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The Influence of Financial Technology Management on Financial Performance: The Moderating Role of Digital Literacy

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Abstract

The development of financial technology (fintech) has accelerated digitalization in financial institutions and requires more strategic technology management to strengthen financial outcomes. However, large technology investments do not automatically translate into better performance if they are not matched by employees' ability to understand and operate the technology. This study therefore examines whether financial technology management is associated with financial performance and whether digital literacy moderates this association. Using a quantitative design and partial least squares structural equation modeling (PLS-SEM) with WarpPLS, survey data were collected from 200 bank employees directly involved in fintech use and management in Indonesian financial institutions. The measurement model was assessed through indicator loadings, composite reliability, and average variance extracted (AVE), while the structural model evaluation focused on path coefficients, the coefficient of determination (R^2), predictive relevance (Q^2), and the interaction term for moderation. The results indicate a positive and statistically significant association between financial technology management and financial performance based on PLS-SEM estimates, and show that higher digital literacy strengthens this relationship. Employees with stronger digital literacy are better able to operate fintech applications accurately, reduce technical errors, and exploit data-driven analytics in ways that are reflected in higher perceived financial performance, whereas low digital literacy constrains the effective use of financial technology and is associated with lower perceived outcomes. These findings suggest that successful fintech initiatives depend not only on the sophistication of systems but also on the digital capabilities of users. Strengthening digital literacy should therefore be treated as a core strategic lever to ensure that financial technology management contributes to sustained improvements in financial performance.

KEYWORDS

financial technology management; digital literacy; financial performance.

Introduction

The rapid diffusion of financial technology (fintech) has become a major driver of transformation in both global and domestic financial industries (Zavolokina et al., 2017). Digital payment systems, electronic wallets, peer-to-peer lending platforms, and analytics-based credit scoring have reshaped how financial products are designed, delivered, and monitored. For financial institutions, the ability to manage these technologies strategically—hereafter referred to as financial technology management (FTM)—is increasingly recognized as a key determinant of operational efficiency, risk control, and competitive positioning (Wahyudin et al., 2025).

Effective financial technology management goes beyond acquiring sophisticated systems. It encompasses the selection of appropriate digital platforms, integration with legacy systems, cybersecurity governance, and the design of scalable, flexible IT architectures that support both internal operations and customer-facing services.

Well-managed fintech infrastructures enable faster, more transparent, and auditable transactions, which in turn can support improved cost efficiency, responsiveness, and value-added services (Schueffel, 2016). However, empirical evidence shows that fintech investments do not always yield the expected performance gains and can even create new costs and security risks when implementation is poorly managed (Kamil et al., 2025).

One critical factor that shapes whether fintech investments translate into performance improvements is the digital literacy (DL) of employees who use and manage these technologies in their daily work (Dhande & Ghosh, 2026). Digital literacy in this study refers not only to basic technical abilities but also to understanding data security, evaluating digital information, and using fintech features appropriately for work tasks (Hutabarat et al., 2025). Prior studies have documented that low digital literacy can hinder fintech adoption, reduce efficiency, and increase vulnerability to fraud and cyber-risks, whereas strong digital literacy fosters more informed and secure usage of digital financial services (R. Rahayu & Day, 2017). In emerging economies such as Indonesia, digital financial literacy remains uneven, even as digital infrastructure penetration is high, creating a "capability gap" that can constrain the effectiveness of fintech initiatives (Nurdien, A., & Galuh, 2023).

Existing research has established links between fintech adoption and various outcomes such as financial inclusion, cost efficiency, and profitability, yet the evidence is mixed (Prihandini, 2025). Some studies report clear performance benefits, while others highlight additional costs, implementation challenges, and security concerns, suggesting that the fintech–performance relationship is not linear and may depend on contextual or organizational conditions. Digital literacy is a plausible moderating factor in this relationship because it shapes how effectively employees can appropriate the potential of fintech systems in their roles (Olusoji, 2025a). Nevertheless, relatively few empirical studies have modeled digital literacy as a formal moderating construct in the relationship between financial technology management and financial performance, particularly at the employee level and in developing-country banking contexts (Wahyudin et al., 2025).

Against this backdrop, this study investigates how financial technology management is associated with financial performance (FP) and examines the moderating role of digital literacy in this relationship among bank employees in Indonesia. The study focuses on employees who are directly involved in the use and management of fintech systems, thereby capturing perceptions that are closely linked to day-to-day operational realities. By specifying digital literacy as a moderator in a PLS-SEM model estimated on employee-level data, the study aims to clarify under which conditions fintech management is more strongly associated with perceived financial performance (Endayani & Arimurti, 2021).

The contributions of this study are threefold. First, it extends fintech and IT capability research by conceptualizing FTM as a digital capability whose performance implications depend on human-capital-based digital skills as a boundary condition (Adielyani, 2025). Second, it adds methodological value by using a latent moderation approach in PLS-SEM to estimate the interaction between FTM and DL, rather than treating digital literacy only as a control variable. Third, it offers contextual insights from Indonesian banks, helping to enrich a literature that has been largely dominated by evidence from developed economies (Abbas et al., 2025).

Methods

This study employed a quantitative research design using component-based Structural Equation Modeling (PLS-SEM) implemented in WarpPLS (Sugiyono, 2016). PLS-SEM is appropriate for predictive, exploratory research involving complex models with latent constructs and multiple indicators, and performs well with relatively moderate sample sizes and non-normal data.

Primary data were collected via an online questionnaire distributed to bank employees in Indonesia who use and are involved in the management of financial technology in their daily work. Targeting these employees ensures that responses reflect practical experiences with fintech implementation and its implications for performance (Ameen et al., 2021). The use of an online survey is consistent with contemporary quantitative research utilizing digital platforms, facilitating broader geographic coverage and efficient data collection.

The population comprised employees from several major banks in Jakarta, Indonesia like Bank BSI, Bank BCA, CIMB, BNI & Mandiri that have implemented financial technology management systems. The sampling approach combined institutional accessibility and the requirement that respondents be directly involved in fintech-related processes (e.g., operations, IT, risk management, or digital service units). Inclusion criteria therefore required that respondents had at least one year of experience with the bank's digital financial systems (Creswell & Creswell, 2018).

Rather than relying solely on simple rules of thumb, the sample size was justified using PLS-SEM-specific guidelines. Following the inverse square root and minimum R^2 methods proposed for PLS-SEM, minimum sample requirements can be derived from the smallest expected path coefficients and the minimum acceptable R^2 value. Given a model with three latent constructs and hypothesized medium-sized effects, these methods suggest that a sample size well below 200 observations would already be sufficient to achieve 80 percent statistical power at the 5 percent significance level. The final sample of 200 valid responses therefore exceeds the minimum requirement for the model complexity analyzed in this study and aligns with international PLS-SEM recommendations, while also satisfying local methodological guidance commonly used in Indonesian research practice.

All constructs were measured using multi-item Likert-type scales ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Items were adapted from prior management, information systems, and finance research and adjusted to the fintech context of Indonesian banks, following standard translation and pre-testing procedures.

Financial Technology Management (FTM) was measured through items capturing the perceived effectiveness of technology use, the robustness of internal control systems, the degree of technology integration into work processes, system security and reliability, and the perceived contribution of technology to improving job performance.

Digital Literacy (DL) captured employees' ability to navigate digital information, manage digital content, understand data security issues, and utilize digital technologies effectively in their work tasks.

Financial Performance (FP) was measured perceptually, focusing on operational efficiency, income margin growth, profitability improvement, operational cost reduction, and the effectiveness of technology investments from the respondents' perspective.

Objective financial indicators at the organizational level (e.g., audited profit figures or cost-to-income ratios) could not be accessed at the respondent level due to confidentiality and aggregation constraints. Perceptual performance measures are widely used in management and information systems research when objective data are unavailable and have been

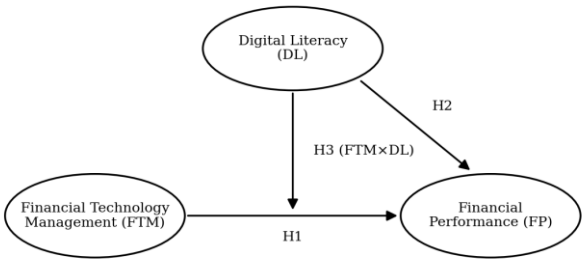


Figure 1. Research Model

shown to correlate with archival performance indicators, making them a valid proxy under such conditions.

A complete list of items, their sources, and their classification as reflective indicators is provided in an appendix (not reproduced here).

Research Model and Hypotheses

The research model comprises three reflective latent constructs: financial technology management (FTM) as the independent variable, financial performance (FP) as the dependent variable, and digital literacy (DL) as the moderating variable. FTM is reflected by five dimensions (system effectiveness, internal control systems, technology integration, system security and reliability, and technology contribution to performance), DL by four dimensions (digital navigation capability, digital content management, data security understanding, and technology utilization skills), and FP by five dimensions (operational efficiency, income margin growth, profitability improvement, operational cost reduction, and technology investment effectiveness).

The model specifies a direct path from FTM to FP (H1), a direct path from DL to FP (H2), and an interaction path from the product term FTM×DL to FP (H3), which tests whether DL strengthens the FTM–FP association. The structural equation is $FP = \beta_1 \cdot FTM + \beta_2 \cdot DL + \beta_3 \cdot (FTM \times DL) + \varepsilon$, where β_3 is the moderation coefficient. The interaction term was generated in WarpPLS from the latent variable scores of FTM and DL. The conceptual model is summarized in Figure 1.

H1: Financial technology management (FTM) is positively associated with financial performance (FP).

H2: Digital literacy (DL) is positively associated with financial performance (FP).

H3: Digital literacy positively moderates the association between FTM and FP, such that the association is stronger at higher levels of DL

Because all focal constructs were measured using self-reported questionnaires, steps were taken to mitigate the risk of common method bias. Procedurally, the survey assured respondents of anonymity and confidentiality, emphasized that there were no right or wrong answers, and separated the measurement of predictors (FTM, DL) and the outcome (FP) into different sections of the questionnaire. Scale anchors and wording were varied to reduce response patterns, and participation was voluntary.

Statistically, common method bias was assessed using the full collinearity approach available in WarpPLS, which evaluates whether variance inflation factor (VIF) values for latent variables exceed critical thresholds. All full collinearity VIF values for FTM, DL, and FP were below 3.3, indicating that neither vertical nor lateral collinearity nor common method variance is likely to be a serious threat to the results. Remaining risks related to single-source, cross-sectional data are acknowledged as a limitation (Sekaran & Bougie, 2020).

Data Analysis and PLS-SEM Procedures

Data analysis proceeded in three main stages, following established PLS-SEM guidelines.

Measurement model assessment:

Reflective measurement models for FTM, DL, and FP were evaluated in terms of indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator loadings were targeted at ≥ 0.70; loadings between 0.40 and 0.70 were considered for retention only when theoretically essential and when composite reliability (CR) and AVE remained above recommended thresholds. Internal consistency was assessed using Cronbach's alpha, CR, and rho_A, all expected to exceed 0.70. Convergent validity required AVE ≥ 0.50, and discriminant validity was evaluated using the Fornell–Larcker criterion and HTMT ratios.

Structural model assessment:

After satisfactory measurement properties were established, the structural model was evaluated using path coefficients, their significance levels, coefficients of determination (R^2) for FP, effect sizes (f^2) of exogenous constructs, and Stone–Geisser's Q^2 as an indicator of predictive relevance. Recent recommendations for PLS-SEM caution against strong reliance on global goodness-of-fit indices; this study therefore emphasizes explanatory and predictive metrics rather than overall fit indices.

Moderation analysis:

The moderating role of digital literacy was examined using the interaction term

FTM×DL, modeled as a product of the latent variables within WarpPLS. The significance and sign of the interaction coefficient were used to test H3, and simple-slope plots were generated to visualize how the FTM–FP association differs across low and high levels of digital literacy (Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, 2021).

Result and Discussion

Descriptive statistics show that all three main constructs—financial technology management, digital literacy, and financial performance—have relatively high mean values. The overall mean for FTM is 4.31 (SD = 0.67), for DL is 4.30 (SD = 0.69), and for FP is 4.32 (SD = 0.69) on a 1–5 scale, indicating general agreement with the positive statements about fintech management, digital skills, and perceived financial outcomes. These high mean scores suggest that respondents perceive fintech implementation and digital literacy to be relatively strong in their organizations, rather than constituting a formal measure of organizational maturity.

Table 1 reports the means, standard deviations, minimum and maximum values for each dimension within FTM, DL, and FP, confirming that responses are skewed toward the upper end of the scale while still exhibiting sufficient variability for multivariate analysis.

This finding indicates that the respondent banks are at a relatively mature and structured stage of financial technology implementation, enabling them to support more efficient, responsive, and technology-oriented operational processes. This high average score also reflects the organization's readiness to adopt various digital-based financial innovations and indicates that employees, as internal users, possess sufficient digital competencies to utilize these technologies optimally. Therefore, this situation suggests that the digital ecosystem within the banking sector is sufficiently developed to drive improved performance.

Table 1. Descriptive Statistics and Variable Measurement Scales

Variable	Dimension	Mean	Std. Dev.	Min	Max	Category
Financial Technology Management (FTM)	System Effectiveness	4.32	0.68	2.1	5.0	Good
	Internal Control Systems	4.15	0.72	2.0	5.0	Good
	Technology Integration	4.28	0.65	2.3	5.0	Good
	System Security & Reliability	4.44	0.61	2.5	5.0	Good
	Technology Contribution to Performance	4.38	0.69	2.0	5.0	Good
Overall FTM		4.31	0.67	2.2	5.0	Good
Digital Literacy (DL)	Digital Navigation Capability	4.26	0.71	2.0	5.0	Good
	Digital Content Management	4.19	0.74	2.1	5.0	Good
	Data Security Understanding	4.41	0.64	2.4	5.0	Good
	Technology Utilization Skills	4.33	0.68	2.2	5.0	Good
Overall DL		4.30	0.69	2.2	5.0	Good
Financial Performance (FP)	Operational Efficiency	4.24	0.73	2.0	5.0	Good
	Income Margin Growth	4.29	0.70	2.1	5.0	Good
	Profitability Improvement	4.35	0.67	2.3	5.0	Good
	Operational Cost Reduction	4.38	0.66	2.2	5.0	Good
	Technology Investment Effectiveness	4.32	0.69	2.0	5.0	Good
Overall FP		4.32	0.69	2.1	5.0	Good

Significance at the 0.05 level is indicated by.

Table 2. Hypothesis Testing Results

Hypothesis	Path	Path coefficient (β)	p-value	Decision
H1	FTM → FP	0.57	< 0.001	Supported
H2	DL → FP	0.23	< 0.001	Supported
H3	FTM × DL → FP (moderation)	0.11	< 0.05	Supported

Source: Data processed (2026)

Table 3. Explanatory Power, Predictive Relevance, and Effect Size

Indicator	Without interaction	With interaction
R^2 (FP)	0.833	0.846
Q^2 (FP)	0.421	0.421
f^2 – FTM	0.62	0.58
f^2 – DL	0.12	0.10
f^2 – FTM × DL	–	0.04

Source: Data processed (2026)

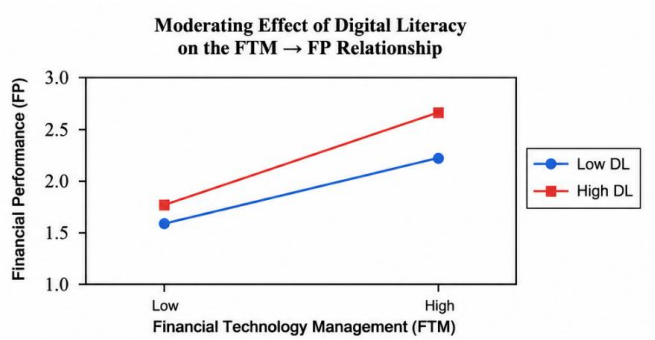


Figure 2. Simple-Slope Plot of the Moderating Role of Digital Literacy in the FTM–FP Relationship

The results of the measurement model evaluation indicate that all retained indicators have standardized loadings above 0.70, with p-values below 0.001, supporting indicator reliability. Cronbach's alpha, composite reliability, and rho_A for all three constructs exceed 0.70, and AVE values are above the 0.50 threshold, confirming internal consistency and convergent validity in line with recommended PLS-SEM criteria.

Discriminant validity is supported by the Fornell–Larcker criterion, with the square roots of AVE for each construct exceeding their correlations with other constructs, and by HTMT ratios falling below commonly suggested cutoffs. Full collinearity VIFs are below 3.3 for all constructs, indicating an absence of problematic multicollinearity and providing additional assurance that common method bias is unlikely to distort the observed relationships.

Structural Model and Hypothesis Testing

After the measurement model satisfied the reliability and validity criteria, the structural model was evaluated. Table 2 summarizes the results of the hypothesis tests.

The path from FTM to FP is positive and statistically significant (β = 0.57, p < 0.001), supporting H1. Higher quality of financial technology management is associated with higher perceived operational efficiency, lower operating costs, and wider reach of digital services, which are reflected in higher perceived financial performance.

Digital literacy is also positively and significantly associated with financial performance (β = 0.23, p < 0.001), supporting H2. Employees with higher digital literacy tend to operate systems more accurately, make fewer technical errors, and make better use of data analytics.

The interaction term FTM×DL is positive and significant (β = 0.11, p < 0.05), supporting H3. The association between FTM and FP is therefore stronger when employees' digital literacy is higher (see Table 3).

With the interaction term included, R^2 for FP is 0.846, meaning that FTM, DL, and their interaction jointly account for 84.6 percent of the variance in perceived financial performance. Adding the interaction raises R^2 by 1.3 percentage points, a modest increase that is nonetheless meaningful given the already high explanatory power of the model. Q^2 is 0.421, which is greater than zero, indicating that the model has predictive relevance for FP.

In terms of effect size, FTM makes a large contribution to FP (f^2 = 0.58), DL makes a smaller contribution (f^2 = 0.10), and the interaction effect is small (f^2 = 0.04) but above the 0.02 threshold. This pattern is consistent with DL acting both as a supporting predictor and as a boundary condition for the FTM–FP association.

The simple-slope plot (Figure 2) shows that the FTM–FP relationship is steeper at high levels of digital literacy than at low levels. Improvements in fintech management are therefore associated with considerably larger perceived performance gains when digital literacy is adequate.

Regarding the influence of financial technology management on financial performance, the research results show a positive and significant relationship. Improving the quality of technology management, including digital system efficiency, transaction security, service speed, access flexibility, and data analytics capabilities, directly improves banks' financial performance (Gomber et al., 2017). Practices such as automating credit processes, data verification, and transactions can reduce operational costs, while utilizing real-time data enables faster and more accurate financial decision-making. Furthermore, digital services also expand market reach and create new fee-based revenue opportunities. These findings are consistent with IT capability research, which emphasizes that organizations that are able to develop and orchestrate robust digital capabilities tend to achieve superior performance outcomes (Chen et al., 2017). In this study, financial technology management functions as a fintech-related IT capability that enhances process efficiency, service quality, and data-driven decision-making, which in turn is reflected in higher perceived financial performance.

Furthermore, digital literacy has also been shown to have a positive impact on financial performance. Employees with a high level of digital literacy are able to operate banking technology more accurately and efficiently, minimize technical errors, and improve the quality of financial data management. Mastery of digital banking features and an understanding of digital security risks enable employees to work more safely and productively. The collective impact of this increased digital literacy is seen in reduced operational error costs, accelerated service processes, and increased employee productivity, ultimately contributing to improved bank financial performance. Furthermore, organizations with high levels of digital literacy tend to be more adaptive to technological developments and capable of continuous internal innovation, thus providing a strong foundation for corporate sustainability and competitiveness in the digital era (Efendi et al., 2026).

The moderating role of digital literacy in the relationship between financial technology management and financial performance is one of the key findings of this study. The analysis shows that digital literacy functions not only as a supporting factor but also as a key reinforcement that determines the extent to which financial technology can improve an organization's financial performance. This finding confirms that financial technology will not produce optimal results without adequate digital skills from the employees operating it. In other words, financial technology implementation will only achieve maximum effectiveness if human resources possess a high level of digital literacy, both in device usage, system understanding, and the ability to manage digital data carefully and securely.

This moderation in digital literacy occurs through several mechanisms. First, employees with high digital literacy tend to be able to utilize financial technology features more effectively and efficiently. They can understand system functions more deeply, operate digital devices smoothly, and adapt technology use to the bank's operational needs. Second, strong digital literacy also plays a role in reducing operational errors. Digitally proficient employees are more careful when inputting data, understand transaction security procedures, and understand potential risks, thereby maintaining operational stability. Third, strong digital skills encourage internal innovation. Banks with highly digitally literate employees can sustainably develop technology-based work processes, accelerate automation, and significantly increase productivity. Fourth, digital literacy enables employees to optimize the use of data analytics. They are able to read financial trends, conduct more accurate risk assessments, and provide strategic recommendations that support increased profitability. Through these four mechanisms, the study showed an increase in the R^2 value from 83.3% to 84.6%, indicating that digital literacy significantly strengthens the relationship between financial technology management and bank financial performance.

The structural model explains a substantial proportion of variance in financial performance. When financial technology management and digital literacy are included as predictors, the R^2 for FP is approximately 0.833, indicating that about 83.3 percent of the variance in perceived financial performance is accounted for by the two constructs (Nurdien & Galuh, 2023). Stone–Geisser's Q^2 value for FP is positive, confirming that the model exhibits predictive relevance for the endogenous construct.

The path from FTM to FP is positive and statistically significant, supporting H1 and indicating that higher levels of financial technology management are associated with higher levels of perceived financial performance among respondents. The path from DL to FP is also positive and statistically significant, supporting H2 and suggesting that employees with higher digital literacy tend to report better financial outcomes for their organizations (Hoirullah & Adiba, 2026). Effect size estimates (f^2) show that FTM has a substantial effect on FP, while DL contributes an additional but comparatively smaller effect, consistent with its role as both a direct predictor and a moderator.

FTM×DL exhibits a positive and statistically significant path coefficient to FP, supporting H3 and confirming that digital literacy moderates the association between financial technology management and financial performance. When the interaction term is added to the model, the R^2 for FP increases from 0.833 to 0.846, indicating that digital literacy explains additional variance in financial performance beyond the main effects of FTM and DL. This incremental increase, while modest, is meaningful in the context of already high explanatory power and underscores the role of digital literacy as a boundary condition.

A simple-slope plot further illustrates that the positive association between FTM and FP is steeper at higher levels of digital literacy than at lower levels: when digital literacy is high, improvements in fintech management are associated with stronger perceived gains in financial performance, whereas when digital literacy is low, the same improvements in FTM translate into smaller perceived performance gains. These results provide empirical support for the argument that human-capital-based digital skills amplify the performance benefits of fintech management.

The findings of this study demonstrate that financial technology management exerts a positive and statistically significant effect on financial performance, with this association being further reinforced under conditions of elevated digital literacy. This finding is highly relevant to the dynamics of the modern financial industry, which increasingly relies on digital technology as a key foundation for strengthening operational efficiency, data processing accuracy, and customer service quality. In the context of rapid digital transformation, particularly in the banking and non-bank financial institutions sector, an institution's ability to strategically manage financial technology is not merely an option but a necessity that determines the organization's competitiveness and sustainability.

The Impact of Financial Technology Management on Organizational Financial Outcomes

The structural analysis in this study shows that financial technology makes a clear and measurable contribution to improving financial performance. Financial institutions that successfully manage digital technology effectively demonstrate superior performance compared to those that simply adopt technology without a well-developed management process. This improved performance is evident in various aspects, such as revenue growth, operational cost efficiency, improved service quality, the ability to process large volumes of transactions, and increased customer satisfaction, resulting in faster and more accurate service (Komilova et al., 2025).

Financial technology significantly supports various internal processes, including the automation of transactions that previously required human labor, accelerated credit approval processes with the support of analytical systems, reduced risk of human error in recording or calculating transactions, real-time financial data integration that accelerates decision-making, and more optimal asset and liquidity management through digital monitoring systems. These benefits emphasize that the implementation of financial technology serves not merely as a modernization of work tools but as a key strategy in driving long-term financial performance (Ahiase et al., 2025).

Furthermore, financial technology enables financial institutions to expand their markets without having to add physical branches. Through digital services such as mobile banking, internet banking, and fintech financing, organizations can reach a wider customer segment at a lower marginal cost. This capability provides a significant competitive advantage over conventional service models. Theoretically, the results of this study reinforce the view of financial technology management as a strategic IT capability that underpins organizational competitiveness. When fintech systems are effectively planned, integrated, and governed, they enable new forms of process efficiency, scalability, and data-driven service innovation, which collectively strengthen the bank's competitive position in increasingly digital financial markets. These findings are in line with prior IT capability studies that highlight the role of digital resources and their management in supporting superior performance. This study also complements previous literature by emphasizing that the success of financial technology is not solely determined by the availability of tools, but rather by a well-planned, directed, and sustainable management system (Gupta, 2025).

The findings show that financial technology management is positively associated with financial performance, reinforcing the view that fintech-related capabilities are an important driver of organizational outcomes in the banking sector (Hamzah & Jaafar, 2026). Banks that effectively manage their digital financial systems—from transaction processing and credit evaluation to data analytics and cybersecurity—tend to report greater efficiency, better service quality, and stronger financial results (S. Rahayu, 2022). This is consistent with IT capability research, which argues that well-developed IT capabilities support business process agility and enable organizations to sense and respond to environmental changes more effectively.

The Role of Digital Literacy in Moderating the Impact of Financial Technology on Financial Performance

Another significant finding of this study is that digital literacy serves not only as an additional competency but also as a determining variable that strengthens the relationship between financial technology management and financial performance. The digital literacy level of employees, which is mostly in the "good" category, provides a strong foundation for optimal financial technology utilization. Employees with high digital literacy are able to use various digital financial features more effectively, understand how to process and interpret financial data based on digital systems, and are able to maintain information security in the face of data leaks or other cyber risks. These capabilities make financial technology not just a tool, but a strategic asset that supports decision-making and improves operational performance (Raudla et al., 2025).

At the organizational level, high digital literacy provides several advantages that organizations with low levels of digital literacy lack. First, organizations adopt new technologies more quickly and adapt more easily to changing digital trends (Sari & Sari, 2025). Second, resistance to technological change is much lower because employees understand the benefits and how digital tools work. Third, work efficiency increases significantly because employees not only use technology but also leverage it strategically to complete work more quickly, accurately, and securely. Fourth, organizations are better prepared to face digital risks, as employees' understanding of digital security improves protection against cyberthreats. Fifth, the use of digital data for predictive analysis and long-term financial planning becomes more effective, enabling organizational strategies to be based on more accurate information (Aini & Fikri, 2025).

Digital literacy exhibits a direct positive association with financial performance, suggesting that employees' digital skills are not merely peripheral but central to organizational value creation in a digitized banking environment. Employees with higher digital literacy are better equipped to navigate complex applications, interpret digital information, and comply with security protocols, thereby reducing errors and supporting more efficient and accurate financial processes. This resonates with research that links digital skills to enhanced job performance and better utilization of information systems in other sectors (Kim et al., 2026).

By modeling digital literacy as an employee-level construct rather than only as a consumer-side attribute, this study expands the scope of digital literacy research into the internal functioning of financial institutions. It positions digital literacy as a micro-level capability that shapes how employees appropriate the possibilities offered by fintech infrastructures in their everyday work, which in turn is reflected in organizational performance indicators (Habib, 2025).

Digital Literacy as a Boundary Condition: Dynamic Capabilities and Socio-Technical Alignment

The positive and significant interaction between financial technology management and digital literacy provides support for the idea that digital literacy operates as a boundary condition for the performance benefits of fintech management. In dynamic capabilities terms, FTM can be seen as part of the organization's capacity to integrate, build, and reconfigure digital resources, while digital literacy reflects employees' absorptive capacity to recognize the value of these resources and apply them in practice. When digital literacy is high, the dynamic capabilities embedded in FTM are more fully realized; when it is low, the reconfiguration potential of fintech remains underutilized. In this sense, the study is grounded in a dynamic capabilities perspective rather than a pure innovation-economics lens, positioning financial technology management and digital literacy as complementary capabilities that jointly shape how banks sense, seize, and reconfigure digital opportunities (Banerjee, 2025).

From a socio-technical systems perspective, the findings highlight the importance of joint optimization between the technical subsystem (fintech platforms, analytics tools, infrastructure) and the social subsystem (skills, work practices, and culture). High digital literacy contributes to better alignment between these subsystems, making it easier for employees to integrate fintech into existing routines, innovate new digital workflows, and manage digital risks effectively. In contrast, low digital literacy can lead to misalignment, where sophisticated systems coexist with inadequate skills, resulting in bottlenecks, workarounds, and heightened error risk. This helps explain why prior studies have reported mixed effects of fintech on performance and underscores the need to consider skill levels when evaluating digital transformation outcomes (Olusoji, 2025b).

Comparison with Prior Studies and Clarification of Mixed Findings

The results are broadly consistent with earlier research that found positive relations between digital finance and performance but also report cases where the benefits were limited or offset by new costs and risks. By explicitly incorporating digital literacy as a moderator, this study offers one explanation for such mixed findings: in contexts where employees' digital skills are relatively low, fintech investments may fail to deliver their full potential, leading to weaker or even negligible performance effects.

The study thus clarifies that fintech is not a universally beneficial intervention; its impact is contingent on the digital readiness of human resources. In this sense, the findings advance fintech-performance and IT capability-performance models by adding a human-capital-based boundary condition that helps to explain under what circumstances positive performance associations are more or less likely to emerge

Conclusion

This study examined the associations between financial technology management, digital literacy, and financial performance among bank employees in Indonesia, using PLS-SEM with WarpPLS on survey data from 200 respondents. The results indicate that financial technology management is positively associated with perceived financial performance, supporting the view that strategically managed fintech capabilities contribute to better financial outcomes. Digital literacy also shows a positive association with financial performance, highlighting the importance of employees' digital skills in realizing the benefits of digital transformation. Most importantly, the study finds that digital literacy positively moderates the association between financial technology management and financial performance, such that the relationship is stronger at higher levels of digital literacy. This suggests that fintech investments and management practices yield greater performance benefits when employees possess strong digital capabilities, and conversely that low digital literacy can limit the impact of even well-designed fintech systems. Theoretically, the study contributes to fintech and IT capability research by conceptualizing FTM as a digital capability whose performance implications are contingent on human-capital-based digital skills as a boundary condition, and by explicitly modeling this condition through a latent interaction in PLS-SEM. Methodologically, it extends prior work by applying a moderation model with employee-level data from a developing-country banking context. Contextually, the findings from Indonesian banks enrich the evidence base on digital transformation in emerging markets, where digital infrastructure is expanding rapidly but digital skills remain uneven

Author contributions

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Conflict of interest

Confirms that the authors have declared any potential conflicts that could influence the impartiality of the research. The authors explicitly state that they have no financial or personal relationships with entities that might unduly affect their objectivity. This declaration ensures the integrity of the study by transparently addressing any possible influences on the research outcomes, contributing to the credibility and trustworthiness of the article.

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