

Artificial Intelligence and Digital Transformation: How are Vietnamese Commercial Banks Creating Value?

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ABSTRACT: This study examines how artificial intelligence (AI) and digital transformation (DT) are reshaping the operational performance of Vietnamese commercial banks, while clarifying the role of banking governance in translating technological capabilities into sustainable business value. The study adopts a qualitative approach, combining structured content analysis and thematic analysis of annual reports, financial statements, corporate governance reports, sustainability reports, and other official disclosures published by banks during the 2018–2025 period. The findings indicate that AI and digital transformation do not, in themselves, generate efficiency; rather, the value of technology emerges from the interplay of process digitalization, data exploitation, automation, service innovation, productivity enhancement, and risk management. Notably, digital maturity, data quality, human capital capabilities, and governance quality create substantial differences in banks' ability to translate technology investments into operational outcomes. The study argues that the progress of digital transformation in banking should not be assessed by the number of technologies deployed, but by the capacity to convert technology into tangible gains in productivity, service quality, and substantive governance capabilities. On this basis, the study proposes policy and managerial implications for advancing banking digital transformation in a manner that is effective, secure, and sustainable.

KEYWORDS: Artificial intelligence; Digital transformation; Organizational capabilities; Banking governance; Thematic analysis

1. INTRODUCTION

Over the past decade, digital transformation has emerged as a major force reshaping the business models of the banking industry worldwide. The rapid development of artificial intelligence (AI), big data, cloud computing, and machine learning has not only transformed the ways in which financial services are delivered but has also directly affected how banks organize their operations, leverage data, make decisions, and manage risk. AI is therefore increasingly regarded as a strategic capability capable of supporting process automation, enhancing productivity, personalizing services, and improving decision quality. Yet technology does not generate efficiency by itself. Its value depends on data quality, organizational capabilities, human resources, and, above all, appropriate governance mechanisms (Gomber et al., 2017; Jöhnk et al., 2021).

In Vietnam, banking digital transformation forms part of the broader National Digital Transformation Programme under Decision No. 749/QĐ-TTg dated June 3, 2020, and has been further operationalized through Decision No. 810/QĐ-NHNN dated May 11, 2021, on the Digital Transformation Plan for the Banking Sector through 2025, with a vision to 2030. Against this policy backdrop, commercial banks have accelerated the development of digital banking, eKYC, process automation, data analytics, and AI applications in customer service, fraud detection, credit assessment, and risk management.... This process is bringing about substantial changes in the organizational structure and operations of banks, while simultaneously creating new requirements for information security, data governance, technological human resources, and accountability (State Bank of Vietnam, 2021).

The issue of greatest concern, in our view, is not how much banks have invested in technology, but rather their ability to translate such investments into substantive improvements in operational performance. A bank may possess a sophisticated technological infrastructure and yet struggle to achieve commensurate productivity gains if its data remain fragmented, its processes have not been redesigned, its workforce lacks digital capabilities, or its governance mechanisms fail to keep pace with technological development. Digital transformation should therefore be understood, first and foremost, as a process of transforming organizational capabilities, in which technology represents a necessary condition; governance capabilities, however, largely determine the extent to which technology can be translated into sustainable value (Jöhnk et al., 2021).

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Recent international research has increasingly examined the relationship between AI, digital transformation, and banking performance, yet the findings remain far from conclusive. On the one hand, digital technologies can reduce transaction costs, enhance productivity, broaden customer access, and strengthen risk management. On the other hand, substantial investment requirements, cybersecurity risks, uneven data quality, and the challenges associated with organizational change may slow the realization of these benefits. For an economy undergoing transformation such as Vietnam, however, differences in bank size, digital maturity, data capabilities, and governance quality make it even less adequate to explain operational performance solely by measuring the “extent of technology adoption.”

This gap suggests the need to shift the research question from whether AI improves banking performance to a deeper inquiry: through what mechanisms, under what conditions, and with what role for banking governance do AI and digital transformation generate performance gains? This is also why the study adopts a qualitative approach, combining structured content analysis and thematic analysis of annual reports, financial statements, corporate governance reports, sustainability reports, and other official disclosures issued by Vietnamese commercial banks during the 2018–2025 period. This approach makes it possible to identify not only the technologies being adopted, but also how those technologies are integrated into strategy, operational processes, risk management, and customer relationships; at the same time, it helps reveal recurring patterns and differences across banks (Braun & Clarke, 2006).

On this basis, the study addresses four main issues: identifying trends and forms of AI and digital transformation adoption in banking; analyzing the mechanisms through which technology contributes to improved performance; clarifying the roles of data, human resources, and governance; and deriving implications for banking management and digital transformation policy.

The principal contribution of the study lies in developing an approach that emphasizes value creation rather than merely the extent of technology adoption. Drawing on a corpus of textual data, the study analyzes eight thematic groups: digital infrastructure; data and analytics; AI and automation; process digitalization; product and service innovation; cost efficiency and productivity; risk management; and governance, control, and accountability. On this basis, the study argues that the effectiveness of banking digital transformation is shaped by the interaction between technology and organizational capabilities. In a sector as particularly sensitive to risk and trust as banking, a good algorithm is not enough; what matters more is whether banks possess the capacity to control, explain, and assume responsibility for decisions that are increasingly supported by technology.

2. LITERATURE REVIEW AND RESEARCH FRAMEWORK

2.1. From Technology Adoption to Value-Creating Capabilities

Research on artificial intelligence (AI) and digital transformation in banking is gradually moving beyond the question of whether banks adopt technology to address a more consequential issue: how technology is organized and translated into value. Based on a review of 44 studies and a thematic analysis, Fares et al. (2023) find that research on AI in banking is concentrated in three broad domains: strategy, processes, and customers. This suggests that the value of AI does not reside in the technology itself, but in how banks integrate technology into their operations and business models.

Jöhnk et al. (2021), through an interview-based study of organizational AI readiness, likewise demonstrate that AI implementation depends on the interplay of technological assets, data, system architecture, organizational capabilities, and leadership commitment. Accordingly, we argue that research on AI in banking needs to move beyond measuring investment levels or the number of applications deployed and instead identify the mechanisms through which technological resources are transformed into capabilities and operational outcomes.

2.2. Theoretical Foundations

The study draws on four complementary theoretical perspectives.

First, the Resource-Based View (RBV) developed by Wernerfelt (1984) and Barney (1991) posits that competitive advantage derives not simply from possessing resources, but from the ability to combine valuable, scarce, and difficult-to-substitute resources. In banking, AI should therefore not be regarded merely as software or a technological investment; its value depends on the data, infrastructure, human resources, knowledge, and processes that underpin and accompany it.

Second, Teece et al.'s (1997) dynamic capabilities theory helps explain how banks identify opportunities, reconfigure resources, and adapt to rapidly changing technological environments. AI can strengthen an organization's capabilities in sensing, forecasting, and decision-making, but realizing value from these capabilities requires banks to reorganize their processes and the ways in which products and services are delivered.

Third, the Technology–Organization–Environment (TOE) framework developed by Tornatzky and Fleischer (1990) emphasizes that technological innovation is simultaneously shaped by technological characteristics, organizational capabilities,

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and the external environment. This provides a basis for examining AI within the organizational and competitive context of banking rather than treating it as an isolated technological phenomenon.

Fourth, agency theory and corporate governance theory (Jensen & Meckling, 1976) are employed to examine accountability, control, and oversight in the process of technology adoption. In the context of AI, governance is not simply a matter of who owns the technology; it also concerns who is accountable for the data, models, decisions, and risks that arise from its use...

Taken together, these perspectives lead to the study's central proposition: AI creates potential, but organizational capabilities and governance ultimately determine the extent to which that potential can be transformed into value.

2.3. Research Gaps

Three major gaps are identified. First, research on AI in banking remains largely oriented toward technology acceptance, customer experience, or the effectiveness of individual applications, while the mechanisms of value creation at the organizational level have yet to be fully explained. Second, measures based on investment levels or the number of applications deployed may overlook data quality, human capabilities, the degree of technological integration, and technology governance. Third, banks' public disclosures contain substantial information on strategy, technology, data, risk management, and innovation, yet these materials have not been fully exploited as a source of qualitative evidence.

Accordingly, this study employs content analysis combined with thematic analysis to address three questions: "What are banks doing?", "What is technology changing?", and, more importantly, "What conditions enable technology to create value?"

2.4. Analytical Framework and Research Questions

The research framework is structured around the following value-creation chain:

AI/Digital Transformation Resources → Data and Organizational Capabilities → Changes in Processes, Products, and Business Models → Governance and Control → Operational Outcomes and Business Value.

On this basis, the study focuses on four research questions:

- (i) Along what dimensions are Vietnamese commercial banks implementing AI and digital transformation?
- (ii) Through what mechanisms are AI and digital transformation reshaping processes, products, services, productivity, and risk management?
- (iii) How do data, human resources, organizational capabilities, and banking governance influence the process of translating technology into value?
- (iv) How do differences in bank size, digital maturity, and governance capabilities give rise to different approaches to AI and digital transformation implementation?

3. RESEARCH METHODOLOGY

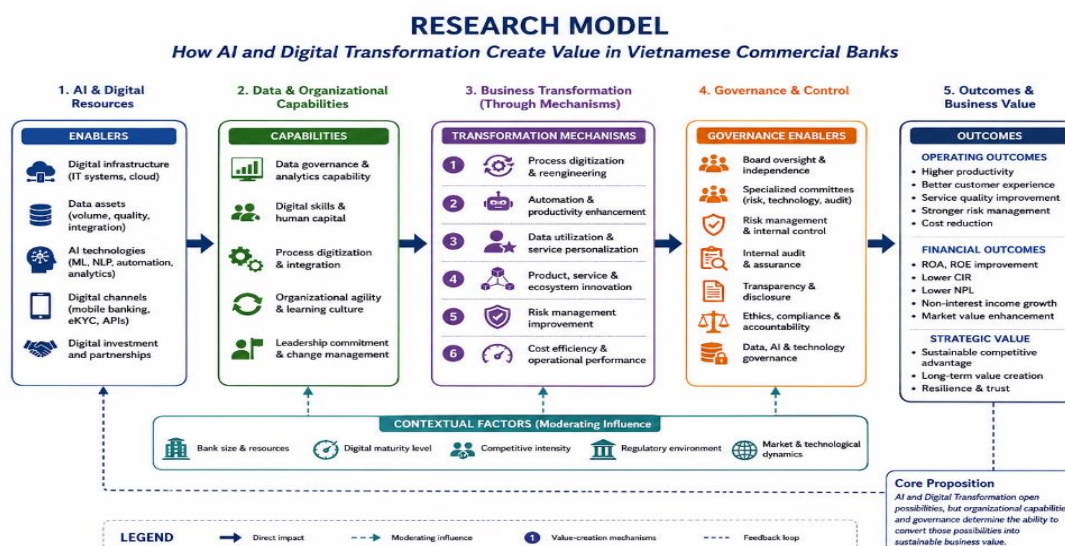
3.1. Research Design and Data

The study adopts a qualitative approach, combining content analysis and thematic analysis to elucidate the processes and mechanisms through which AI and digital transformation create value in banking (Braun & Clarke, 2006). Data were collected from publicly available sources concerning Vietnamese commercial banks during the 2018–2025 period, including annual reports, financial statements, corporate governance reports, sustainability reports, and disclosures relating to technology, data, AI, and digital transformation.

The units of analysis comprise reports, tables, and information relevant to the research questions. The use of multiple documentary sources enables cross-validation between strategic orientations and the extent of actual implementation, thereby reducing the risk of equating technological disclosures with genuine technological capabilities.

3.2. Analytical Framework and Data Coding

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AIDTI is employed as a qualitative coding framework focusing on eight dimensions: digital strategy, digital infrastructure, AI applications, data governance, digital banking, information security, innovation, and digital human resources. The level of implementation is classified into four stages: orientation, experimentation, deployment, and routine integration.

In addition, the study employs a banking governance quality framework to assess governance capabilities across the following dimensions: the structure and independence of the Board of Directors; specialized committees; risk management; internal control and audit; transparency and disclosure; shareholder protection; ethics and compliance; and the governance of technology, data, and AI.

The data were coded by combining predefined categories derived from the theoretical foundations with new themes emerging from the empirical evidence. Accordingly, governance is viewed not merely as a control mechanism, but also as an organizational capability that determines how technology is selected, deployed, controlled, and translated into value.

3.3. Analytical and Validation Procedures

The analytical process comprised four stages: collecting and standardizing the documents; coding the data; grouping the codes into major themes; and comparing banks to identify similarities, differences, and exceptional cases. Reliability was enhanced through the triangulation of multiple sources and cross-checking of information.

The analysis focused on six value-creation mechanisms: (1) process digitalization and restructuring; (2) automation and productivity enhancement; (3) data exploitation and service personalization; (4) product, service, and ecosystem innovation; (5) enhanced risk management capabilities; and (6) strengthened governance, control, and accountability.

Indicators such as ROA, ROE, CIR, NPLs, non-interest income, and market value were used solely to illustrate the broader context and support interpretation; they were not treated as dependent variables or as a basis for establishing causal relationships.

Thus, the underlying logic of the study follows a sequential chain: AI and digital transformation generate resources and opportunities; organizational capabilities convert these resources into operational capabilities; and governance determines the ability to control those capabilities and translate them into sustainable value.

Table 1. The Shift toward Digital Banking in Vietnam: From 2020 to 2024/2025

Indicator	Time Point	Data/Current Status	Significance
Digital transformation plan for the banking sector	May 11, 2021	The State Bank of Vietnam (SBV) issued Decision No. 810/QĐ-NHNN, with a plan through 2025 and a vision to 2030	A major policy milestone, establishing digital transformation as a sector-wide programme

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Adults with a bank account	End-2024	>87%	Indicates that digital banking has achieved a very high level of penetration
Share of transactions conducted through digital channels across many credit institutions	End-2024	>90%	Digital channels have become the predominant means of conducting banking transactions
Basic banking operations fully digitalized	2024	100% for many basic operations	Signals a shift from partial digitalization toward end-to-end process digitalization
Payment transactions via mobile devices and QR codes	2017–2023	Average annual growth exceeding 100%	Demonstrates a profound shift in payment behavior
Share of transactions conducted through digital channels across the banking sector	Four years after the implementation of Decision No. 810; reported in 2025	>90% at many credit institutions	Confirms that digital transformation has become embedded in core banking operations

Source: State Bank of Vietnam, “Imprints of Banking Technology in 2024: Security and Safety in the Provision and Use of Banking Services in Cyberspace”; SBV, “2025 Banking Sector Digital Transformation Event.”

Table 1 shows that the digital transformation of Vietnam’s banking system has moved from the stage of establishing strategic directions to one of deep integration into core business operations. While Decision No. 810/QĐ-NHNN dated May 11, 2021, established the framework for banking digital transformation through 2025, by the end of 2024 more than 87% of adults had a bank account, and many credit institutions reported that more than 90% of their transactions were conducted through digital channels. Notably, many basic banking operations—including deposits, account opening, card issuance, fund transfers, and lending—had been fully digitalized. This indicates that digital transformation is no longer simply a matter of placing individual services online; it is progressively reshaping the way banks operate.

4. DISCUSSION OF RESEARCH FINDINGS

Table 2. Vietcombank: How Has Digital Transformation Translated into Transaction Scale and Customer Experience?

Indicator	Time Point	Result	Implications for Value Creation
Retail transactions conducted through digital channels	2024	99%	Digital channels have become the dominant transaction channel
Retail banking operations conducted entirely in the digital environment	2024	83%	A shift from transaction digitalization toward process digitalization
Customers successfully enrolled for biometric identification	2024	>10 million customers	Enhanced identification, authentication, and security capabilities
Share of Digibank customers enrolled for biometric identification	2024	65%	Integration of identity data into the digital ecosystem
New VCB DigiBiz customers	2024 vs. 2023	Increased 1.5-fold	Digital products contributed to expanding the corporate customer base
Digital transaction volume	2024 vs. 2020	Increased by >600%	Demonstrates the rapid expansion of digital operations
Digital transaction value	2024 vs. 2020	Increased by >400%	Technology has generated tangible business scale
Transaction processing capacity	2024	>11 million transactions/day	Evidence of large-scale operational capacity

Source: Vietcombank, 2024 Sustainability Report/Annual Report and information disclosed by Vietcombank on its digital banking operations.

4.1. AI and Digital Transformation: From Technology Investment to Value-Creating Capabilities

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The most noteworthy finding from the qualitative analysis does not lie in confirming that AI and digital transformation are associated with banking performance, but rather in explaining how technology is translated into value and under what conditions this occurs. Analysis of reports and publicly disclosed materials shows that the value of AI does not arise directly from the level of investment or the number of technologies deployed. Rather, it emerges when technology is connected with the bank's data, people, processes, and business strategy.

This perspective is consistent with Barney's (1991) resource-based view and Teece et al.'s (1997) dynamic capabilities theory. AI, data, and digital infrastructure constitute important resources, but they are not, in themselves, sufficient to generate competitive advantage. What matters is the organization's ability to coordinate, integrate, and reconfigure these resources in response to changes in the business environment. Jöhnk et al. (2021) likewise show that organizational readiness for AI depends on a range of complementary factors, including resources, data, technological architecture, organizational capabilities, and leadership commitment.

The analysis indicates that differences among banks do not necessarily lie in which institution possesses more advanced technology. Two banks may use the same AI platform yet achieve different outcomes if they differ in data quality, human capabilities, system integration, and internal coordination. An algorithm can be purchased or leased; customer data accumulated over many years, institutional knowledge, and organizational capabilities are considerably more difficult to replicate. Competitive advantage in the AI era is therefore shifting from technology ownership toward the ability to organize and exploit technology.

This finding is consistent with the review by Fares et al. (2023), which suggests that the value of AI in banking is generated primarily through strategy, processes, and customer relationships. AI acquires genuine economic significance only when it is absorbed into a bank's core activities. A simple chatbot may reduce the workload of customer service staff; however, when data generated through the chatbot are connected to customer relationship management systems, behavioral analytics, and product development, the technology begins to form part of the bank's business capabilities.

This is also where digitalization differs from digital transformation. Digitalization may make an existing process faster; digital transformation goes further by reconsidering the process itself: whether established practices still need to be maintained, how data should be used, and how business decisions can be reorganized. When AI is integrated into credit assessment, fraud detection, customer management, or risk forecasting, banks are not merely changing their tools; they are gradually changing the logic through which decisions are made.

The authors argue that data therefore constitute a particularly important strategic asset. As AI technologies become increasingly widespread, differentiation no longer lies primarily in the algorithm itself, but in data quality and the ability to turn data into useful knowledge for decision-making. A bank with comprehensive, standardized, and well-governed data is in a fundamentally different position to exploit AI from one whose data are fragmented or inconsistent. From this perspective, AI becomes a strategic resource only when it is "anchored" in the organization's distinctive assets and capabilities (Barney, 1991).

Nevertheless, the benefits of AI should not be viewed in absolute terms. The more deeply technology becomes embedded in banking operations, the more salient issues of data quality, model risk, security, privacy, and the explainability of decisions become. The BIS (2025) emphasizes that the application of AI in finance requires adaptive governance mechanisms that link technological innovation with risk management and internal control. Technological capabilities and governance capabilities must therefore develop in tandem.

Taken together, these observations suggest that digital transformation should not be understood through the simple logic that "greater investment will produce greater efficiency." A more appropriate proposition is that AI expands the potential for value creation, but that potential becomes a business outcome only when technology is absorbed into the bank's organizational capabilities, data, human resources, and strategy. This represents a shift from a technology-investment mindset toward a value-creating capability-building mindset.

4.2. Banking Governance: The Condition for Translating Technological Potential into Value

Table 3. Techcombank: From Data to AI and Value-Creating Capabilities

Indicator	2024	2025	Change/Significance
Data Brain platform	Operational and supporting the data/AI strategy	Integrated data from approximately 100 source systems	Increasingly deep data integration
Number of data points processed daily	Approximately 8 billion	Approximately 8 billion	A very large data scale providing the foundation for AI

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Number of attributes describing each customer	—	>12,500 attributes	Creates a foundation for analytics and personalization
AI/ML models in operation	—	>55 models	AI has moved from experimentation toward broader deployment
Online retail transactions	>91%	—	Continued high level of integration
			Digital channels have become a core component of retail banking
AI-personalized marketing messages	>1.2 billion	—	AI has been translated into concrete business activities
Technology and infrastructure expenditure	VND 2.9 trillion	—	Technology investment is aligned with business strategy

Source: Techcombank, 2024 Annual Report and 2025 Annual Report.

If AI opens up new possibilities, governance determines how those possibilities are used. This is one of the key findings emerging from the qualitative analysis. Accordingly, the study does not treat the Banking Governance Quality Framework as a “moderating variable” in the econometric sense; rather, it conceptualizes governance quality as an organizational condition that shapes the processes through which technology is selected, deployed, controlled, and translated into value.

This is particularly important in banking because AI projects often require substantial investment, lengthy implementation periods, and a high degree of uncertainty. Senior management typically possesses greater technical expertise and information about technology than the Board of Directors and shareholders. Such information asymmetry may increase the risk of trend-driven investment or the selection of technologies that are insufficiently aligned with business needs. From an agency-theoretic perspective, mechanisms of oversight and accountability therefore become particularly important (Jensen & Meckling, 1976).

However, governance quality should not be assessed merely by the number of committees a bank has, the number of independent directors it appoints, or the number of internal regulations it adopts. More important is whether these institutional arrangements actually participate in decisions concerning AI. When AI is used for credit scoring, fraud detection, customer segmentation, or risk management, the Board of Directors and senior management must understand not only what the technology can do, but also where it may fail, how data may become biased, and who bears responsibility when the system produces inappropriate decisions.

This represents a significant change in the nature of banking governance. Traditional governance has focused primarily on operational oversight and risk control. In the AI era, governance must also address the challenge of innovation. Excessively stringent controls may cause banks to miss technological opportunities; insufficient oversight, by contrast, may expose them to model risk, data risk, and reputational risk. The imperative, therefore, is not to choose between innovation and control, but to establish a governance mechanism that is sufficiently robust to ensure safety while remaining sufficiently flexible to allow technology to be tested, refined, and improved.

This finding is consistent with Cheng et al. (2025), whose study shows that AI can improve financial outcomes through business process governance and internal control. BIS (2025) likewise emphasizes that AI governance needs to be integrated with risk management, data security, and existing lines of defense. These strands of evidence reinforce the argument that AI does not create value in an organizational vacuum; its effectiveness depends substantially on how technology is embedded within the bank’s governance structure.

From the perspective of dynamic capabilities, governance therefore does not stand outside the digital transformation process. Rather, it constitutes part of the organizational capability that enables banks to identify opportunities, select technologies, allocate resources, and reconfigure processes (Teece et al., 1997). The Board of Directors provides strategic direction, senior management organizes implementation, while risk, control, and audit functions establish the necessary boundaries. When these functions operate in concert, technology is more likely to become a business capability rather than merely an investment.

Accordingly, the study proposes conceptualizing the AI value-creation process as follows:

AI and digital transformation resources → data and organizational capabilities → restructuring of processes, products, and business models → governance and control → changes in productivity, service delivery, and risk management → operational outcomes.

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This chain demonstrates that none of these elements exists entirely in isolation. Poor-quality data constrain AI capabilities; insufficiently skilled personnel reduce the organization's ability to absorb technology; legacy processes may erode the benefits of automation; and weak governance can turn an opportunity for innovation into a new source of risk. Conversely, when technology, data, people, and governance are effectively connected, AI can become an integral component of long-term competitive capability.

In our view, this provides a more appropriate basis for assessing digital transformation in Vietnamese banking. As technology becomes increasingly widespread, competitive advantage lies less in what technologies a bank possesses than in how it organizes and governs them. AI can be purchased; platforms can be leased; but data capabilities, domain knowledge, an innovation-oriented culture, leadership capabilities, and accountability mechanisms must be accumulated over time.

The core message of this study, therefore, is not that AI automatically makes banks more efficient. The deeper proposition is that AI creates potential, whereas organizations determine value. In a highly systemic industry such as banking, that potential can become sustainable value only when technological innovation is accompanied by data and human capabilities, process restructuring, and a governance system capable of assuming responsibility for decisions in which algorithms play an increasingly substantive role.

5. POLICY AND GOVERNANCE IMPLICATIONS

The foregoing analysis suggests that the central challenge of AI and digital transformation in Vietnamese banking is no longer primarily whether banks invest in technology, but rather their capacity to translate technology into value. Evidence from annual reports, corporate governance reports, and disclosures on technology and data reveals a gap between the implementation of digital initiatives and the ability to integrate them into business processes, human resources, and control systems. Accordingly, the most important implication of this study is that AI can generate meaningful value only when embedded within a governance structure that is sufficiently robust, transparent, and accountable. Specifically:

First, for the State Bank of Vietnam and regulatory authorities

Policy should gradually shift from a mindset of encouraging technology adoption toward one of governing how technology is adopted and used. As AI becomes increasingly embedded in credit scoring, fraud detection, risk management, and financial service delivery, issues relating to data quality, model explainability, algorithmic bias, cybersecurity, and accountability when systems produce erroneous decisions should be placed at the center of regulatory oversight. These are also among the key risks that the BIS has specifically highlighted in the governance of AI in the financial sector (Bank for International Settlements [BIS], 2025).

Vietnam has already taken important steps in this direction. Decision 810/QD-NHNN placed banking-sector digital transformation within a systematic development program, while Decree 94/2025/ND-CP established a controlled sandbox mechanism for the banking sector (State Bank of Vietnam, 2021; Government of Vietnam, 2025). In our view, the sandbox should be regarded not merely as a space in which firms can experiment with technology, but also as an environment in which regulators can observe emerging risks, accumulate practical experience, and refine policy based on evidence from implementation.

At the same time, banking supervision should pay greater attention to data governance, AI model governance, cybersecurity, and technological resilience. Banking safety in the AI era is therefore not solely a matter of capital adequacy; it is equally a matter of technological and data governance capabilities (BCBS, 2013, 2015).

Second, for commercial banks

The most important message is that AI should not be treated as a standalone information technology project. Technological value typically emerges when AI is connected to data, processes, people, and business strategy. This is consistent with Barney's (1991) Resource-Based View and Teece et al.'s (1997) dynamic capabilities perspective.

In our view, digital transformation is first and foremost a transformation of organizational capabilities, and only subsequently a transformation of technology. The Board of Directors should engage substantively in AI strategy, understand data and model risks, and establish oversight mechanisms covering the entire lifecycle of technology projects. AI should also be selected on the basis of specific business problems rather than driven by the pursuit of the latest technologies. Applications such as process automation, fraud detection, credit support, risk management, and service personalization are more likely to generate tangible value than projects undertaken primarily for demonstration purposes.

In particular, AI investment must be accompanied by investment in data and people. Jöhnk et al. (2021) show that AI readiness depends on data, system architecture, resources, organizational capabilities, and leadership. Even a sophisticated algorithm is unlikely to produce good outcomes when the underlying data are inaccurate; similarly, a modern data platform has limited value if the workforce lacks the capabilities required to exploit it. Data governance and workforce reskilling should therefore be regarded as strategic investments rather than merely supporting costs.

Third, for investors and capital markets

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In the digital economy, data, technological capabilities, organizational knowledge, and governance quality are increasingly important intangible assets. Investors, however, should not equate the number of AI initiatives disclosed by a bank with its actual competitive capabilities. What matters is whether technology has been translated into improvements in processes, service quality, risk management, and innovation capabilities.

From this perspective, the gap between a bank that “has technology” and one that “has the capability to translate technology into value” is where governance quality becomes most visible. Technology can be purchased, but organizational capabilities, a learning-oriented culture, and governance accountability must be accumulated over time. These, ultimately, are the foundations that determine whether AI becomes a sustainable competitive advantage or remains merely an innovation program.

6. CONCLUSION

This study was conducted in the context of Vietnamese banking’s transition from the digitalization of individual activities toward a deeper process of restructuring driven by data, technology, and artificial intelligence (AI). Based on content analysis and thematic analysis of annual reports, corporate governance reports, technology disclosures, and other official documents published by Vietnamese commercial banks during the 2018–2025 period, the study examines not only which technologies banks are adopting, but, more importantly, how and under what conditions these technologies are translated into value.

The findings indicate that AI and digital transformation are generating substantial changes in how banks organize processes, exploit data, develop products, deliver services, and manage risk. However, the extent to which technology is present does not necessarily correspond to the maturity of digital transformation. Banks that are able to connect technology with high-quality data, appropriate human capabilities, redesigned processes, and clearly defined governance mechanisms tend to demonstrate a more substantive transformation process. This finding is consistent with the arguments of Barney (1991) and Teece et al. (1997), which suggest that competitive advantage does not arise simply from possessing a resource, but from the ability to organize, combine, and reconfigure resources in ways that create value.

An important contribution of this study lies in clarifying the role of governance in the process of translating technological potential into value. The analysis shows that governance should not be viewed solely in terms of the structure of the Board of Directors or the presence of specialized committees. As AI becomes increasingly involved in business decisions and risk management, governance quality is also reflected in the capacity to oversee data and models, ensure accountability, control technology-related risks, and ensure that AI is used in ways consistent with strategic objectives. This represents a point of convergence among Agency Theory, the Resource-Based View, and dynamic capabilities theory (Jensen & Meckling, 1976; Barney, 1991; Teece et al., 1997).

From a practical perspective, the study argues that the success of digital transformation should not be assessed by the number of AI applications or the scale of technology investment. Such measures capture only part of the transformation process. More important is whether a bank has developed reliable data infrastructure, a digitally capable workforce, appropriate governance mechanisms, and an organizational culture capable of learning and adapting. In other words, AI creates potential, but organizational capabilities determine whether that potential is converted into value. This perspective is also consistent with Jöhnk et al.’s (2021) research on AI readiness.

Nevertheless, the study has several limitations. First, the data are drawn primarily from publicly disclosed information and therefore cannot fully capture changes occurring within individual banks. Second, the study focuses on the Vietnamese commercial banking system, meaning that the extent to which the findings can be generalized to other institutional contexts remains to be tested. Third, the analysis currently identifies technology categories and value-creation mechanisms at an aggregate level rather than examining specific applications in greater depth, such as Generative AI, machine learning, AI in credit assessment, or AI in risk management... These limitations point to several promising avenues for future research, particularly research that combines documentary analysis with in-depth interviews, case studies, and banks’ internal data.

The research team argues that competition among banks in the AI era will not simply be a race for technological advancement. Technology is becoming increasingly accessible, whereas governance capabilities, data quality, organizational knowledge, and the capacity to learn cannot be developed overnight. Sustainable competitive advantage will therefore belong to banks that understand where AI should be positioned: AI is not an end in itself, but a resource for restructuring the organization, strengthening decision-making capabilities, and creating long-term value.

REFERENCES

- 1) Bank for International Settlements. (2013). Principles for effective risk data aggregation and risk reporting. Basel Committee on Banking Supervision. <https://www.bis.org/publ/bcbs239.htm>

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- 2) Bank for International Settlements. (2025). Governance of AI adoption in central banks. Consultative Group on Risk Management. <https://www.bis.org/publications/governance-ai-adoption-central-banks>
- 3) Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- 4) Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- 5) Cheng, X., Du, A. M., Yan, C., & Goodell, J. W. (2025). Internal business process governance and external regulation: How does AI technology empower financial performance? *International Review of Financial Analysis*, 99, 103927. <https://doi.org/10.1016/j.irfa.2025.103927>
- 6) Government of Vietnam. (2025). Decree No. 94/2025/ND-CP dated April 29, 2025, on the controlled sandbox mechanism in the banking sector. [Government of Vietnam legal document](#)
- 7) Fares, O. H., Butt, I., & Lee, S. H. M. (2023). Utilization of artificial intelligence in the banking sector: A systematic literature review. *Journal of Financial Services Marketing*, 28(4), 835–852. <https://doi.org/10.1057/s41264-022-00176-7>
- 8) Gomber, P., Koch, J.-A., & Siering, M. (2017). Digital Finance and FinTech: Current research and future research directions. *Journal of Business Economics*, 87(5), 537–580. <https://doi.org/10.1007/s11573-017-0852-x>
- 9) Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- 10) Jöhnk, J., Weißert, M., & Wyrski, K. (2021). Ready or not, AI comes—An interview study of organizational AI readiness factors. *Business & Information Systems Engineering*, 63, 5–20. <https://doi.org/10.1007/s12599-020-00676-7>
- 11) State Bank of Vietnam. (2021). Decision No. 810/QĐ-NHNN dated May 11, 2021, approving the “Banking Sector Digital Transformation Plan through 2025, with an orientation toward 2030”. <https://thuvienphapluat.vn/van-ban/Tien-te-Ngan-hang/Quyết-dinh-810-QĐ-NHNN-2021-phe-duyet-Ke-hoach-Chuyen-doi-so-nganh-Ngan-hang-den-2025-474917.aspx>
- 12) Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-SMJ882>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z)
- 13) Prime Minister of Vietnam. (2020). Decision No. 749/QĐ-TTg dated June 3, 2020, approving the “National Digital Transformation Programme through 2025, with an orientation toward 2030”. <https://thuvienphapluat.vn/van-ban/Cong-nghe-thong-tin/Quyết-dinh-749-QĐ-TTg-2020-phe-duyet-Chuong-trinh-Chuyen-doi-so-quoc-gia-444136.aspx>
- 14) Tornatzky, L. G., Fleischer, M., & Chakrabarti, A. K. (1990). The processes of technological innovation. Lexington Books.
- 15) Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180. <https://doi.org/10.1002/smj.4250050207>



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