decisions, enhance operational efficiency, and ultimately contribute to the bottom line by improving profitability. Therefore, the hypotheses put forward are as follows:

H_4: *Organizational Databases impacts profitability.*

2.5 The Relationship between Risk Management and Profitability

Torabi et al. (2016) state effective risk management involves the identification and assessment of potential risks that an organization may face. By understanding and quantifying these risks, organizations can proactively address challenges that could otherwise adversely impact profitability. A robust risk management framework guides decision-makers in evaluating potential consequences and trade-offs associated with different choices (Workman et al., 2021). Informed decision-making helps organizations pursue opportunities with calculated risks, contributing to enhanced profitability (Jurison, 2019). In addition. demonstrating a sound risk management strategy often results in a lower cost of capital (Bezzina et al., 2014). Investors and lenders are more confident in organizations that proactively manage risks, leading to improved financial terms and lower financing costs, positively affecting profitability (Jung et al., 2018). Furthermore, proactive risk management contributes to operational resilience, minimizing disruptions and ensuring business continuity (Dohmen et al., 2023). Organizations that are willing to take calculated risks in pursuit of strategic goals can uncover new opportunities, potentially leading to increased profitability. Compliance with regulations and industry standards is a crucial aspect of risk management (Hobvi et al., 2022). On other hand, non-compliance poses significant financial risks, including penalties and reputational damage (I. Yusuf & Ekundayo, 2018). Adhering to regulatory requirements preserves profitability and maintains stakeholder trust. Risk management involves considerations of risk transfer through insurance. While insurance premiums represent a cost, they provide financial protection against unforeseen events, contributing to overall risk mitigation and long-term profitability (Ortiz-de-Mandojana & Bansal, 2016). Effective risk management helps protect an organization's reputation. Finally, a positive reputation is invaluable and can influence customer loyalty, attracting new business and positively impacting profitability (Khan et al., 2022). In essence, the relationship between risk management and profitability is dynamic and intricate. While effective risk management is essential for preserving financial health, the strategic navigation of risks can lead to competitive advantages and sustainable profitability. Organizations that strike the right balance between risk aversion and strategic risk-taking are better positioned to thrive in a dynamic business environment. As such, the hypotheses we put forward are as follows:

H_5: *Risk Management impacts profitability.*

2.6 Risk Management as Mediator

Risk management, as a mediator, plays a pivotal role in orchestrating the delicate equilibrium between risk and profitability within organizational dynamics. Acting as a guiding force, risk management evaluates potential risks associated with strategic decisions, providing decision-makers with comprehensive insights to inform their choices (Bloemen et al., 2018). By aligning organizational strategies with overarching objectives, risk management ensures that profitability is not pursued at the expense of sustainability (van Bommel, 2018). It acts as a buffer, enhancing organizational resilience by identifying vulnerabilities and implementing proactive measures to mitigate disruptions (Sahebjamnia et al., 2018). Employing financial modeling and scenario analysis, risk management prepares organizations for various contingencies, optimizing profitability through strategic adjustments. Moreover, risk management serves as a guardian of compliance and ethical considerations, mediating between strategic decisions and regulatory requirements to prevent legal issues and safeguard reputational integrity. Through transparent communication and stakeholder management, risk management fosters trust, contributing positively to profitability (Strauß, 2018). Embracing a culture of continuous improvement, risk management analyzes past experiences to refine strategies, fortifying the organization against unforeseen challenges. In essence, risk management's role as a mediator is instrumental in steering organizations toward a balanced approach that harmonizes risk, resilience, and profitability in the ever-evolving landscape of business. Therefore, the hypotheses we propose are as follows:

H_6: *Risk Management mediates the relationship between Artificial Intelligence and profitability.*
H_7: *Risk Management mediates the relationship between Organizational Databases and profitability.*

Building upon the hypothesis development in the previous study, this research aims to present innovative insights, as depicted in Fig. 1 below.

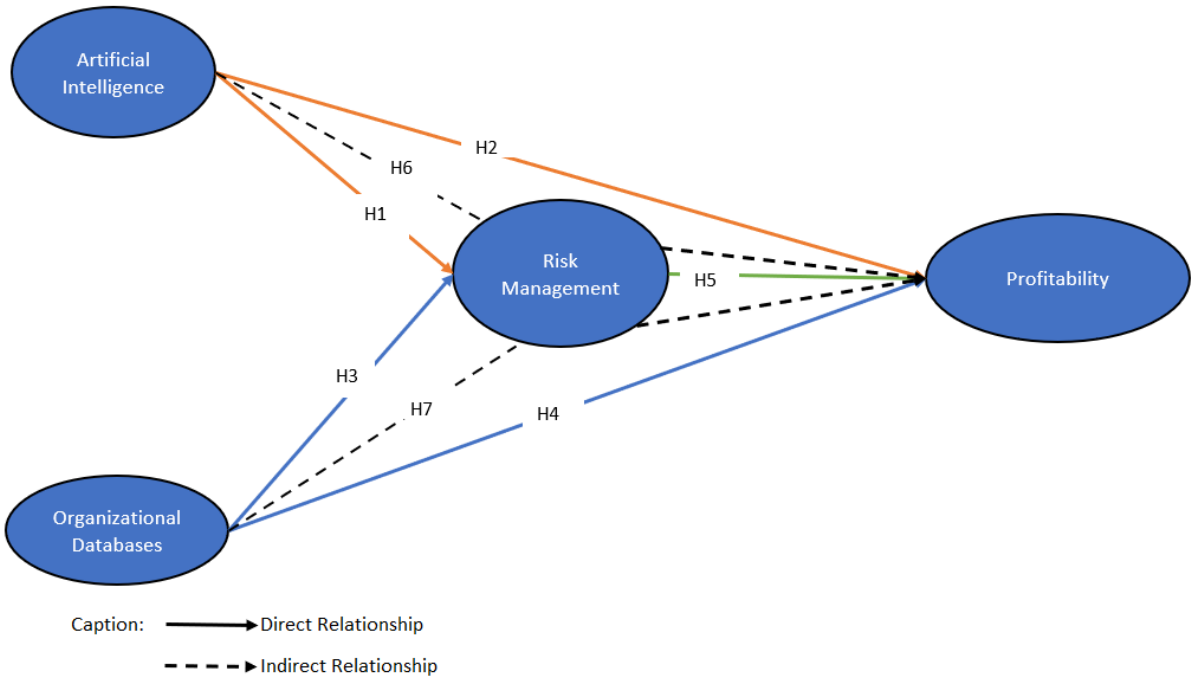

Fig. 1. Conceptual Framework

3. Methodology

3.1 Research Design

In crafting the research design, a quantitative methodology has been deliberately chosen to meticulously investigate and dissect the intricate relationship between the incorporation of Artificial Intelligence (AI) and the caliber of Organizational Databases concerning Profitability. This quantitative paradigm provides a systematic framework for measurement, enabling a meticulous analysis with the capacity for broader generalization to diverse organizational contexts. The research population comprises organizations that have actively integrated AI technology into their operational framework while concurrently maintaining dedicated risk management functions. Employing purposive sampling techniques, the sample selection process will meticulously consider key factors such as organizational size, industry affiliations, and the varying degrees of AI technology implementation. This judicious selection process aims to capture a diverse yet representative cross-section of organizations, ensuring that the findings are both insightful and applicable across different business environments. Key stakeholders and decision-makers within these organizations will constitute the primary respondents for the study. This includes senior executives, risk management professionals, and Information Technology (IT) specialists intimately involved in the planning, execution, and supervision of both AI implementation and risk management strategies. Their perspectives and insights will be instrumental in providing a comprehensive understanding of the nuanced interplay between AI, database quality, and the resultant impact on organizational profitability.

3.2 Measurement of Variables

In this study, the independent variables involve three main dimensions that serve as the focus of analysis. Firstly, the level of AI Implementation will be assessed using a Likert scale measuring the extent to which AI is integrated into various business processes. This measurement provides a profound understanding of how extensively AI technology is incorporated into the day-to-day operations of the organizations under investigation adopted from (Habbal et al., 2024; Kalogiannidis et al., 2024; Sarker, 2022). Secondly, the Quality of Organizational Databases will be examined through an evaluation of the structure and efficiency of the databases. This assessment delves into the depth and effectiveness of the databases in accommodating and leveraging data, offering insights into the foundational aspects of the organizational data infrastructure Adopted from (Grover & Kar, 2017; Hart et al., 2016; Mikalef et al., 2018). Risk Management (measured through indicators of risk identification, risk assessment, and mitigation strategies) will be a crucial element describing the extent to which organizations manage and respond to potential risks arising

from the implementation of AI technology and the quality of databases adopted from (Dohmen et al., 2023; Torabi et al., 2016; Workman et al., 2021). The dependent variable in this research is Organizational Profitability, a pivotal measure that encapsulates the financial health and success of the organizations under scrutiny. This variable will be quantified using established financial indicators, primarily focusing on Return on Investment (ROI) and Net Profit Margin. The utilization of these indicators ensures a holistic evaluation of profitability, capturing both the efficiency of investment returns and the net earnings relative to revenue. By employing these financial metrics, the study aims to discern the direct impact of AI implementation and database quality on the financial performance of the organizations, providing a tangible and quantitative measure of their success in terms of profitability adopted from (Khan et al., 2022; Ortiz-de-Mandojana & Bansal, 2016; Purwaningsih et al., 2024a).

3.3 Data Analysis Approach

In the analytical phase of this research, quantitative data will undergo rigorous examination utilizing statistical methodologies. Linear regression, a powerful statistical tool, will be applied to ascertain the relationships between AI implementation, database quality, and organizational profitability. This analysis aims to unveil the direct impact of AI integration and database efficiency on the financial performance of the organizations under study. Furthermore, path analysis, a sophisticated statistical technique, will be employed to delve deeper into the intricate web of relationships (Krämer et al., 2014). This method allows for a comprehensive understanding of the mediating variables, particularly focusing on the quality of risk management. The path analysis will illuminate the extent to which risk management practices mediate the relationships between AI implementation, database quality, and profitability. By exploring these pathways, the study seeks to uncover nuanced insights into how risk management plays a role in shaping the overall impact of AI and database quality on organizational financial outcomes.
The overarching goal of this quantitative approach within the research design is to provide a quantifiable and robust comprehension of how the implementation of AI and the quality of organizational databases directly influence profitability. Through rigorous statistical analysis, the research findings are poised to be fortified, offering empirical foundations for pragmatic recommendations. This, in turn, is expected to offer valuable insights and guidance for organizations grappling with challenges associated with AI technology and risk management in the contemporary business landscape.

4. Findings

4.1 Latent Variable Descriptive

The descriptive statistics in Table 1 offer valuable insights into four crucial constructs: Artificial Intelligence, Organizational Databases, Risk Management, and Profitability. Artificial Intelligence exhibits a relatively balanced distribution with a median of -0.002, yet the positive excess kurtosis (3.990) and negative skewness (-1.602) suggest outliers, indicating a concentration towards lower values. Organizational Databases display a left-skewed distribution with a negative median (-0.286) and skewness (-1.003), while a positive excess kurtosis (1.551) implies potential outliers. Risk Management and Profitability both show left-skewed distributions with negative medians (-0.302 and -0.156, respectively) and skewness values (-0.543 and -1.301). Profitability's positive excess kurtosis (2.758) indicates potential outliers with heavy tails. Overall, the findings point to a concentration of responses towards lower values in all constructs, with the presence of outliers necessitating further examination. A more comprehensive understanding will require in-depth analysis, including hypothesis testing and correlation studies. Addressing outliers and scrutinizing distribution shapes may refine interpretations and enhance the reliability of the findings.

Table 1
LV Descriptive

Construct	No. of Obs.	Median	Min	Max	Excess Kurtosis	Skewness
Artificial Intelligence	240	-0.002	-4.498	0.961	3.990	-1.602
Organizational Databases	240	-0.286	-3.286	1.192	1.551	-1.003
Risk Management	240	-0.302	-3.485	1.298	1.062	-0.543
Profitability	240	-0.156	-3.494	1.24	2.758	-1.301

4.2 Validity and Reliability

Table 2 presents the results of the Confirmatory Factor Analysis (CFA) for four key constructs: Artificial Intelligence (AI), Organizational Database (OD), Risk Management (RM), and Profitability (PROF). The outer loading values represent the strength of the relationship between each indicator and its corresponding construct. For Artificial Intelligence, the indicators (AI1 to AI8) exhibit robust outer loading values ranging from 0.922 to 0.957. These values suggest a strong association between the provided statements and the AI construct. The Cronbach's Alpha coefficient of 0.980 indicates high internal consistency, while rho_A and Composite Reliability (CR) values above 0.980 and 0.983, respectively, further validate the reliability of the AI construct. The Average Variance Extracted (AVE) value of 0.879 indicates a satisfactory level of convergent validity. Similarly, Organizational Database indicators (OD1 to OD7) demonstrate substantial outer loading values ranging from 0.867 to 0.960. The high Cronbach's

Alpha (0.972), rho_A (0.978), and CR (0.977) values confirm the internal consistency and reliability of the OD construct. The AVE of 0.857 suggests acceptable convergent validity. For Risk Management, indicators (RM1 to RM7) exhibit strong outer loading values ranging from 0.876 to 0.945, affirming a robust relationship with the RM construct. High values for Cronbach's Alpha (0.964), rho_A (0.966), and CR (0.970) demonstrate strong internal consistency and reliability. The AVE of 0.821 indicates satisfactory convergent validity. Profitability indicators (PROF1 to PROF7) also show substantial outer loading values ranging from 0.722 to 0.937, indicating a reliable connection with the PROF construct. The high Cronbach's Alpha (0.949), rho_A (0.951), and CR (0.959) values affirm internal consistency and reliability, while the AVE of 0.769 reflects acceptable convergent validity. In summary, the Confirmatory Factor Analysis results validate the measurement model's reliability and convergent validity for the four constructs, establishing a solid foundation for subsequent analyses and interpretations.

Table 2
Confirmatory Factor Analysis

Construct	Items	Indicators	Outer Loading	Cronbach's Alpha	rho_A	CR	AVE
Artificial Intelligence	AI1	AI algorithms provide advanced risk assessments by analyzing diverse datasets, minimizing uncertainties and strengthening risk management strategies.	0.923	0.980	0.981	0.983	0.879
	AI2	AI's predictive analytics capabilities contribute to improved decision-making, optimizing resource allocation, and enhancing profitability through informed strategies.	0.937				
	AI3	AI-driven automation enhances operational efficiency, reducing the risk of errors and operational failures that could impact financial stability.	0.946				
	AI4	AI enables cost optimization through process automation and efficiency improvements, directly impacting profitability by maximizing financial returns.	0.932				
	AI5	AI's adaptability to changing conditions aids in proactive risk mitigation, ensuring organizations can swiftly respond to emerging threats.	0.925				
	AI6	AI-powered customer analytics provides valuable insights, facilitating customer-centric strategies that positively influence profitability.	0.957				
	AI7	AI plays a crucial role in fraud detection, bolstering financial security and minimizing the risk of monetary losses.	0.922				
	AI8	AI fosters continuous innovation, positioning organizations for market leadership and sustained profitability through technological advancements and competitive differentiation.	0.956				
Organizational Databases	OD1	The organizational database implements robust security protocols, including encryption and access controls, to safeguard sensitive information from unauthorized access.	0.867	0.972	0.978	0.977	0.857
	OD2	The database is regularly maintained to ensure accurate and reliable information, minimizing errors and discrepancies in organizational data.	0.937				
	OD3	The organizational database demonstrates scalability to accommodate growing data volumes, ensuring efficient performance and adaptability to changing business needs.	0.942				
	OD4	User access to the database is carefully managed, with defined roles and permissions to control data access and maintain confidentiality.	0.917				
	OD5	The organization has established regular data backup routines and effective recovery procedures to prevent data loss and ensure business continuity in the event of system fail-	0.960				
	OD6	The organizational database is designed with integration capabilities, allowing seamless data exchange with other systems and promoting a cohesive information environment.	0.905				
	OD7	The database adheres to relevant data protection regulations and industry standards, ensuring legal compliance and mitigating the risk of legal consequences related to data management.	0.951				
Risk Management	RM1	The organization has a systematic process in place to identify and assess potential risks across various aspects of its operations.	0.876	0.964	0.966	0.97	0.821
	RM2	Risks are evaluated based on their potential impact and likelihood, enabling the organization to prioritize and address high-priority risks first.	0.917				
	RM3	Clear and effective strategies are in place to mitigate identified risks, including preventive measures and contingency plans.	0.945				
	RM4	The organization actively monitors and surveils key risk indicators to detect early warning signs and ensure timely intervention.	0.916				
	RM5	There is a transparent communication process for sharing risk-related information within the organization, ensuring that relevant stakeholders are aware of potential threats.	0.919				
	RM6	The organization ensures compliance with industry regulations and legal requirements related to risk management, minimizing legal and regulatory risks.	0.883				
	RM7	There is an ongoing commitment to reviewing and improving the risk management processes, adapting to changing business environments and emerging risks.	0.885				
Profitability	PROF1	The organization consistently experiences positive revenue growth over specified periods, indicating its ability to generate income.	0.916	0.949	0.951	0.959	0.769
	PROF2	The gross and net profit margins are consistently healthy, demonstrating efficient cost management and sustainable profitability.	0.874				
	PROF3	The organization achieves a favorable return on investment, reflecting the effectiveness of its capital allocation and investment decisions.	0.937				
	PROF4	Effective cost control measures are implemented, ensuring that operational expenses are managed efficiently to maximize profitability.	0.869				
	PROF5	The organization successfully expands its market share, indicating a competitive edge and the ability to capture a larger portion of the target market.	0.722				
	PROF6	High customer retention rates and satisfaction scores contribute to long-term profitability through repeat business and positive word-of-mouth marketing.	0.909				
	PROF7	The organization demonstrates a commitment to innovation and increased productivity, leading to the development of new revenue streams and enhanced overall profitability.	0.895				

Furthermore, Table 3 displays the Heterotrait-Monotrait Ratio (HTMT) for the four constructs: Artificial Intelligence (AI), Organizational Databases (OD), Profitability (PROF), and Risk Management (RM). The HTMT values, which indicate discriminant validity, are generally within an acceptable range. Specifically, the moderate values between AI and other constructs (OD=0.376,

PROF=0.587, RM=0.460) suggest a reasonable level of discrimination between Artificial Intelligence and the other domains. Similarly, the values between Organizational Databases and both Profitability (0.514) and Risk Management (0.333) indicate a moderate level of discriminant validity. Overall, while the HTMT values do not demonstrate extremely low levels, they still support the idea of reasonable discriminant validity among the constructs, aligning with established thresholds for such assessments. Researchers should complement these findings with additional validity measures, and consider the broader context of the study, for a comprehensive interpretation.

Table 3
Heterotrait-Monotrait Ration (HTMT)

Construct*)	AI	OD	PROF	RM
AI	1			
OD	0.376	1		
PROF	0.587	0.514	1	
RM	0.46	0.333	0.488	1

*) AI=Artificial Intelligence; OD=Organizational Databases; RM=Risk Management; PROF=Profitability

4.3 Direct Relationship

Table 4 and Fig. 2 showcase the outcomes of the Path Analysis, delving into the proposed relationships among constructs in the structural model. Let's explore the key hypotheses and their associated findings. The observed path from Artificial Intelligence (AI) to Risk Management (RM) reveals a path coefficient of 0.380 with a standard deviation of 0.072. The T statistics value of 5.293, coupled with a p-value of 0.000, signifies statistical significance. Consequently, H1, positing a positive connection between AI and RM, attains confirmation. The path connecting AI to Profitability (PROF) manifests a path coefficient of 0.361, alongside a standard deviation of 0.062. A T statistics value of 5.842 and a p-value of 0.000 underline the statistical significance. Thus, H2, proposing a positive association between AI and PROF, gains affirmation. In exploring the link from Organizational Databases (OD) to Risk Management (RM), a path coefficient of 0.185 is observed, accompanied by a standard deviation of 0.056. A T statistics value of 3.282 and a p-value of 0.001 establish statistical significance, endorsing H3's suggestion of a positive relationship between OD and RM. The path from OD to Profitability (PROF) yields a path coefficient of 0.296 and a standard deviation of 0.052. A T statistics value of 5.714, coupled with a p-value of 0.000, underscores statistical significance, supporting the acceptance of H4, which posits a positive association between OD and PROF. Examining the link from Risk Management (RM) to Profitability (PROF), a path coefficient of 0.215 is identified, accompanied by a standard deviation of 0.056. With a T statistics value of 3.862 and a p-value of 0.000, statistical significance is evident, affirming H5's assertion of a positive relationship between RM and PROF. In conclusion, the Path Analysis affirms the proposed relationships among Artificial Intelligence, Organizational Databases, Risk Management, and Profitability. All five hypotheses garner support through statistically significant path coefficients, contributing valuable insights into the underlying structural dynamics of the model.

Table 4
Path Analysis

Hypothesis	Construct*)	Original	STDEV	T Statistics	P Values	Result
H1	AI → RM	0.380	0.072	5.293	0.000	Accepted
H2	AI → Prof	0.361	0.062	5.842	0.000	Accepted
H3	OD → RM	0.185	0.056	3.282	0.001	Accepted
H4	OD → PROF	0.296	0.052	5.714	0.000	Accepted
H5	RM → PROF	0.215	0.056	3.862	0.000	Accepted

*) AI=Artificial Intelligence; OD=Organizational Databases; RM=Risk Management; PROF=Profitability

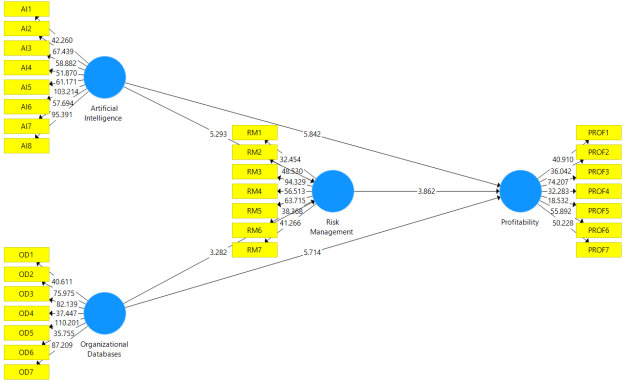

Fig. 2. Smart PLS Output

4.4 Indirect Relationship

Table 5 presents the results of the Mediation Analysis, specifically examining the mediating roles of Risk Management (RM) in the relationship between Artificial Intelligence (AI) and Profitability (PROF), as well as between Organizational Databases (OD) and Profitability. For the mediation pathway from AI to RM to PROF, the observed path coefficient is 0.082, with a standard deviation of 0.025. The T statistics value is 3.214, and the associated p-value is 0.001, indicating statistical significance. Consequently, H6, proposing that the relationship between AI and PROF is mediated by RM, is accepted. In the mediation pathway from OD to RM to PROF, the path coefficient is 0.040, accompanied by a standard deviation of 0.017. The T statistics value is 2.288, and the p-value is 0.023, demonstrating statistical significance. Thus, H7, suggesting that the relationship between OD and PROF is mediated by RM, is accepted. In summary, the Mediation Analysis provides support for the mediating roles of Risk Management in the relationships between both Artificial Intelligence and Profitability (H6) and Organizational Databases and Profitability (H7). The statistically significant path coefficients and associated T statistics values underscore the importance of Risk Management as a mediator in these relationships. These findings contribute valuable insights into the nuanced dynamics of the model, emphasizing the intermediary role of Risk Management in influencing organizational profitability.

Table 5
Mediation Result

Hypothesis	Construct*)	Original Sample	STDEV	T Statistics	P Values	Result
H6	AI → RM → PROF	0.082	0.025	3.214	0.001	Accepted
H7	OD → RM → PROF	0.040	0.017	2.288	0.023	Accepted

*) AI=Artificial Intelligence; OD=Organizational Databases; RM=Risk Management; PROF=Profitability

5. Discussions

The acceptance of Hypothesis 1 (H1) indicating that "Artificial Intelligence impacts Risk Management" carries significant implications for the banking sector in Indonesia. This acknowledgment underscores AI's transformative influence on risk management practices within financial institutions. With AI technologies advancing, the industry is on the cusp of a paradigm shift in how risks are identified, assessed, and mitigated. H1 implies that AI, with its analytical capabilities and machine learning algorithms, is pivotal in reshaping risk management methodologies in Indonesian banks. The integration of AI enables a real-time and nuanced assessment of potential risks, providing a strategic advantage in navigating a complex market environment (Habbal et al., 2024). This can lead to improved accuracy in identifying emerging risks, enhanced predictive analytics, and a proactive approach to addressing challenges (Alexandro & Basrowi, 2024a, 2024b; Purwaningsih et al., 2024b). The implications extend beyond risk identification to encompass precise risk mitigation strategies (Aljohani, 2023). AI-driven practices contribute to operational efficiencies, cost reduction, and a more resilient financial system. In the Indonesian banking sector, H1 signals a need for institutions to embrace AI-driven solutions in their risk management frameworks (Basrowi & Maunnah, 2019; Basrowi & Utami, 2020; Marwanto et al., 2020). Effective utilization of AI technologies can foster a competitive edge, promoting a culture of innovation, adaptability, and responsiveness to emerging risks (Abbasi & Rahmani, 2023). As the industry evolves, AI integration becomes not only a strategic imperative but also a catalyst for sustainable growth and resilience in dynamic market dynamics. The acknowledgment of AI's impact on risk management marks a transformative era for the Indonesian banking landscape, where technology becomes a crucial ally in navigating the complexities of risk and reward (Hadi et al., 2019; Hamdan & Basrowi, 2024; Junaidi, Basrowi, et al., 2024; Z. F. A. Yusuf et al., 2024).

The validation of Hypothesis 2 (H2) regarding "Artificial Intelligence impacts profitability" holds significant implications for Indonesia's banking industry (Himmatul & Junaedi, 2024; Saeri et al., 2024; Shofwa et al., 2024). This acknowledgment recognizes AI's transformative influence on financial performance, reshaping traditional paradigms in pursuit of success. H2 underscores AI's crucial role in influencing profitability, promising new revenue avenues and cost optimizations. By leveraging AI's analytical prowess, banks can enhance revenue streams through targeted strategies (Stone et al., 2020). Moreover, H2 suggests AI's impact extends to cost management and operational efficiency, offering streamlined processes and reduced costs (Ng et al., 2021). This approach not only improves the bottom line but positions banks for sustained profitability in a competitive landscape. In Indonesia, H2 emphasizes the imperative for strategic AI adoption, offering a competitive edge through operational optimization, personalized customer experiences, and innovative financial products (Himmatul et al., 2024; Kharis et al., 2024; Lisaria et al., 2024). The acknowledgment of AI's impact on profitability signals a transformative shift, urging Indonesian banks to adopt a forward-thinking, technologically adept approach for sustained growth. H2 implies that AI integration is not merely strategic but a necessity, placing Indonesian banks at the forefront of a technological renaissance synonymous with innovation, financial success, and strategic prowess in a digital and competitive banking ecosystem (Junaidi, Masdar, et al., 2024; Miar et al., 2024).

Hypothesis 3 (H3) asserts that "Organizational Databases impact Risk Management," holding significant implications for Indonesia's banking industry. This confirmation highlights the pivotal role of Organizational Databases in shaping risk management practices amid the sector's digital transformation. H3 implies that the quality and efficiency of Organizational Databases directly influence Risk Management efficacy in Indonesian banks. Serving as information cornerstones, databases house crucial data for risk assessment, compliance, and decision-making (R. Wang et al., 2023). A well-structured database enhances risk identification accuracy, providing real-time insights into potential challenges. Moreover, H3 suggests that Organizational Databases impact regulatory compliance (Basrowi & Utami, 2023; I Gusti Gede Heru Marwanto Basrowi, 2020; Suseno et al., 2018). Database quality is intrinsic to aligning risk management with regulatory standards, minimizing legal risks, and safeguarding the bank's reputation. In Indonesia's banking sector, H3 underscores the need to prioritize and invest in optimizing Organizational Databases. This focus ensures data integrity, security, and accessibility, enabling proactive risk management, compliance, and resilience in evolving regulatory landscapes (Georgiadis & Poels, 2021). As the industry navigates the digital era, H3 emphasizes Organizational Databases' pivotal role in fostering a robust risk management culture. The acknowledgment of this symbiotic relationship positions Indonesian banks to leverage data strategically, ensuring compliance, navigating uncertainties, and enhancing overall resilience. Quality Organizational Databases emerge as not just a technological necessity but a strategic imperative for banks thriving in dynamic landscapes with evolving regulatory expectations.

Hypothesis 4 (H4) asserts that "Organizational Databases impact profitability," holding profound implications for Indonesia's banking industry. This acknowledgment underscores the critical role of Organizational Databases in influencing financial performance, a crucial aspect as the banking sector undergoes digital transformation. H4 suggests that the quality and efficiency of Organizational Databases directly affect the financial success of Indonesian banks. Serving as data repositories crucial for decision-making and operational efficiency, a well-structured database contributes significantly to profitability by providing accurate insights and optimizing decision-making processes.

Moreover, H4 implies that the impact of Organizational Databases on profitability extends to customer-centric strategies. An effective database, capturing and utilizing customer data, enhances personalized services and targeted marketing, fostering customer loyalty and retention, thereby positively impacting the bottom line. In Indonesia's banking industry, H4 underscores the strategic need to prioritize optimizing Organizational Databases. Institutions investing in data integrity, security, and accessibility are better positioned to leverage databases for sustained financial success (Purwaningsih et al., 2024a). The integration of advanced analytics and data-driven decision-making becomes not just technological advancement but a strategic necessity for banks navigating a competitive landscape (Buhalis & Leung, 2018).

As Indonesia's banking sector evolves, H4 emphasizes the significance of Organizational Databases as catalysts for financial growth and customer-centric strategies. Acknowledging databases' impact on profitability positions Indonesian banks to leverage data strategically, enhancing customer experiences and contributing to sustained financial success in a dynamic digital era. Advanced database management practices emerge as a linchpin for thriving in an environment marked by evolving customer expectations and market demands.

Hypothesis 5 (H5) confirms that "Risk Management impacts profitability," holding significant implications for Indonesia's banking sector. This recognition emphasizes the crucial role of effective risk management practices in shaping financial performance amid uncertainties and regulatory changes. The acceptance of H5 implies that the quality of Risk Management directly influences the financial success of Indonesian banks. Going beyond compliance, effective risk management becomes a strategic imperative, helping institutions minimize losses and contribute positively to the bottom line by identifying and mitigating potential risks (Jurison, 2019).. Furthermore, H5 suggests that Risk Management's impact on profitability extends to strategic decision-making and resource allocation. A well-structured risk management framework enables informed decisions, allowing banks to navigate challenges, seize opportunities, and allocate resources optimally. Proactive risk management becomes a catalyst for sustainable profitability, fostering resilience in dynamic market conditions In the Indonesian banking industry, H5 underscores the need for institutions to enhance risk management frameworks. Integrating advanced methodologies and technology positions banks to thrive in uncertain environments. Accepting the impact of risk management on profitability enables banks to navigate risks proactively and enhance financial resilience (Hobvi et al., 2022). As the sector evolves, H5 emphasizes risk management's critical role as a cornerstone for sustained financial success. Recognizing risk management as a strategic enabler positions Indonesian banks to shape their financial destinies proactively. Advanced risk management practices emerge as pivotal elements for banks aspiring to innovate, thrive, and sustain profitability in a dynamic financial landscape (Purwaningsih, 2019, 2020; Purwaningsih & Rahmanto, 2013).

Hypotheses 6 (H6) and 7 (H7) confirmation, indicating that "Risk Management mediates the relationship between Artificial Intelligence and profitability" and "Risk Management mediates the relationship between Organizational Databases and profitability," has significant implications for Indonesia's banking sector. These findings emphasize the intricate interplay among advanced technologies, data infrastructure, and strategic risk management. H6 underscores that the impact of Artificial Intelligence (AI) on profitability is contingent on effective Risk Management practices. This implies that AI integration should align with risk

tolerance levels, compliance standards, and strategic objectives to ensure a positive financial outcome (van Bommel, 2018). Similarly, H7 suggests that the association between Organizational Databases and profitability is channeled through the mediating influence of Risk Management. The quality and management of databases impact risk identification, compliance, and decision-making, with risk management acting as a conduit for translating these aspects into tangible financial gains. In response, Indonesian banks are urged to adopt a holistic approach, integrating AI technologies and optimizing organizational databases within a strategic risk management framework. This comprehensive strategy is deemed essential for sustained financial success amidst the evolving technological landscape and dynamic market conditions (Purwaningsih et al., 2018, 2019, 2022; Purwaningsih & Suhaeri, 2019). The confirmation of H6 and H7 provides a strategic roadmap, encouraging financial institutions to navigate challenges and leverage opportunities through an integrated approach to technology, data infrastructure, and risk management practices.

6. Conclusion

In summarizing this research, it can be concluded that the primary objectives have been achieved. The study aimed to explore and analyze the relationship between the implementation of Artificial Intelligence (AI) and the quality of Organizational Databases on profitability, with Risk Management as a mediator. Key findings affirm that the influence of AI and the quality of organizational databases on profitability is not direct but mediated by the role of Risk Management. This implies that to achieve genuine financial success, there needs to be a seamless integration of AI technology, effective risk management, and optimization of organizational databases. The implications of these findings are highly significant, particularly for the banking sector in Indonesia. Financial institutions need to recognize the importance of collaboration between cutting-edge technology, robust data infrastructure, and strategic risk management. Integrating AI and optimizing databases within a comprehensive risk management framework is not just a technological enhancement but a strategic necessity. Acknowledging these implications positions Indonesian banks at the forefront of a transformative era, where innovation, adaptability, and a risk-sensitive culture are key to sustainable financial success. In this context, further steps focused on enhancing risk management frameworks, cultivating a culture of adaptability and innovation, and sustained investment in AI capabilities and database optimization are crucial recommendations for financial institutions in Indonesia. Thus, this research not only yields crucial insights but also provides guidance for further development in the fields of technology, risk management, and financial performance. Sustained awareness, adaptability, and a proactive approach will be pivotal for Indonesian banks to thrive in the ever-evolving landscape of the digital era.

6.1 Theoretical and Practical Implications

The findings of this research hold several theoretical implications that contribute to the existing body of knowledge in the fields of Artificial Intelligence (AI), Organizational Databases, Risk Management, and profitability in the context of the banking sector. The confirmation that Risk Management mediates the relationship between AI, Organizational Databases, and profitability adds depth to the understanding of these intricate connections. This supports and extends existing theories on technology adoption, risk mitigation, and financial performance, providing a nuanced perspective on the interplay between advanced technologies and strategic risk management. Furthermore, the study introduces a mediating role for Risk Management in the relationship between AI and profitability, challenging a simplistic direct impact model. This theoretical nuance enhances our understanding of the complex dynamics involved in leveraging AI for financial success, prompting future scholars to explore similar mediating influences in different contexts and industries. The practical implications of this research are significant for practitioners, particularly in the banking industry. Financial institutions in Indonesia can leverage these insights to inform and enhance their strategic decision-making processes. The acknowledgment that Risk Management plays a pivotal role in translating the potential of AI and high-quality organizational databases into tangible profitability underscores the importance of a comprehensive risk-aware approach. Practically, this implies that organizations should not solely focus on technological advancements but should prioritize the development and optimization of their risk management frameworks. Institutions that integrate AI effectively, optimize their databases, and concurrently strengthen their risk management practices are likely to be better positioned for sustained financial success. Additionally, the findings emphasize the need for continuous investment in employee training and development to ensure a workforce equipped to handle the evolving technological landscape. This practical guidance is crucial for banking professionals seeking to navigate the complexities of technological integration, risk management, and financial performance in a rapidly changing environment. In summary, the theoretical implications contribute to academic discourse, while the practical implications offer actionable insights for organizations aiming to thrive in the digital era.

6.2 Limitations and Recommendations

Despite the valuable insights gained from this research, it is essential to acknowledge certain limitations that may impact the generalizability and scope of the findings:

1. Contextual Specificity: The study is context-specific to the Indonesian banking sector, and findings may not be directly transferable to other industries or global contexts. Different regulatory environments, cultural factors, and industry dynamics could influence the relationships studied.
2. Temporal Constraints: The rapidly evolving nature of technology and business environments introduces a temporal constraint. Findings are reflective of the state of affairs during the study period and may not capture emerging trends or changes post-research.
3. Sample Characteristics: The study's findings are contingent on the characteristics of the sampled organizations. Variations in size, industry, and technological maturity among sampled institutions may impact the generalizability of results.

To address these limitations and guide future research endeavors, the following recommendations are proposed:

1. Cross-Industry Studies: Future research should explore the relationships between AI, Organizational Databases, Risk Management, and profitability across diverse industries to validate the generalizability of findings.
2. Longitudinal Studies: Conducting longitudinal studies would allow researchers to capture the dynamic nature of technology adoption and its impact on risk management and profitability over time.
3. Global Comparative Analysis: Comparative studies across multiple countries and regulatory environments can provide a broader understanding of how contextual factors influence the relationships under investigation.
4. In-Depth Case Studies: Complementing quantitative approaches with in-depth qualitative case studies can offer richer insights into the specific mechanisms and contextual nuances influencing the studied relationships.
5. Continuous Technological Monitoring: Given the rapid pace of technological change, organizations are encouraged to continuously monitor and adapt their AI implementations and risk management strategies to stay aligned with evolving best practices and industry trends.
6. Collaborative Industry Initiatives: Collaboration among financial institutions, industry associations, and regulatory bodies can foster the development of standardized best practices in AI adoption, risk management, and database optimization, ensuring a collective advancement within the sector.

By addressing these recommendations, future research endeavors can enhance the robustness and applicability of findings in the dynamic landscape of technology, risk management, and financial performance.

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