



Synergy of Fintech, Digital Transformation, and Human Resource Readiness in Achieving Sustainable Banking

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Abstract

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Digital transformation has become a key pillar in changing the structure of the modern banking industry and plays an important role in strengthening the competitiveness of financial institutions in the technological age. This study aims to analyze the relationship between the application of financial technology, digital transformation, and human resource readiness as key factors for the success of innovation in the banking sector. Using the Systematic Literature Review method of scientific publications over the past five years, this study identifies a range of conceptual and empirical findings that highlight the importance of synergy between technological innovation and organizational readiness. The results of the analysis show that fintech plays a key catalyst in accelerating the digitalization of financial services, while the readiness of human resources serves as a reinforcing element that determines the effectiveness and sustainability of the implementation of digital transformation. The integration of these three variables forms an organizational adaptation model that is oriented towards innovation and efficiency. This research confirms that the balance between technological development and human readiness is the key to the success of sustainable banking digital transformation in the midst of global economic disruption.



1. Introduction

The era of the industrial revolution 4.0 has marked a fundamental change in the global business world, including the banking sector. Advances in information and communication technology have shifted the bank's operational paradigm from conventional systems to data-driven digital services, automation, and artificial intelligence. Digital transformation is no longer just a strategic choice, but an urgent need for financial institutions to remain competitive in the face of technological disruption and changes in customer behavior (Alt et al., 2018). In the midst of this landscape, the ability of banks to adapt through digital innovation is a determining factor for business sustainability and the competitiveness of the financial industry.

The COVID-19 pandemic has further accelerated the need for digitalization in the banking sector. Mobility restrictions encourage people to switch to digital transaction channels such as mobile banking, internet banking, and e-wallets. This situation shows that digitalization not only supports efficiency, but also ensures the continuity of financial services in emergency situations (Indayani & Hartono, 2020). Changes in consumer behavior that are increasingly dependent on technology encourage banks to expand digital transformation systemically through the use of financial technology (financial technology or fintech) (Financial Services Authority [OJK], 2021).

Fintech has become a major catalyst in the digital transformation process in the banking sector. Collaboration between banks and fintech companies enables the creation of faster, more efficient, and more inclusive financial services. In addition to expanding access to finance, fintech also improves transparency, transaction

security, and the quality of customer experience (Setiyono & Prapanca, 2021). Nevertheless, fintech adoption has not always been seamless. There is a gap in the readiness of banking human resources (HR) in managing technological change, especially related to digital competence, technological literacy, and innovative capabilities (Wu & Kao, 2022).

Human resource readiness is an important element in the success of digital transformation. According to Winasis and Riyanto (2020), changes in technology-based work structures have led to the emergence of new pressures on banking employees, especially in terms of adaptation to automation systems and flexible work models. Without adequate digital competency improvement, the transformation carried out risks not being optimal and causing internal resistance to change. Therefore, strengthening human resource capacity through training, change management, and the formation of a digital work culture is the main strategy to keep pace with the speed of technological development.

In addition to internal challenges, the banking sector also faces the need to build synergy between technological innovation and good governance. Santoso et al. (2021) emphasize the importance of talent mapping and digital talent development strategies to support sustainable digitalization programs in the financial sector. In this context, HR readiness is not only related to technical capabilities, but also includes cultural and organizational readiness to accept digital change across the board. Thus, the success of digital transformation of banking is not only measured by the extent to which the technology is applied, but also by how effectively human resources are able to manage and optimize the technology.

Although many studies discuss digitalization and fintech adoption, the integration between the three, namely digital transformation, fintech utilization, and human resource readiness, is still rarely studied simultaneously in the context of banking (Arianto, 2021). This gap shows that understanding of the relationship between technological and human factors is still limited. Therefore, this study seeks to analyze the relationship between the use of fintech and the readiness of human resources for the success of digital transformation in the banking industry. This research is expected to make a theoretical contribution to the development of a sustainable digital banking model and provide practical implications for financial institutions in preparing effective and adaptive digital transformation strategies.

2. Literature Review

2.1 Digital Transformation in the Banking Sector

Digital transformation in the banking sector is a process of fundamental changes to business models, operational systems, and financial services through the integration of information and communication technology. This process includes the adoption of technologies such as big data analytics, artificial intelligence (AI), mobile banking, and the internet of things that aim to improve efficiency, speed, and customer satisfaction (Alt et al., 2018). In the context of industry 4.0, digital transformation is the main strategy to strengthen the competitiveness and resilience of the banking industry in the face of rapid global changes.

According to the Financial Services Authority (2021), the success of banking digitalization is not only determined by the ability of institutions to adopt new

technologies, but also by the readiness of infrastructure, data governance, and cybersecurity. This transformation requires banks to innovate in providing faster, more flexible, and customer-oriented services. However, as stated by Winasis and Riyanto (2020), this transformation can also cause new pressure on employees due to changes in work systems, automation, and digitalization of business processes. Therefore, a strategic approach to digital transformation must pay attention to the balance between the application of technology and the readiness of the people who manage it.

2.2 Financial Technology (Fintech) as a Catalyst for Change

Fintech is a crucial element in accelerating the digital transformation of banking because of its ability to create technology-based financial service innovations. These innovations include electronic payment systems, peer-to-peer lending, and digital financial services that expand people's access to finance in an inclusive manner (Buwono et al., 2022). Collaboration between banks and fintech companies results in synergies in the development of new products that are more efficient, transparent, and customer-satisfaction-oriented.

According to Shabri et al. (2022), fintech adoption has positively contributed to increasing service innovation, company growth, and strengthening the competitiveness of banks. However, challenges arise in the regulatory aspects and data security risks that demand coordination between financial institutions and supervisory authorities. Santoso et al. (2021) added that to maximize the benefits of fintech, banking institutions need to develop a long-term strategy that includes talent mapping and improving digital literacy for all employees. Thus, fintech is not only

seen as a technological tool, but also as a transformational strategy that changes the structure of the banking ecosystem.

2.3 Human Resource Readiness in the Digital Banking Era

The readiness of human resources (HR) is a fundamental factor that determines the success of digital transformation in the banking sector. Changes towards digital systems require employees to have new competencies such as technology literacy, data analysis, and adaptability to innovation (Wu & Kao, 2022). Without such readiness, digital transformation risks facing internal resistance and ineffective implementation.

Winasis and Riyanto (2020) show that rapid digitalization can increase work pressure if it is not balanced with training and organizational culture adjustments. Therefore, the development of digital competencies must be integrated into HR management strategies, including continuous training, the formation of a digital mindset, and the restructuring of organizational structures to be more agile and adaptive. Kuchciak and Warwas (2021) emphasized that HR readiness serves as a mediating variable that strengthens the relationship between fintech adoption and digital transformation performance. This means that the higher the readiness of human resources in managing technological changes, the greater the potential for the success of banking digitalization as a whole.

3. Methods

This study uses the Systematic Literature Review (SLR) approach as the main method in analyzing the relationship between digital transformation, financial

technology (fintech), and human resource (HR) readiness in the banking sector. This approach is carried out systematically to identify, assess, and synthesize findings from various relevant previous studies. The purpose of using the SLR method is to gain an in-depth understanding of the direction of development of digital transformation theory and practice, as well as to find research gaps that still need to be studied in the context of the relationship between technological innovation and human readiness in the banking industry.

The research stage begins with the formulation of the main questions that focus on three things: first, how is the role of fintech as a driver of innovation and digitalization of banking services; second, the extent to which human resource readiness contributes to the success of the digital transformation process; and third, how these three aspects interact with each other in shaping the competitive advantage of banking institutions in the digital era. The literature collection process is carried out through an indexed academic database with the criteria of the year of publication, namely the last five years to be in accordance with the current context. All the literature found was then selected based on relevance, validity, and methodological consistency.

The analysis was carried out by reviewing the conceptual relationships between the three main variables of the research visualized in the logical relationship model. In this model, fintech plays a key driver (independent variable) that drives the digital transformation of banking (dependent variable), while human resource readiness functions as a determining factor or mediating variable that affects the extent to which digital transformation can run effectively. This relationship forms a

logical flow that illustrates that the success of banking's digital transformation depends not only on the speed of technology adoption, but also on the readiness and adaptability of human resources to manage these changes.

After all the data was analyzed, the results of the synthesis of findings were used to formulate a thematic pattern and a conceptual map that showed the direction of integration between financial technology, HR management, and digital transformation of banking. Furthermore, the results of the synthesis are laid out in a conceptual model that describes the logical flow of relationships between variables, as presented in the following summary of logic flows:

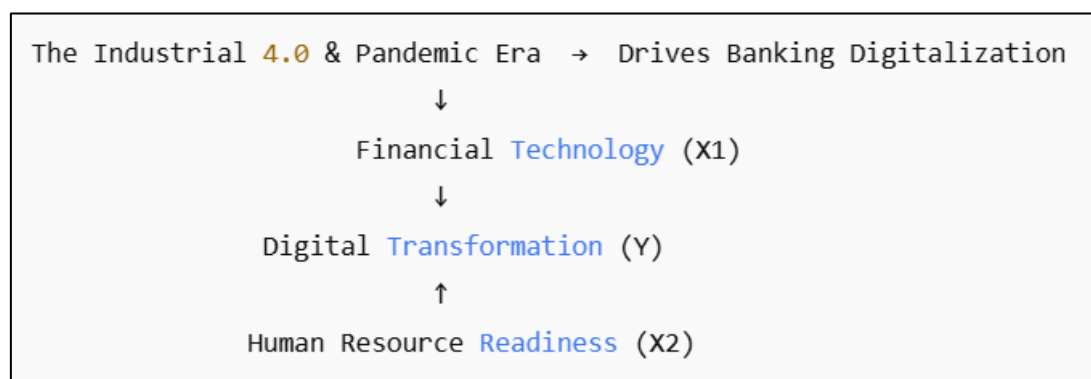


Figure.1 Conceptual Framework

Figure 1 explains that the relationship between the three variables shows that financial technology (fintech) plays a key driver of innovation and automation of banking services, which in turn results in digital transformation as a tangible form of technology integration into business processes, operational models, and customer interactions. However, the success of this transformation is highly dependent on the

level of readiness of human resources (HR) who are able to adopt, manage, and sustain these innovations in a sustainable manner. Thus, fintech functions as a catalyst for change, digital transformation is the result of the application of this technology, and the readiness of human resources plays a role in ensuring that the digitalization process runs effectively, safely, and oriented towards customer satisfaction to form a system that reinforces each other between technology, processes, and people in the modern banking ecosystem.

4. Results

The results of the literature analysis show that digital transformation in the banking sector has become an inevitable global phenomenon. Technological changes and market demands require financial institutions to adapt quickly to remain relevant in the digital age. According to Alt et al. (2018), digitalization in the financial sector has changed the traditional intermediation system to a technology-based one with the role of fintech as the main catalyst. Fintech drives service innovation, accelerates financial access, and significantly changes consumer behavior in transactions. This change also shifts the interbank competition model from traditional competition to digital ecosystem collaboration involving various technology-based entities.

The Financial Services Authority (2021) emphasized that the success of banking digitalization is not only determined by the application of new technology, but also by the readiness of organizations to face change. One of the biggest challenges is ensuring that governance, data security, and infrastructure readiness can

support digital services across the board. Banks that successfully carry out digital transformation are those that are able to integrate technological innovation with risk management strategies and strengthen human resources. This shows that technological and human aspects are closely intertwined in creating a sustainable digital financial system.

Research by Kuchciak and Warwas (2021) highlights that the success of fintech adoption is heavily influenced by employees' digital competency levels and organizational support for innovation. Fintech is not only an instrument of efficiency, but also accelerates the formation of new data-driven business models and digital customer service. However, there is still a gap between the technological capabilities of financial institutions and the readiness of their human resources, especially in terms of digital literacy and adaptability to changes in the work system (Wu & Kao, 2022). Therefore, the readiness of human resources is a crucial factor that acts as a link between the application of technology and the achievement of effective digital transformation results.

Santoso et al. (2021) explain that HR readiness is not only related to technical skills, but also concerns strategic capabilities and organizational culture. The talent mapping strategy and digital competency development must be carried out in a sustainable manner so that digital transformation does not only stop at the technological level, but becomes part of the organization's DNA. Winasis and Riyanto (2020) added that digitalization that is not balanced with psychological and organizational readiness can increase work stress and decrease employee

productivity. Therefore, investment in the human aspect is just as important as investment in technological infrastructure.

Arianto (2021) stated that the COVID-19 pandemic has accelerated massive changes in banking service patterns towards digital. However, this acceleration also shows the inequality in the ability of banks to manage innovation. Banks that have a digital transformation strategy and ready human resources tend to adapt more quickly to market changes, while those that are not ready have difficulty maintaining operational efficiency. This indicates that fintech adoption without adequate human resource readiness will not result in effective digital transformation. Shabri et al. (2022) found that many banking institutions in Eastern Europe face a gap between their digital vision and the readiness of their human resources. They emphasized the importance of a human resource roadmap to support Banking 4.0, where digital innovation must be accompanied by technology-based workforce capacity planning. These findings are in line with Wu and Kao (2022), who underscore the need to integrate HR policies in digital transformation strategies so that the sustainability of innovation can be maintained in the long term.

Latif et al. (2020) reinforces this view by highlighting that most banks do not have a systematic digital talent development strategy. They concluded that there is a significant digital talent gap between the needs of the industry and the actual capabilities of the available workforce. Therefore, digital capacity building must be a top priority in the banking transformation roadmap. Santoso et al. (2021) also show that many financial institutions in Southeast Asia have only reached the adoption stage, not yet at the integration stage, which is combining fintech systems with

governance and HR processes as a whole. This strengthens the argument that digital transformation is not only about implementing new systems, but also about changing organizational paradigms and cultures. According to Indayani and Hartono (2020), the pandemic has accelerated awareness of the importance of digital transformation, but at the same time highlighted the limitations of infrastructure and human resource readiness to support this acceleration.

In general, the results of the literature review show that the success of the digital transformation of banking is influenced by three main elements that interact with each other: the adoption of fintech as a driver of innovation, the readiness of human resources as change managers, and digital transformation management as the main strategic framework. The three form a mutually reinforcing relationship, where each variable has a vital role in determining the success of banking adaptation in the digital era. The SLR also found that there is a research gap related to the integration between human factors and technology in the context of banking digitalization, thus opening up opportunities for the development of more comprehensive conceptual models.

Table.1 Gap Research Analysis

Yes	Name (Year)	Research Title	Conclusion / Gap Research
1	Latif et al. (2024)	Exploring sustainable human resource management change in the context of digital banking	There is a lack of empirical research that integrates the digital competence of human resources with the performance of digital transformation of banking.

2	Wu & Kao (2022)	Mapping the Sustainable Human-Resource Challenges in Southeast Asia's FinTech Sector	Lack of understanding of the readiness of regional human resources to support the digitalization of the fintech and banking sectors.
3	Santoso et al. (2021)	Talent Mapping: A Strategic Approach Toward Digitalization Initiatives in the Banking and FinTech Industry in Indonesia	The lack of a strategic framework that links human resource readiness with long-term digitalization strategies in banking.
4	Kuchciak & Warwas (2021)	Designing a Roadmap for Human Resource Management in Banking 4.0	There is no integrative model between digital transformation strategies and HR management in the Banking 4.0 era.
5	Buwono et al. (2022)	Kesiapan Perbankan Menuju Transformasi Digital Pasca Pandemi Covid-19 Melalui Financial Technology (Fintech)	There have not been many studies that assess the readiness of banks as a whole from the aspects of regulation, technology, and human resources simultaneously.
6	Winasis & Riyanto (2020)	Transformasi Digital di Industri Perbankan Indonesia: Impak pada Stres Karyawan	Lack of research on the psychological impact and readiness of employees on digital banking changes.

Based on the overall results, the results of the literature synthesis show that fintech adoption is the main factor accelerating the digitalization of banking services, but the biggest gap lies in the readiness of human resources to manage these changes. There is a need for a holistic approach that combines technology development, organizational governance, and human resource strengthening strategies. This research reinforces the view that the success of digital transformation cannot be achieved through technology investment alone, but must be balanced with adequate

human transformation. These findings are an important basis for the development of adaptive, inclusive, and sustainable digital banking policy models and implementation strategies in the future.

5. Discussion

The results of the study show that the success of digital transformation in the banking industry is not only determined by technological innovation, but also highly depends on the readiness of human resources in managing the changes that occur. Fintech plays a key catalyst that accelerates the digitization of banking services through the implementation of electronic payment systems, peer-to-peer lending, and application-based data integration (Setiyono & Prapanca, 2021). However, the adoption of such technology requires the readiness of employee competencies that are able to adapt to changes in business models and digital-based work environments (Wu & Kao, 2022).

The relationship between the three variables of fintech, digital transformation, and human resource readiness forms a mutually reinforcing mutual relationship. Fintech is a key driver of system and service change; digital transformation is the result of the adaptation process; while human resource readiness is an element that determines the sustainability and effectiveness of transformation (Buwono et al., 2022). In this context, human resources not only play a role as policy implementers, but also as change agents who drive innovation in the organization. When the digital capacity of human resources is high, fintech adoption will run more effectively and produce optimal digital transformation.

Santoso et al. (2021) emphasized the importance of a talent management strategy as a foundation for the success of digital transformation. Human resource readiness cannot be built instantly, but through a continuous learning process, technology-based training, and the formation of an adaptive work culture. Banks that successfully manage this process tend to have higher levels of innovation and operational efficiency. On the other hand, financial institutions that are still oriented towards conventional systems will face significant obstacles in implementing responsive and secure digital services.

In addition to internal factors, regulatory aspects and institutional support also play an important role in ensuring the success of digitalization. The Financial Services Authority (2021) emphasizes that the sustainability of digital transformation must be balanced with strengthening risk governance, personal data protection, and cybersecurity. Thus, collaboration between regulators, banks, and the fintech sector is key to creating an inclusive and trusted digital financial ecosystem. This collaboration also strengthens the ability of human resources to adapt to evolving digital operational and ethical standards.

This finding is in line with the view of Winasis and Riyanto (2020) who stated that digital transformation will face resistance if it is not followed by psychological and organizational readiness. Therefore, changes in organizational structure, processes, and culture must be carried out in parallel with technological innovation. This approach ensures that digitalization not only results in system efficiency, but also builds human capacity that is adaptive to disruption. Based on the whole, the results of this discussion confirm that the relationship between fintech, digital

transformation, and human resource readiness is the main foundation for the sustainability of the modern banking industry. Technological innovation without human readiness will only result in superficial changes, while human resource development without technological support will limit competitiveness. Therefore, a balance between the two is an absolute prerequisite for achieving an effective, sustainable, and future-oriented digital transformation.

6. Conclusion

Digital transformation in the banking sector is a strategic process that involves a complete change in business models, organizational structures, and work cultures. Fintech plays a key catalyst that accelerates the digitalization of the financial system and encourages the emergence of service innovations that are more efficient, secure, and customer-oriented. However, the success of digital transformation is not only determined by the technology used, but also by the readiness of human resources who are the main drivers in implementing and optimizing these innovations. This study confirms that the relationship between fintech, digital transformation, and human resource readiness is interdependent and reinforcing each other. Fintech encourages digitalization, the readiness of human resources to ensure the effectiveness of its implementation, and digital transformation is the result of synergy between the two. These three aspects must be planned simultaneously so that the changes that occur are not only technological, but also bring organizational culture changes towards adaptive and sustainable governance. The implications of this study show that strengthening the digital capacity of human resources, talent

development strategies, and collaboration between financial institutions and regulators are the main keys in facing the challenges of the digital banking era. With a balance between technological innovation and human readiness, the banking industry can build a financial system that is inclusive, competitive, and resilient to future global changes.

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