

ERP Mediation in Digital Competence, Information Quality, System Automation, and Managerial Decision-Making in Banking

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KEYWORDS	ABSTRACT
Keywords: digital competence; financial information quality; system automation; Enterprise Resource Planning; managerial decision-making Conflict of Interest Statement: The author(s) declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. Copyright © 2026 Vifada Management and Digital Business. All rights reserved.	Digital transformation in the banking sector requires more accurate information integration and effective managerial decision-making. This study examines the effects of digital competence, financial information quality, and system automation on managerial decision-making effectiveness, with Enterprise Resource Planning (ERP) utilization serving as a mediating variable. A quantitative survey was conducted involving 100 ERP users from four major banks in Makassar, Indonesia. The data were analyzed using partial least squares structural equation modeling (PLS-SEM). The findings indicate that digital competence, financial information quality, and system automation significantly influence ERP utilization, with digital competence emerging as the strongest predictor. ERP utilization also exerts a substantial positive effect on managerial decision-making effectiveness. Furthermore, ERP utilization mediates the relationships between the three antecedent variables and managerial decision-making effectiveness. These findings contribute empirical evidence to the literature on digital transformation in banking and offer practical implications for strengthening employees' digital competence, improving financial information quality, and optimizing ERP utilization within banking institutions.

Introduction

Digital transformation has fundamentally changed how organizations create value, manage business processes, and make decisions. It extends beyond the adoption of new technologies to encompass strategic changes in organizational structures, human resource competencies, operational processes, and business models (Kraus et al., 2022; Verhoef et al., 2021). These changes are particularly important in the banking industry, where institutions operate in highly data-dependent, risk-intensive, and strictly regulated environments. Accordingly, banks' ability to integrate technology, human resources, and information has become a critical determinant of successful digital transformation (Porfirio et al., 2024).

In Indonesia, banking digital transformation has accelerated in response to the increasing use of digital financial services, changing customer behavior, the growth of financial technology companies, and rising demand for fast, secure, and integrated services. The Financial Services Authority of Indonesia identifies governance, technology, data, risk management, institutional collaboration, and consumer protection as the principal components of banking digital transformation (Otoritas Jasa Keuangan [OJK], 2021). This policy direction was subsequently reinforced through regulations and guidelines requiring banks to achieve adequate levels of digital maturity, system resilience, and information technology governance (OJK, 2023). Nevertheless, Indonesia's banking sector continues to face challenges related to infrastructure disparities, human resource capabilities, data integration, cybersecurity, and differences in technological capacity across banks (Habir & Wardana, 2023).

Enterprise Resource Planning (ERP) is among the key technologies supporting this transformation. ERP is an integrated system that enables organizations to connect financial management, human resources, procurement, internal control, reporting, and operational activities through a centralized database. This integration facilitates faster, more consistent, and widely accessible information across organizational units. ERP systems can also improve cross-functional coordination, information transparency, process efficiency, and decision-making quality (Balić et al., 2022). Rouhani et al. (2021) demonstrated that ERP system quality and information quality influence both user experience and organizational decision quality. However, these benefits do not arise automatically, as they depend substantially on user capabilities, data quality, organizational support, and the alignment of the system with task requirements.

Digital competence is a critical human factor affecting the successful utilization of ERP systems. It extends beyond the technical ability to operate software and encompasses the capacity to understand data, apply analytical features, evaluate digital information, resolve technical problems, and adapt to system changes. Pargmann et al. (2023) found that the digitalization and automation of accounting activities have increased the demand for digital and analytical competencies, particularly as routine tasks are increasingly transferred to automated systems. These competencies are equally relevant to banking employees, who must interpret financial and operational information within an increasingly digital work environment. Empirical evidence indicates that digital skills training and access to digital platforms can strengthen employee empowerment and performance (Abdul Rahim et al., 2024). In the Indonesian banking sector, digital competence has also been identified as an important dimension of digital transformation that contributes to improved employee performance (Harahap et al., 2024).

Nevertheless, digital competence may not necessarily result in effective managerial decision-making unless it is translated into the appropriate use of information systems. Users may possess strong technological capabilities, yet the resulting organizational benefits may remain limited when ERP features are underutilized or poorly aligned with task requirements. Jo and Park (2023) found that ERP success is jointly determined by technology quality, user perceptions, and human participation. This finding suggests that digital competence should be viewed as an organizational resource that enables users to explore, interpret, and utilize ERP-generated information effectively. ERP utilization can therefore serve as a mechanism through which individual digital competence is transformed into organizational decision-making capability.

In addition to digital competence, financial information quality is essential for effective managerial decision-making. High-quality information should be accurate, relevant, complete, consistent, reliable, and timely. Such information is required for credit risk assessment, liquidity management, resource allocation, cost control, performance evaluation, and banking strategy formulation. Franke and Hiebl (2023) found that data-source quality is associated with improved decision quality, although this benefit becomes stronger when organizations employ professionals with adequate data analytics skills. Within an ERP environment, information quality also enhances perceived system usefulness because users obtain information that is understandable and relevant to their work requirements (Jo & Park, 2023).

Conversely, inaccurate, delayed, incomplete, or inconsistent information can undermine user confidence and lead to biased managerial decisions. Research on digital accounting systems in the banking industry has identified information quality as an important system-success factor that contributes to improved decision-making quality (Al-Okaily et al., 2022). Other studies have demonstrated that ERP quality—including technical, information, and service quality—is associated with organizational performance (Balić et al., 2022). However, the literature presents inconsistent findings. Jo and Park (2023), for example, found that information quality did not directly improve user satisfaction but exerted a strong influence on the perceived usefulness of ERP systems. This

inconsistency suggests that the effect of information quality on organizational outcomes may operate through ERP utilization rather than exclusively through a direct relationship.

Another important factor is system automation, which refers to the extent to which technology can execute processes, validate transactions, process data, generate reports, and connect organizational functions with minimal manual intervention. Automation can reduce human error, shorten reporting cycles, improve process consistency, and enable the provision of real-time information. The digitalization of accounting activities indicates that routine tasks are increasingly being automated, allowing professionals to shift their attention toward analytical, interpretive, and strategic activities (Pargmann et al., 2023). The integration of automation technologies with ERP systems can also improve process efficiency and strengthen the quality of information used in organizational decision-making (Harianto et al., 2024). Moreover, advancements in automated and artificial intelligence-assisted accounting systems have accelerated the transition of the accounting function from transaction recording toward predictive analysis and decision support (Sampaio et al., 2025).

Despite these potential benefits, a high level of automation does not necessarily produce more effective managerial decisions. Automation that is not supported by appropriate data controls, system integration, human oversight, and interpretive capabilities may amplify errors and disseminate them across organizational units. Furthermore, continued reliance on manual processes and fragmented information systems can hinder real-time data updates. Al-Hattami (2025) found that digital accounting systems can improve financial performance, although their effectiveness depends on implementation quality and an organization's ability to transform data into meaningful information. This finding indicates that automation requires an integrated platform such as ERP to convert technical efficiency into managerial benefits.

These issues are particularly relevant to the banking sector in Makassar, a major center of economic and financial activity in Eastern Indonesia. Banks operating in Makassar face increasing transaction volumes, demands for rapid reporting, heightened risk-monitoring requirements, and growing expectations for digital services. However, differences may exist across banks and organizational units in terms of employees' digital competence, information quality, process integration, and system automation. Technology implementation at the organizational level is also not necessarily accompanied by a comparable level of utilization among individual users. Consequently, substantial investments in ERP systems may not improve decision quality when users lack adequate digital competence, the resulting information does not satisfy managerial requirements, or work processes remain dependent on manual intervention. These circumstances highlight the need to examine banking digital transformation through an integrated analysis of human, informational, and technological factors and their implications for managerial decision-making.

Previous studies reveal several important research gaps. First, research on banking digital transformation has predominantly examined organizational performance, customer experience, service innovation, and competitiveness, while internal decision-making mechanisms have received comparatively limited attention (Porfírio et al., 2024). Second, ERP research has generally focused on system quality, information quality, user satisfaction, technology acceptance, or organizational performance (Balić et al., 2022; Jo & Park, 2023; Nour, 2023). Third, studies on digital competence, information quality, and automation have tended to examine these variables separately, thereby providing limited insight into their combined effects within an integrated model. Fourth, the existing literature is dominated by evidence from manufacturing industries, nonfinancial firms, and organizations in developed economies, while studies of banking institutions in developing economies remain limited (Al-Okaily et al., 2022). Fifth, ERP has generally been positioned as an independent variable or an object of system evaluation rather than as a mediating mechanism through which digital resources and process quality are converted into effective managerial decisions.

To address these gaps, the novelty of this study lies in developing an integrated model that positions ERP utilization as a mediator of the relationships between digital competence, financial information quality, system automation, and managerial decision-making effectiveness. The model integrates human, informational, and technological dimensions within a single analytical framework. It further proposes that these three factors may not automatically improve decision-making effectiveness but must first facilitate effective ERP utilization. Theoretically, this study extends the Information Systems Success Model by incorporating digital competence and system automation as antecedents of ERP utilization. It also draws on the Resource-Based View to conceptualize digital competence as a strategic organizational resource. Contextually, this study provides evidence from the relatively underexplored banking sector in Makassar. Accordingly, it aims to examine the direct and indirect effects of digital competence, financial information quality, and system automation on managerial decision-making effectiveness through the mediating role of ERP utilization.

Research Design and Methodology

This study employed a quantitative approach with an explanatory survey design to examine the causal relationships among digital competence, financial information quality, system automation, Enterprise Resource Planning (ERP) utilization, and managerial decision-making effectiveness in the banking sector in Makassar, Indonesia. A quantitative approach was selected because it enables the empirical examination of relationships among complex latent variables through structural modeling (Hair et al., 2021). The study population comprised bank employees who actively used ERP systems, including operational staff, analysts, managers, and information technology personnel. Using purposive sampling, 100 respondents were selected from four major banks—BNI, BRI, BCA, and Bank Mandiri. Eligible respondents were required to have direct experience using ERP systems and to be involved in decision-making processes within their respective work units. The sample size met the minimum requirement for partial least squares structural equation modeling (PLS-SEM), namely at least ten times the number of indicators in the construct containing the largest number of indicators (Hair et al., 2021).

Data were collected both online and offline using a five-point Likert-scale questionnaire in accordance with each bank's internal authorization procedures. The research instrument was developed using indicators established in previous studies. Digital competence was measured in terms of digital literacy and users' ability to operate information systems, whereas financial information quality was assessed based on accuracy, relevance, completeness, and timeliness (DeLone & McLean, 2003). The measures of system automation, ERP utilization, and managerial decision-making effectiveness were adapted from the ERP and information systems management literature. Before the questionnaire was administered to the full sample, it underwent expert validation and pilot testing to ensure that the indicators appropriately represented their respective constructs and that all items were clearly understood (Straub, 1989).

The data were analyzed using PLS-SEM with SmartPLS because this technique is suitable for prediction-oriented models and does not impose strict multivariate normality assumptions (Ramayah et al., 2018). The analysis involved evaluating both the measurement and structural models. The measurement model was assessed using outer loadings above 0.70, Cronbach's alpha and composite reliability values above 0.70, and average variance extracted (AVE) values above 0.50. Discriminant validity was evaluated using the Fornell-Larcker criterion, which requires the square root of each construct's AVE to exceed its correlations with all other constructs (Fornell & Larcker, 1981). Once the measurement model had demonstrated adequate validity and reliability, the structural model was evaluated using path coefficients, R^2 values, and statistical significance. A bootstrapping procedure with 5,000 resamples was applied to test the direct and indirect effects, including the mediating role of ERP utilization in the relationships between digital competence, financial information quality, system automation, and managerial decision-making effectiveness.

Findings and Discussion

Respondents in study This amount to 100 person Which originate from The four largest banks in Indonesia, namely BNI, BRI, BCA, and Mandiri, were evenly distributed, with 25 respondents each. This indicates that the representation of respondents from each bank is balanced, thus ensuring that the research results are unbiased. to One institutions certain. Seen from aspect position, majority respondents were in the Staff position (48%), followed by Supervisor (28%), Manager (20%), and Head of Division (4%). This composition shows that the majority of respondents is employee operational And medium, Which in a way direct involved in the use of information systems and technology-based decision-making processes, making them highly relevant to the research context. Based on gender, 52% of respondents were male and 48% were female, indicating a relatively balanced distribution with no significant dominance by either gender.

In terms of age, respondents were dominated by the 25-29 year age group (32%), followed by age 30-34 year (24%), 35-39 year (20%), 40-44 year (16%), and ≥ 45 years (8%). Most are of productive age, generally possessing good digital adaptability and actively using ERP systems in their work activities. Meanwhile, in terms of work period characteristics, most respondents own experience Work 1-5 year (36%) And 6-10 year (28%), indicating that the majority of respondents have sufficient understanding of workflows, financial processes, and the use of technology in banks. Respondents with 11-15 years of service (20%), 16-20 years (10%), and >20 years (6%) provided additional insights from experienced employees who could assess the implementation of the ERP system in more depth. Overall, these respondent characteristics indicate that the research sample has sufficient diversity and represents the general structure of the banking workforce in Makassar City, so that the data obtained are considered representative and relevant to the research objectives regarding digital competence, financial information quality, system automation, and the effectiveness of decision-making through ERP utilization.

Table 1. Respondent Characteristics

Characteristic	Category	Frequency	Percentage (%)
Bank	BNI	25	25
	BRI	25	25
	BCA	25	25
	Bank Mandiri	25	25
Position	Staff	48	48
	Supervisor	28	28
	Manager	20	20
	Head of Division	4	4
Gender	Male	52	52
	Female	48	48
Age	25-29 years	32	32
	30-34 years	24	24
	35-39 years	20	20
	40-44 years	16	16
	≥ 45 years	8	8
Length of Service	1-5 years	36	36
	6-10 years	28	28
	11-15 years	20	20
	16-20 years	10	10
	>20 years	6	6

Source: Primary data processed by the authors.

Based on the PLS-SEM results obtained using SmartPLS, all measurement indicators exhibited outer loading values above the recommended threshold of 0.70. Therefore, all indicators met the requirements for convergent validity (Hair et al., 2021).

Hair et al. (2021) explain that indicators with outer loading values of ≥ 0.70 make a substantial contribution to explaining their respective latent constructs and should therefore be retained in the measurement model. This view is supported by Chin (1998), who states that high loading values indicate strong indicator reliability and a close relationship between an indicator and its underlying latent construct.

For the Digital Competence construct (X1), the outer loading values ranged from 0.866 to 0.910, indicating that indicators X1.1-X1.5 strongly represent the construct. These values substantially exceeded the recommended threshold and therefore confirmed the convergent validity of X1 (Hair et al., 2021). For the Financial Information Quality construct (X2), indicators X2.1-X2.5 produced outer loading values ranging from 0.835 to 0.883. These results indicate that the dimensions of accuracy, relevance, consistency, completeness, and timeliness adequately represent financial information quality. Henseler et al. (2009) emphasize that high outer loading values demonstrate the ability of indicators to reflect their respective latent constructs accurately.

The System Automation construct (X3) recorded outer loading values ranging from 0.863 to 0.897. These findings indicate that indicators such as processing speed, system integration, and the reduction of manual errors are strongly associated with system automation. According to Wong (2013), consistently high outer loading values demonstrate the reliability of the measurement model. Similarly, the Managerial Decision-Making Effectiveness construct (Y) exhibited strong indicator validity, with outer loading values ranging from 0.857 to 0.910. All indicators, Y1-Y5, exceeded the recommended threshold, demonstrating that the measurement model for this construct possessed adequate convergent validity (Hair et al., 2021; Wong, 2013).

The ERP Utilization construct (Z) recorded the highest outer loading values among all constructs, ranging from 0.875 to 0.923. This finding indicates that indicators associated with ERP utilization, including ease of access, process integration, and decision-analysis support, accurately represent the construct. These results are consistent with the guidelines proposed by Hair et al. (2021) regarding indicator reliability in PLS-SEM. Overall, all indicators produced outer loading values above 0.70, confirming that the measurement model achieved satisfactory convergent validity and could proceed to structural model evaluation. As emphasized by Gefen and Straub (2005), establishing convergent validity is essential for ensuring the accuracy and credibility of subsequent structural model analysis.

Table 2. Outer Loading Results

Construct	Indicator	Outer Loading	Interpretation
Digital Competence (X1)	X1.1	0.897	Valid
	X1.2	0.910	Valid
	X1.3	0.901	Valid
	X1.4	0.866	Valid
	X1.5	0.868	Valid
Financial Information Quality (X2)	X2.1	0.844	Valid
	X2.2	0.870	Valid
	X2.3	0.883	Valid
	X2.4	0.835	Valid
	X2.5	0.871	Valid
System Automation (X3)	X3.1	0.885	Valid
	X3.2	0.887	Valid
	X3.3	0.863	Valid
	X3.4	0.897	Valid
	X3.5	0.872	Valid
Managerial Decision-Making Effectiveness (Y)	Y1	0.906	Valid
	Y2	0.910	Valid
	Y3	0.863	Valid
	Y4	0.900	Valid
	Y5	0.857	Valid

ERP Utilization (Z)	Z1	0.898	Valid
	Z2	0.920	Valid
	Z3	0.905	Valid
	Z4	0.875	Valid
	Z5	0.923	Valid

The assessment of construct reliability and validity showed that all research variables met the recommended criteria for PLS-SEM analysis. The Digital Competence construct (X1) obtained a Cronbach's alpha of 0.933, composite reliability of 0.949, and average variance extracted (AVE) of 0.790, indicating excellent internal consistency and convergent validity. According to Fornell and Larcker (1981), an AVE value above 0.50 and composite reliability above 0.70 demonstrate satisfactory convergent validity. The Financial Information Quality construct (X2) also exhibited excellent reliability, with a Cronbach's alpha of 0.913, composite reliability of 0.935, and AVE of 0.741. These values substantially exceeded the minimum thresholds recommended by Bagozzi and Yi (1988), who proposed that a composite reliability value of at least 0.60 indicates consistent construct measurement.

The System Automation construct (X3) recorded a Cronbach's alpha of 0.928, composite reliability of 0.945, and AVE of 0.776. These results indicate that the indicators consistently and adequately represented the underlying latent construct. Diamantopoulos and Siguaw (2000) emphasized that high reliability reflects measurement stability and the accuracy of indicators in representing latent variables. Similarly, the Managerial Decision-Making Effectiveness construct (Y) met all reliability and validity requirements, with a Cronbach's alpha of 0.932, composite reliability of 0.949, and AVE of 0.788. Peter, Straub, and Rai (2007) explained that high construct reliability enhances confidence in the quality of measurement models used in information systems research.

The ERP Utilization construct (Z) demonstrated the highest reliability among all constructs, with a Cronbach's alpha of 0.944, composite reliability of 0.957, and AVE of 0.818. According to Nunnally and Bernstein (1994), reliability values above 0.90 indicate exceptionally strong internal consistency and support the use of the indicators in confirmatory research models. Overall, all constructs satisfied the recommended thresholds for internal consistency reliability and convergent validity. The measurement model was therefore considered reliable and valid, allowing the analysis to proceed to the evaluation of the structural model.

Table 3. Construct Reliability and Validity Results

Construct	Cronbach's Alpha	Composite Reliability (rho_A)	Composite Reliability (rho_C)	Average Variance Extracted (AVE)
Digital Competence (X1)	0.933	0.936	0.949	0.790
Financial Information Quality (X2)	0.913	0.921	0.935	0.741
System Automation (X3)	0.928	0.933	0.945	0.776
Managerial Decision-Making Effectiveness (Y)	0.932	0.934	0.949	0.788
ERP Utilization (Z)	0.944	0.945	0.957	0.818

Note: Values of Cronbach's alpha and composite reliability above 0.70 indicate satisfactory internal consistency, while AVE values above 0.50 confirm convergent validity.

The discriminant validity assessment using the Fornell-Larcker criterion demonstrated that all constructs met the recommended validity requirements. This criterion requires the square root of the average variance extracted ($\sqrt{\text{AVE}}$) for each construct to be greater than its correlations with all other constructs (Fornell & Larcker, 1981). The Digital Competence construct (X1) recorded a $\sqrt{\text{AVE}}$ value of 0.889, which exceeded its correlations with Financial Information Quality ($X2 = 0.229$), System Automation ($X3 = 0.348$), Managerial Decision-Making Effectiveness ($Y = 0.441$), and ERP Utilization ($Z = 0.568$). These results confirm that Digital Competence was empirically distinct from the other constructs and therefore demonstrated satisfactory discriminant validity.

Correction: Based on an AVE of 0.790, the $\sqrt{\text{AVE}}$ value for X1 is 0.889, rather than 0.904.

The Financial Information Quality construct (X2) also demonstrated satisfactory discriminant validity, with a $\sqrt{\text{AVE}}$ value of 0.861, which exceeded its correlations with Digital Competence (X1 = 0.229), System Automation (X3 = -0.111), Managerial Decision-Making Effectiveness (Y = 0.323), and ERP Utilization (Z = 0.390). These results indicate that X2 was empirically distinct from the other constructs. Similarly, the System Automation construct (X3) recorded a $\sqrt{\text{AVE}}$ value of 0.881, which was higher than its correlations with X1 (0.348), X2 (-0.111), Y (0.342), and Z (0.343). Therefore, the X3 indicators adequately represented system automation without substantial conceptual overlap with the other constructs.

The Managerial Decision-Making Effectiveness construct (Y) produced a $\sqrt{\text{AVE}}$ value of 0.888, exceeding its correlations with X1 (0.441), X2 (0.323), X3 (0.342), and Z (0.743). Although the correlation between Y and Z was relatively strong, the $\sqrt{\text{AVE}}$ value of Y remained higher than their interconstruct correlation; therefore, the Fornell-Larcker criterion was satisfied. Likewise, the ERP Utilization construct (Z) recorded a $\sqrt{\text{AVE}}$ value of 0.904, which exceeded its correlations with X1 (0.568), X2 (0.390), X3 (0.343), and Y (0.743). These findings confirm that ERP Utilization was empirically distinct from the other constructs included in the model.

Overall, the square root of the AVE for each construct exceeded its correlations with all other constructs, confirming satisfactory discriminant validity under the Fornell-Larcker criterion. Consequently, each construct captured a conceptually and empirically distinct phenomenon within the research model, supporting the suitability of the measurement model for subsequent structural analysis.

Note: The $\sqrt{\text{AVE}}$ values were recalculated from Table 3 as follows: X1 = 0.889, X2 = 0.861, X3 = 0.881, Y = 0.888, and Z = 0.904.

Table 4. Discriminant Validity Results Using the Fornell-Larcker Criterion

Construct	X1	X2	X3	Y	Z	AVE	$\sqrt{\text{AVE}}$
Digital Competence (X1)	0.889					0.790	0.889
Financial Information Quality (X2)	0.229	0.861				0.741	0.861
System Automation (X3)	0.348	-0.111	0.881			0.776	0.881
Managerial Decision-Making Effectiveness (Y)	0.441	0.323	0.342	0.888		0.788	0.888
ERP Utilization (Z)	0.568	0.390	0.343	0.743	0.904	0.818	0.904

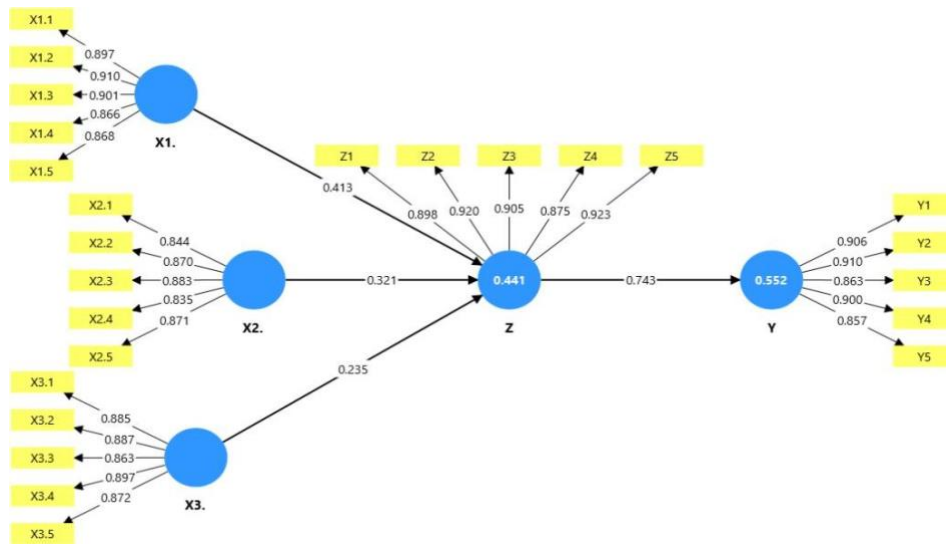
Note: The bold diagonal values represent the square root of the AVE. Discriminant validity is established when each diagonal value exceeds the correlations between the corresponding construct and all other constructs.

The structural model results showed that all examined relationships were statistically significant, as indicated by t-statistics greater than 1.96 and p-values below 0.05. Digital Competence (X1) had a positive and significant effect on ERP Utilization (Z), with a path coefficient of 0.413, a t-statistic of 5.505, and a p-value below 0.001. This finding indicates that greater employee digital competence is associated with more effective ERP utilization in organizational work processes. Among the three antecedent variables, Digital Competence had the largest effect on ERP Utilization, identifying it as the strongest predictor of Z.

Financial Information Quality (X2) also had a positive and significant effect on ERP Utilization (Z), with a path coefficient of 0.321, a t-statistic of 4.603, and a p-value below 0.001. This result suggests that accurate, relevant, complete, and timely financial information encourages more effective ERP utilization in managerial processes. System Automation (X3) similarly exerted a positive and significant effect on ERP Utilization, with a path coefficient of 0.235, a t-statistic of 2.892, and a p-value of 0.004. Although its effect was smaller than those of Digital Competence and Financial Information Quality, system automation remained an important predictor of ERP utilization.

Furthermore, ERP Utilization (Z) had a strong positive and significant effect on Managerial Decision-Making Effectiveness (Y), with a path coefficient of 0.743, a t-statistic of 16.283, and a p-value below 0.001. This was the strongest relationship in the structural model, demonstrating the central role of ERP utilization in facilitating faster, more accurate, and more effective managerial decisions. Overall, Digital Competence, Financial Information Quality, and System Automation

significantly predicted ERP Utilization, which subsequently had a substantial effect on Managerial Decision-Making Effectiveness. However, the mediating role of ERP Utilization should be confirmed separately through the significance of the bootstrapped indirect effects.



The PLS-SEM results indicate that both the measurement model (outer model) and the structural model (inner model) produced satisfactory estimates and met the recommended evaluation criteria. All indicators recorded outer loading values ranging from 0.835 to 0.923, exceeding the recommended threshold of 0.70 and demonstrating satisfactory indicator reliability and convergent validity. According to Ramayah et al. (2018), high factor loadings indicate that indicators accurately represent their respective latent constructs. For Digital Competence (X1), the outer loading values ranged from 0.866 to 0.910, indicating that employees' digital skills, technology utilization, system understanding, and digital literacy strongly represented the construct. Similarly, the Financial Information Quality indicators (X2) produced outer loading values ranging from 0.835 to 0.883, confirming that accuracy, relevance, consistency, completeness, and timeliness were adequately reflected in the measurement model. These results are consistent with the measurement validity principles proposed by Straub (1989) for information systems research.

The System Automation construct (X3) recorded outer loading values ranging from 0.863 to 0.897, indicating that process automation, system efficiency, data-processing speed, and ERP module integration were adequately captured by the indicators. ERP Utilization (Z) exhibited the highest outer loading values among the constructs, ranging from 0.875 to 0.923. This finding demonstrates that the use of ERP for data integration, information processing, and decision support was strongly represented by its indicators. Managerial Decision-Making Effectiveness (Y) also demonstrated satisfactory indicator reliability, with outer loading values ranging from 0.857 to 0.910, indicating that decision quality, accuracy, speed, and relevance were consistently measured. The structural model results further showed that Digital Competence had a positive and significant effect on ERP Utilization, with a path coefficient of 0.413. This finding indicates that employees with stronger digital competencies tend to utilize ERP systems more effectively. It is consistent with Venkatesh et al. (2003), who emphasized that user capabilities are critical to organizational technology utilization.

Financial Information Quality also had a positive and significant effect on ERP Utilization, with a path coefficient of 0.321, suggesting that ERP utilization increases when organizational information is more accurate, relevant, timely, and reliable. System Automation similarly had a positive and significant, although comparatively smaller, effect on ERP Utilization, with a coefficient of 0.235. ERP Utilization exerted the strongest effect on Managerial Decision-Making Effectiveness, with a path coefficient of 0.743, confirming its important role in facilitating higher-quality managerial decisions. This finding aligns with O'Donnell and David (2000), who argued that ERP systems enhance information transparency, process integration, and decision support. The model explained 44.1% of the variance in ERP Utilization and 55.2% of the variance in Managerial Decision-Making Effectiveness, as reflected by R^2 values of 0.441 and 0.552, respectively. These values indicate satisfactory explanatory power based on the criteria proposed by Falk and Miller (1992). Collectively, the findings provide a basis for examining ERP Utilization as a mediating mechanism; however, its mediating role must ultimately be established through the statistical significance of the bootstrapped indirect effects.

Conclusion

This study demonstrates that digital competence, financial information quality, and system automation are important determinants of Enterprise Resource Planning (ERP) utilization in the banking sector. Among these factors, digital competence exerted the strongest influence, emphasizing that employees' ability to understand and operate digital technologies is a fundamental prerequisite for effective ERP utilization. Financial information quality also had a significant effect, indicating that ERP utilization depends substantially on the availability of accurate, relevant, complete, and timely information. System automation likewise had a positive and significant effect, although its contribution was comparatively smaller than those of digital competence and financial information quality.

ERP utilization had the strongest effect on managerial decision-making effectiveness. By integrating data and providing real-time information, ERP systems enable managers to evaluate organizational conditions, reduce uncertainty, and accelerate decision-making processes. The mediation analysis further revealed that ERP utilization mediated the effects of digital competence, financial information quality, and system automation on managerial decision-making effectiveness. Thus, these three factors generate greater managerial benefits when supported by the effective utilization of ERP systems. Overall, successful digital transformation in the banking sector is determined not only by the technologies adopted but also by employees' digital competence, the quality of organizational information, and the degree of process automation. This study provides empirical evidence that ERP constitutes a strategic capability through which organizational digital readiness is translated into more effective managerial decision-making. Banking institutions should therefore continuously strengthen employees' digital competence, improve information governance, expand process automation, and optimize ERP utilization.

Statement on the Use of Generative Artificial Intelligence (AI)

During the preparation of this manuscript, the authors used Grammarly solely to improve grammar, readability, clarity, and overall language quality. Generative AI was not used to formulate research ideas, analyze data, interpret findings, or draw scientific conclusions. All aspects of the study, including its design, data collection, analysis, interpretation, and conclusions, were conducted and verified by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the manuscript.

References :

Abdul Rahim, N. F., Zainal, S. R. M., & Al Mamun, A. (2024). Assessing the impact of employee-centric digital transformation initiatives on job performance: The mediating role of digital empowerment. *Strategic Management*, 29(2), 5-18.

- Alghamdi, F. (2024). Digital competence and system utilization in financial institutions. *Journal of Financial Technology*, 12(2), 45-60.
- Al-Hattami, H. M. (2025). The impact of digital accounting systems on financial performance. *Journal of Risk and Financial Management*.
- Al-Okaily, M., Alghazzawi, R., Alkhwaldi, A. F., & Al-Okaily, A. (2022). The effect of digital accounting systems on decision-making quality in the banking industry sector: A mediated-moderated model. *Global Knowledge, Memory and Communication*. <https://doi.org/10.1108/GKMC-01-2022-0015>
- Alshetwi, A. (2024). Information quality and decision-making effectiveness in ERP environments. *International Journal of Accounting Information Systems*, 35, 100678. <https://doi.org/10.1016/j.accinf.2024.100678>
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74-94.
- Balić, A., Turulja, L., Kuloglija, E., & Pejić Bach, M. (2022). ERP quality and organizational performance: Technical characteristics versus information and service. *Information*, 13(10), 474. <https://doi.org/10.3390/info13100474>
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Benitez, J., Henseler, J., Castillo, A., & Schuberth, F. (2020). How to perform and report impactful analysis using partial least squares: Guidelines for IT researchers and professionals. *Information & Management*, 57(2), 103168.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-336). Lawrence Erlbaum Associates.
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.
- Diamantopoulos, A., & Siguaw, J. A. (2000). *Introducing LISREL: A guide for the uninitiated*. SAGE Publications.
- Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Franke, F., & Hiebl, M. R. W. (2023). Big data and decision quality: The role of management accountants' data analytics skills. *International Journal of Accounting & Information Management*, 31(1), 93-127. <https://doi.org/10.1108/IJAIM-12-2021-0246>
- Gefen, D., & Straub, D. W. (2005). A practical guide to factorial validity using PLS-Graph: Tutorial and annotated example. *Communications of the Association for Information Systems*, 16(1), 91-109.
- Habir, M., & Wardana, W. (2023). *The digital transformation of Indonesia's banking sector*. ISEAS-Yusof Ishak Institute.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Harahap, R. A., Matondang, A. R., & Absah, Y. (2024). Impact of digital transformation on banking employee performance with self-efficacy as a mediator. *Problems and Perspectives in Management*.
- Hariato, K. J., Tarigan, Z. J. H., & Siagian, H. (2024). The effect of digital ERP implementation, supply chain integration, and information quality on organizational performance. *International Journal of Productivity and Performance Management*.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135.
- Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In R. R. Sinkovics and P. N. Ghauri (Eds.), *New challenges to international marketing* (Vol. 20, pp. 277-319). Emerald Group Publishing.

- Jo, H., & Park, D.-H. (2023). Mechanisms for successful management of enterprise resource planning from user information processing and system quality perspective. *Scientific Reports*, 13, 12678. <https://doi.org/10.1038/s41598-023-39787-y>
- Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management*, 63, 102466. <https://doi.org/10.1016/j.ijinfomgt.2021.102466>
- Nour, M. A. (2023). The impact of ERP systems on organizational performance: The role of firm size, industry, and duration of ERP use. *International Journal of Enterprise Information Systems*, 19(1), 1-29.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- O'Donnell, E., & David, J. S. (2000). How information systems support business decision making: A research framework and literature review. *International Journal of Accounting Information Systems*, 1(4), 293-318.
- Otoritas Jasa Keuangan. (2021). *Blueprint for digital transformation in banking*. Otoritas Jasa Keuangan.
- Otoritas Jasa Keuangan. (2023). *OJK issues regulation and guidelines to support banking sector digital transformation*. Otoritas Jasa Keuangan.
- Pargmann, J., Riebenbauer, E., Flick-Holtsch, D., & Berding, F. (2023). Digitalisation in accounting: A systematic literature review of activities and implications for competences. *Empirical Research in Vocational Education and Training*, 15, Article 1. <https://doi.org/10.1186/s40461-023-00141-1>
- Petter, S., Straub, D., & Rai, A. (2007). Specifying formative constructs in information systems research. *MIS Quarterly*, 31(4), 623-656.
- Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2024). Factors affecting digital transformation in banking. *Journal of Business Research*, 171, 114393.
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). *Partial least squares structural equation modeling using SmartPLS 3.0*. Pearson.
- Rouhani, S., Ashrafi, A., Ravasan, A. Z., & Afshari, S. (2021). Assessing the impact of enterprise resource planning on decision-making quality. *Kybernetes*, 50(5), 1144-1162. <https://doi.org/10.1108/K-04-2019-0273>
- Sampaio, C., Gomes, D., & Carvalho, C. (2025). Digital transformation in accounting: An assessment of automation and artificial intelligence through bibliometric analysis. *International Journal of Financial Studies*, 13(4), 206.
- Straub, D. W. (1989). Validating instruments in MIS research. *MIS Quarterly*, 13(2), 147-169.
- Tarigan, Z. J. H., Siagian, H., & Jie, F. (2021). Impact of enhanced enterprise resource planning on firm performance through green supply chain management. *Sustainability*, 13(8), 4358. <https://doi.org/10.3390/su13084358>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901. <https://doi.org/10.1016/j.jbusres.2019.09.022>
- Wong, K. K.-K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, 24(1), 1-32.