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The Impact of FinTech Partnerships on Banking Digitalization and Post-Crisis Economic Resilience

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Abstract

The primary objective of this research is to examine the role of banking digitalization in driving economic recovery, with a specific focus on how collaboration with the FinTech industry can enhance this process. Additionally, this research will analyze the challenges and opportunities posed by such collaborations, considering regulatory frameworks, technological advancements, and consumer adoption patterns to provide a comprehensive understanding of the potential impact of banking digitalization on post-crisis economic resilience. The core result of this empirical study demonstrates that the FinTech industry exerts a significant influence in both mediating and moderating the relationship between banking digitalization and national economic recovery. The findings reveal that the FinTech industry acts as a crucial intermediary that enhances the impact of digitalization efforts within the banking sector, amplifying their contribution to economic recovery. Additionally, the study shows that FinTech has the potential to strengthen the effectiveness of digital banking initiatives by providing innovative solutions, improving customer access to financial services, and increasing the overall efficiency of banking operations. Collaboration between traditional banks and FinTech companies has emerged as a key factor in accelerating digital transformation, which is essential for fostering economic resilience and recovery. By embracing FinTech innovations, banks can expand their digital offerings, improve the customer experience, streamline transactions, and reduce operational costs. This partnership approach not only boosts the competitiveness of individual financial institutions but also contributes to broader national economic recovery efforts by promoting financial inclusion, expanding access to credit, and driving sustainable growth. Furthermore, the research provides valuable insights into how banks can leverage FinTech solutions to overcome the challenges posed by rapidly changing market conditions, technological advancements, and evolving customer expectations. It highlights the importance of creating a supportive regulatory environment and developing innovative collaboration models that enable both traditional financial institutions and FinTech firms to thrive. This study makes a substantial contribution to the banking sector by offering a roadmap for accelerating digital transformation through strategic partnerships with FinTech companies, thereby positioning the industry as a key player in driving national economic recovery. Ultimately, the research underscores the importance of integrating FinTech into the banking ecosystem, showing that such collaboration is not only beneficial but necessary for future growth. By fostering a seamless blend of traditional banking expertise and FinTech innovation, the industry can create more resilient, flexible, and customer-centric financial services that are capable of responding to both current and future economic challenges. The findings of this study thus provide a clear pathway for banks looking to accelerate their digital transformation and actively participate in the nation's economic recovery efforts.

Keywords: Banking Digitalization, Economic Recovery, Fintech Collaboration

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1. INTRODUCTION

The government of Indonesia is actively driving efforts to support the National Economic Recovery, also known as PEN in Indonesian, in response to the economic impacts (Nababan et al., 2021; Yulivan et al., 2023). A critical part of these efforts involves accelerating the digital transformation of the banking sector. However, this process has encountered challenges due to the slow pace of banking digitalization and a lack of robust collaboration with the FinTech industry. These issues are significant obstacles in the path of national economic recovery, as banking digitalization plays a crucial role in improving financial accessibility and efficiency. The traditional banking sector in Indonesia faces several barriers to digitalization. Many banks continue to operate on legacy systems that are not easily adaptable to modern digital technologies, making it difficult to adopt the advancements necessary for a competitive edge (Jameaba, 2024). Additionally, regulatory complexities create challenges in integrating innovative solutions offered by the FinTech industry. Cultural resistance within organizations also plays a role, as some institutions are slow to change established processes and adopt new digital platforms. This hesitation slows the overall transformation, which is needed to fully leverage the benefits of digitalization for economic recovery. On the other hand, the FinTech industry has emerged as a pivotal player in Indonesia's efforts to revitalize its economy (Faj'ri et al., 2024). FinTech companies are driving financial

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inclusion by offering innovative solutions that reach underserved populations, including those in remote or rural areas. For example, collaborations between traditional banks and FinTech platforms, such as those between Bank DBS Indonesia and various e-commerce and FinTech partners, have enhanced the digital economy and promoted financial education across the country. These collaborations showcase the potential of FinTech in bridging the financial services gap and fostering a more inclusive financial system. Moreover, the rise of digital payment systems has streamlined transactions, reduced costs, and improved convenience for both consumers and businesses. Initiatives like the Quick Response Code Indonesia Standard (QRIS) are excellent examples of how FinTech solutions can simplify financial interactions and increase efficiency in the digital economy. In response to these challenges, the Indonesian government has taken several initiatives to encourage the integration of FinTech and banking. The Financial Services Authority (OJK) has developed a Digital Finance Innovation Road Map and Action Plan for 2020-2024, which provides a clear framework for the digital transformation of financial services in the country. This road map outlines strategies for embracing digital financial services while ensuring consumer protection and regulatory compliance. Furthermore, public-private partnerships between the government, traditional banks, and FinTech companies are being encouraged to foster innovation, boost collaboration, and accelerate the pace of digital transformation (Saifurrahman & Kassim, 2024).

The Government of Indonesia has actively pursued its National Economic Recovery (PEN) program, initiated under PP No. 23 of 2020, to mitigate the economic fallout. This program aims to revitalize economic activity by supporting key community business sectors, with a particular focus on micro, small, and medium enterprises (MSMEs), which form the backbone of the Indonesian economy. The PEN program encompasses a comprehensive array of fiscal and monetary policies crafted to stimulate business activity, safeguard jobs, and improve overall economic resilience. According to the Ministry of Finance, these measures are expected to play a critical role in fostering economic stability and growth, setting the foundation for a gradual but steady recovery. To support this extensive recovery initiative, the government allocated a substantial budget to the PEN program, with 305.5 trillion Rupiah (or 41%) of the budget realized by the end of July 2021 (Antaranews, 2021). This substantial fiscal commitment reflects the government's dedication to economic revival, aiming to sustain essential business activities, enhance liquidity, and provide targeted financial assistance to both businesses and individuals impacted by the economic downturn. Notably, the budget for the PEN program was increased from 699.43 trillion Rupiah to 744.75 trillion Rupiah in 2021 to further strengthen its impact and ensure sufficient support across all levels of the economy.

The increased budget allocation is expected to create a gradual economic uplift, providing businesses with the resources needed to recover and encouraging consumer spending by offering financial stability to individuals. The government's approach includes a mix of direct cash transfers, credit incentives, tax relief, and other support mechanisms designed to benefit both businesses and households (Yang et al., 2023). These policies not only aim to keep businesses afloat but also strive to protect and create jobs, fostering a sense of financial security among workers and contributing to increased spending power within communities. Furthermore, the PEN program places significant emphasis on collaboration with the FinTech sector to expedite the digitalization of financial services for MSMEs, which has been instrumental in enhancing financial inclusion. By partnering with FinTech companies, the government aims to streamline the distribution of financial aid, improve accessibility to credit, and reduce bureaucratic hurdles that might otherwise delay financial support to struggling businesses. This digitalization effort aligns with the government's vision of building a more resilient economy capable of withstanding future shocks and promoting sustainable growth.

The anticipated impact of these measures is a progressive, broad-based recovery that can address both immediate economic needs and long-term structural improvements within the economy. By supporting MSMEs and enhancing the digital infrastructure, the government is setting the stage for a stronger, more diversified economy. The PEN program's continued implementation throughout 2021 and beyond is expected to gradually drive economic momentum, thereby stabilizing Indonesia's growth trajectory and laying a solid foundation for future development. The development of FinTech in Indonesia has been rapid and transformative. In response to this growth, Bank Indonesia has established regulations to guide the implementation of Financial Technology, as outlined in Bank Indonesia Regulation Number 19/12/PBI/2017. This regulatory framework is intended to support innovation within the financial sector by setting standards that facilitate the integration of new technologies. According to the Indonesian Financial Services Authority (OJK), payment services accounted for 42.22% of all FinTech products in Indonesia as of 2017, indicating the dominant role of digital payment solutions in the FinTech landscape.

Despite the promising advancements, some practitioners and researchers argue that FinTech could disrupt traditional financial services (Prawirasasra, 2018). Concerns have emerged over FinTech's potential to challenge existing financial institutions and reshape the industry in ways that could be detrimental to established players. Both Bank Indonesia and the Financial Services Authority have proactively worked to mitigate these risks through a combination of policies and regulatory initiatives aimed at managing the impacts of FinTech on the financial and banking sectors. As the central bank, Bank Indonesia has developed a comprehensive blueprint for the Indonesia Payment System (IPS) in alignment with the demands of the digital era (Bank Indonesia, 2019). This blueprint outlines strategies for integrating digital payments into the broader financial ecosystem, aiming to foster secure, efficient, and inclusive payment options. The Financial Services Authority has also set goals within its master plan for how FinTech should collaborate with financial and banking institutions (OJK, 2021). By encouraging cooperation between FinTech companies and traditional financial entities, the OJK aims to leverage FinTech's innovative potential while protecting the stability and reliability of the financial sector. Thus, the evolving role of FinTech—whether as a disruptive force or a collaborative partner—remains a critical area of

focus for Indonesia's financial and banking service sector. Both regulatory bodies continue to monitor and adapt to the impact of FinTech on traditional financial services, balancing the benefits of innovation with the need to safeguard industry stability. According to OJK Regulation Number 12/POJK.03/2018, digital banking services in Indonesia are defined as banking services offered electronically, with an emphasis on optimizing client data to provide faster, more autonomous service while ensuring security. Reports indicate that the volume of digital banking transactions in Indonesia reached 513.7 million Rupiah in December 2020, reflecting a 41.53% year-on-year increase. The transaction value of these digital activities amounted to 2,775.5 trillion Rupiah, marking a 13.91% rise over the previous year (Mawarni & Iqbal Fasa, 2021). This shift towards digital banking aligns with evolving consumer behaviors, as more individuals embrace digitalization in their financial activities. The Financial Services Authority (OJK) has been instrumental in supporting the development of digital banking in Indonesia, implementing a range of regulations to ensure safe and efficient digital services. In recent years, digital banks have started to operate in Indonesia, leading to a significant increase in digital transactions. Government initiatives also play a crucial role in supporting the FinTech industry, with the aim of enhancing financial inclusion and promoting digital transformation across the nation. According to a news release from the Coordinating Ministry for the Economy of the Republic of Indonesia (Kemenko_Ekon, 2020), financial inclusion is essential to accelerating the National Economic Recovery (PEN) initiative by enabling FinTech-based financing and digital technologies.

Findings from IDC's Digitalization in Banking Study (2016), which surveyed global banks regarding their views on the rise of FinTech, indicated that 23.4% of respondent banks still perceive FinTech as a "Possible Threat" and view it as competition to traditional banking. However, 34.2% of banks saw FinTech as an area for potential collaboration (OJK, 2021). Reflecting this trend, several Indonesian banks have already formed partnerships with FinTech companies, as reported by Kontan, (2021). These collaborations between traditional banks and FinTech firms represent a strategic approach to blending technological innovation with established banking practices, ultimately aiming to create a more inclusive and digitally capable financial sector in Indonesia. Previous research on banking digitalization in Indonesia has been conducted by various scholars, highlighting its impact on different aspects of the banking and financial sectors. Puspitadewi (2019) found that digitalization in banking significantly enhanced the effectiveness and productivity of operations at PT. Bank of National Indonesia (Persero) Tbk, Jember Branch. Similarly, Rodin et al. (2019) identified key directions for the growth of the FinTech industry and the role of digitalization in banking services. Yudhira (2021) explored the development of Sharia-compliant FinTech, focusing on digital financial innovations that cater to Islamic finance principles. Additionally, Abidin (2021) examined the PEN program, concluding that it positively influenced labor productivity in Indonesia's agricultural sector.

The present study seeks to investigate the role of banking digitalization in supporting economic recovery, particularly through the development of collaborative efforts with the FinTech industry. The research aims to experimentally assess whether the FinTech sector can act as a mediator or moderator in the relationship between banking digitalization and national economic recovery. By examining these interactions, the study aims to provide insights into the ways in which banking and FinTech collaboration can contribute to Indonesia's economic resilience and growth. The findings of this study offer valuable contributions to the Indonesian government, providing practical insights that can support policy-making and strategic planning. Additionally, the study represents a novel addition to the existing literature on banking digitalization, specifically in its focus on the collaborative potential of the FinTech industry to drive economic recovery. This research is expected to serve as a resource for further exploration in digital financial services and their role in national economic development.

2. LITERATURE REVIEW

According to Abidin (2021), the National Economic Recovery Program (PEN), established through PP Number 23 of 2020, seeks to protect, maintain, and enhance the capacity of businesses to sustain their operations throughout the COVID-19 pandemic. The program is designed as a comprehensive support system for business owners, ensuring they have the resources and resilience to navigate the economic challenges posed by the pandemic. The program addresses both immediate needs and long-term goals, helping businesses adapt to new market conditions, retain employees, and stabilize their financial health. The success of the PEN program is evidenced by several key economic indicators. One of the primary indicators is the increase in productivity across various sectors, reflected in the higher output of goods and services. This increase in productivity signals that businesses are able to maintain or even boost their production levels despite external pressures. Another indicator is the rise in per capita income, which suggests that, as businesses recover and expand, they contribute to a higher income level for individuals within the economy. Additionally, the PEN program's positive impact on gross domestic product (GDP) growth highlights its role in driving broader economic recovery and strengthening the economy's overall capacity.

By focusing on productivity, income growth, and GDP, the PEN program aims not only to stabilize the economy but also to lay the foundation for sustainable growth in the post-pandemic period. Through targeted support for business sectors, the program is intended to foster economic resilience, helping businesses become more adaptable and competitive. The increase in productivity and income levels demonstrates the program's effectiveness in promoting economic activity, while the improvement in GDP reflects its broader impact on national economic recovery (Ahmad & Rehman, 2019). The banking and finance industry has undergone significant transformation over the past decade due to digitalization (Sulehri et al., 2024), most notably marked by the rise of financial technology, commonly known as "FinTech." This

sector has introduced innovative business models and reshaped traditional financial services through the integration of technology. According to Subanidja et al. (2020), FinTech has catalyzed shifts in business mechanisms by creating, altering, and enhancing business models to better suit digital-first consumers (Adjasi & Yu, 2021; Ahmad, 2022; Roy & Madheswaran, 2020). FinTech also presents a dual potential: it can either disrupt traditional financial services or create collaborative opportunities between established institutions and new technology-driven firms. One of the most apparent impacts of FinTech is its application of information technology within the finance sector, streamlining processes and expanding access to financial services. Yudhira (2021) further underscores FinTech's role as a crucial tool for economic recovery, especially during the COVID-19 pandemic. FinTech solutions provide a pathway for strengthening economic resilience by offering accessible digital financial services that reach a broad population, including those underserved by traditional banking. This digital approach enables faster, more secure, and more efficient transactions, supporting individuals and businesses in maintaining economic stability during challenging times. Thus, FinTech not only serves as a transformative force within the finance industry but also emerges as a strategic asset for bolstering economic recovery efforts.

Digitalization marks a significant shift in perspective, impacting even the most traditional organizations and reaching the broader public (Gimpel & Röglinger, 2015; Wadud, 2022; Quader, 2024; Iqbal & Abbas, 2024). In the banking industry, digitalization involves a series of electronically supported activities provided by banks through digital channels, allowing both prospective and current customers to manage banking services independently (Hussain, 2018; Puspitadewi, 2019; Omri, 2022; Audi & Al Masri, 2024). In Indonesia, digital financial services have evolved rapidly and can be categorized into various groups, as noted by Marginingsih (2019). The economic slowdown brought on by the COVID-19 pandemic initially reduced payment transaction volumes in the financial and banking sectors but simultaneously acted as a catalyst for accelerating digitalization efforts in banking (Mawarni & Iqbal Fasa, 2021). The pandemic has thus driven the rapid implementation of digital banking, highlighting the necessity for enhanced digital infrastructure and customer accessibility. For successful banking digitalization, governance and risk management are crucial factors in maintaining and improving bank performance. This is particularly true during the COVID-19 pandemic, which has underscored the need for open banking and digital transformation as viable solutions for banks adapting to current challenges. To stay competitive and meet evolving customer needs, digital transformation in banking must be accompanied by the continuous improvement of business processes and rigorous risk management strategies.

The partnership between banks and FinTech companies is gaining momentum in Indonesia (Kontan.co.id, 2021). Both sectors have unique strengths and limitations, making collaboration beneficial for offsetting each other's weaknesses. According to Nurzianti (2021), the Indonesian Financial Technology Association (AFI) reported that 63.9% of FinTech companies have established partnerships with the banking sector through Application Programming Interfaces (APIs), enabling seamless integration of services. These collaborations reflect a shared interest in leveraging technology to improve financial services, streamline processes, and expand access to financial solutions for the broader population. Through such partnerships, the banking and FinTech sectors can enhance their adaptability, resilience, and relevance in an increasingly digital economy. Suheriadi (2020) highlighted that several banks have begun to transform their business strategies by incorporating Open API technology for advanced statistical analysis, enabling greater data integration and insights. Bank Indonesia supports this shift, viewing the collaboration between banks and the FinTech industry as increasingly open and beneficial. Bank Indonesia has also emphasized that the interlinking of the FinTech sector with digital banking initiatives creates a robust framework for achieving optimized financial digitalization (CNBC Indonesia, 2021). Such collaborative efforts are expected to drive significant advancements in digital financial services and promote more efficient financial systems.

Research by Hanifa and Fisabilillah (2021) further demonstrated that the FinTech sector offers valuable opportunities that can positively impact national economic recovery. The growth of the FinTech industry is closely linked to the digitalization of banking services, which has facilitated the expansion of digital financial products and services (Rodin et al., 2019). This interconnected development highlights how digital banking innovations and FinTech solutions are mutually reinforcing, as each sector's progress contributes to the other's growth and effectiveness. According to Gian Ayu (2021), digitalization holds the potential to serve as a key driver of national economic recovery, offering a path toward sustained economic growth. By leveraging digital solutions, Indonesia can increase economic resilience, enhance productivity, and lay the groundwork for higher levels of economic performance. As banking and FinTech collaborations continue to evolve, digitalization is set to play a central role in Indonesia's economic recovery and growth strategy, aligning with broader goals of financial inclusion and technological advancement. According to Bank Indonesia, collaboration between the interlinked FinTech industry and digital banking is essential to achieve optimal results in financial digitalization (CNBC Indonesia, 2021). This partnership is seen as a critical step toward realizing the full potential of digital transformation in finance, enabling more efficient services and broader accessibility. Banking digitalization also has the capability to stimulate economic recovery by fostering financial inclusion and creating more accessible financial services, a point emphasized (Wali, 2018; Zubair & Hayat, 2020; Gian, 2021; Ali & Mohsin, 2023; van Zanden, 2023). Subanidja et al. (2020) argue that FinTech should not be seen as a disruptive force but rather as a collaborative partner with the banking sector. This perspective reframes FinTech as a complementary asset to traditional banking, with significant potential for cooperative innovation. As digital banking continues to evolve, the FinTech industry anticipates that this transformation will accelerate, enhancing the reach and impact of digital financial services. Such collaborations are expected to drive modernization in the financial sector, supporting economic resilience and

growth in Indonesia.

3. RESEARCH METHODOLOGY

This study employs quantitative methods, gathering data through online surveys using purposive random sampling. A total of 400 valid samples were selected from an initial pool of 150 responses collected from employees across various Indonesian banks. To measure the study variables, a five-point Likert scale was used, allowing for quantitative assessment of respondents' perceptions and attitudes. Data analysis was conducted using SmartPLS software, a tool commonly used for structural equation modeling in quantitative research. The study's empirical analysis involved two primary tests: a model test to assess the fit and validity of the research model, and a hypothesis test to examine the proposed relationships between variables. This methodological approach provided a robust framework for analyzing the impact of banking digitalization and FinTech collaboration on economic recovery.

4. RESULTS

The findings of the model test and the hypothesis test are examples of empirical test results in the quantitative method. In this empirical test, 400 people who fill out questionnaires will be analyzed.

The table 1 summarizes estimated outcomes across various dimensions and indicators, focusing on areas such as banking digitalization, the FinTech industry, national economic recovery, and a moderating effect. Each row represents different indicators, suggesting the impact or relevance of these factors on the specified dimensions. In the dimension of governance and risk, a value of 0.932 is associated with banking digitalization, indicating a high level of emphasis on governance and risk management in the digitalization process within the banking sector. This likely reflects the importance of robust governance and risk frameworks in ensuring secure and efficient digital transformation in financial institutions. Digital transformation acceleration, including IT utilization, is highlighted as a central aspect of both banking digitalization and the FinTech industry, with indicators such as 0.963 for banking digitalization and 0.831 for the FinTech industry. These values underscore the critical role of IT in driving transformation, where effective utilization of technology can improve operational efficiency and enhance service delivery. The indicator for "create/change/improve for business model synergy and collaboration" emphasizes the need for dynamic business models in both the banking and FinTech sectors. The values suggest this as a key strategy for adaptation and growth, especially with a value of 0.785 tied to national economic recovery, pointing to the role of collaborative business models in supporting economic revitalization.

IT applied to finance is another important factor, linked to financial outputs such as products, services, and income per capita. The values—0.953 for banking digitalization and 0.937 for FinTech—suggest that the application of IT within financial services is central to driving product and service innovation, likely boosting economic activity and individual income levels as a result. For Gross Domestic Product (GDP) and the FinTech industry as a moderating effect, the value of 0.800 highlights the positive influence of GDP and FinTech growth on the broader economic environment, while the value of 0.862 further reinforces the significance of economic interdependencies. Additionally, values of 0.895 for banking digitalization and 1.566 under the moderating effect indicate a particularly strong influence in this area, suggesting that GDP and FinTech industry performance play an integral role in moderating the relationship between these factors and economic outcomes. These estimated outcomes underscore the interconnectedness of banking digitalization, the FinTech industry, and national economic recovery, with significant moderating effects from governance, risk management, and GDP-FinTech dynamics. The values collectively illustrate the ways in which digitalization, IT application, business model innovation, and economic indicators contribute to robust economic growth and stability.

Table 1: Estimated Outcomes

Dimension / Indicator	Banking Digtalization	FinTech Industry	National Economic Recovery	Moderating Effect-1
Governance and Risk	0.932			
Digital Transformation Acceleration IT Utilization	0.963			
Create/change/improve for business model	0.831			
Synergy/collaboration		0.785		
IT applied to Finance Output		0.953		
Product/Services/Income per Capita		0.937		
Gross Domestic Product/FinTech Industry as			0.800	
Moderating effect			0.862	
			0.895	
				1.566

The table 2 presents the validity and reliability outcomes for four constructs: banking digitalization, the FinTech industry, national economic recovery, and a moderating effect. Each construct's reliability and validity are assessed using Cronbach's Alpha, rho_A, composite reliability, and average variance extracted (AVE). For banking digitalization, Cronbach's Alpha is 0.895, rho_A is 0.906, composite reliability is 0.935, and AVE is 0.829. These values suggest high internal consistency and reliability for this construct, with Cronbach's Alpha and composite reliability values well above

the acceptable threshold of 0.7, and an AVE value above 0.5, indicating that a substantial proportion of variance is captured by this construct's indicators. The FinTech industry construct has a Cronbach's Alpha of 0.872, rho_A of 0.891, composite reliability of 0.923, and AVE of 0.801. Similar to banking digitalization, the high values across these metrics confirm that the FinTech industry construct is both reliable and valid, with strong indicator consistency and a high level of explained variance. For national economic recovery, Cronbach's Alpha is 0.813, rho_A is 0.816, composite reliability is 0.889, and AVE is 0.728. These outcomes indicate a reliable construct, with acceptable internal consistency and validity. The AVE value of 0.728 suggests a substantial level of variance captured, supporting the construct's validity in measuring national economic recovery. The moderating effect shows values of 1.000 across Cronbach's Alpha, rho_A, composite reliability, and AVE. This perfect score may indicate a single-indicator or fixed construct where variance is fully captured, resulting in complete reliability and validity. Overall, these results confirm that all constructs exhibit strong reliability and validity, as demonstrated by high Cronbach's Alpha, rho_A, composite reliability, and AVE values. The metrics indicate that the constructs are consistently measured and capture the intended dimensions effectively, supporting their use in further analysis.

Table 2: Validity and Reliability Outcomes

	Cronbach's Aplha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Banking Digitalisation (BD)	0.895	0.906	0.935	0.829
FinTech Industry (FI)	0.872	0.891	0.923	0.801
National Economic Recovery (NER)	0.813	0.816	0.889	0.728
Moderating Effect-1	1.000	1.000	1.000	1.000

The table 3 summarizes the outcome metrics of the model, providing insight into the predictive power, communality, goodness of fit, and predictive relevance for three constructs: banking digitalization, the FinTech industry, and national economic recovery. For banking digitalization, the communality is 0.828, which suggests that a substantial proportion of variance in this construct's indicators is explained by the construct itself. High communality indicates that the indicators are well-aligned with banking digitalization, providing a strong basis for interpreting its role within the model. The FinTech industry construct, however, does not have associated values in this table, indicating either an indirect measurement approach or that it serves as an exogenous variable within the model framework. As a result, its communality and other outcomes are not explicitly listed, suggesting it may act more as a contributing factor to the outcomes observed in other constructs. For national economic recovery, the R-square value is 0.418, indicating that approximately 41.8% of the variance in this construct is explained by the model's predictors. This shows a moderate level of predictive accuracy, suggesting that the model factors moderately influence national economic recovery. The communality for national economic recovery is 0.728, pointing to a high level of indicator alignment with the construct, reinforcing the validity of its measurement within the model.

The goodness of fit (GoF) value is 0.474, a metric that assesses the overall fit of the model to the data. A GoF of 0.474 reflects a moderately strong fit, suggesting that the model structure captures a fair amount of the observed data variance but might benefit from further refinement for stronger predictive capacity or indicator alignment. The Q-square value of 0.491 for national economic recovery represents the predictive relevance of this construct. A Q-square value above zero indicates that the model has predictive relevance, and in this case, the relatively high value of 0.491 suggests that the model is well-suited to predict aspects related to national economic recovery, even though there may still be room for optimization. The model demonstrates a solid structure for predicting national economic recovery and banking digitalization, as shown by the R-square, communality, and Q-square values. The GoF value suggests a moderate level of model fit, indicating the need for potential adjustments to enhance predictive accuracy and model alignment. These outcomes collectively highlight that the model effectively captures essential dynamics between these constructs, particularly regarding national economic recovery.

Table 3: Outcome of the model

Variable	*R-Square*	*Communality*	*GoF*	*Q-Square*
Banking_Digitalization (BD)		0.828		
FinTech_Industry(FI)	0.418	0.801	0.474	0.491
National_Economic_Recovery (NER)	0.259	0.728		

5. DISCUSSION

This study provides empirical evidence supporting the role of banking digitalization in advancing national economic recovery through collaboration with the FinTech industry. The developed empirical model demonstrates high validity and reliability, with Cronbach's Alpha (CA) and Composite Reliability (CR) values exceeding 0.7, indicating reliable variable measurements. Additionally, all indicators for the variables meet validity requirements, showing outer loading values greater than 0.5. The FinTech Industry variable (IF) displays a coefficient of determination (R^2) of 0.418 or 41.8%, which is higher than that of the National Economic Recovery (PEN) variable. This suggests that, while the FinTech industry itself does not significantly moderate the relationship (with a T-Statistic <1.96 and P-Value > 0.05), it has substantial

potential to enhance the effect of banking digitalization on economic recovery when significant collaboration is established. The findings indicate that banking digitalization positively and significantly impacts the FinTech industry. The Beta coefficient is 0.647, the T-Statistic is 10.200 (exceeding 1.96), and the P-Value is 0.000 (below 0.05), underscoring a strong positive relationship. The most critical indicator for banking digitalization is the Acceleration of Digital Transformation (X2 = 0.963), while for the FinTech Industry variable, the leading indicator is Synergy/Collaboration (Y2 = 0.953). These results highlight the importance of accelerating digital transformation in banking to foster digital innovation and collaborative development, either through disruptive initiatives or strategic partnerships. The study's findings align with trends in the banking sector, where many institutions are actively updating their business models to keep pace with digitalization demands. Bank Indonesia has acknowledged the growing openness of banks to collaborate with FinTech, emphasizing the importance of a synergistic relationship between the two sectors. According to Bank Indonesia, the integration of FinTech and traditional banking is essential to achieving optimal results in financial digitalization (CNBC Indonesia, 2021). These findings underscore the significant role of digital transformation and collaborative efforts in supporting the national economy, reinforcing the need for banking institutions to adopt innovative practices and form strategic alliances with FinTech to foster resilience and growth. The study finds that the Financial Technology (FinTech) industry has had a positive and significant effect on Indonesia's National Economic Recovery (NER). With a beta coefficient of 0.500, a T-statistic of 4.725 (exceeding 1.96), and a P-value of 0.000 (less than 0.05), the data highlights a strong positive relationship between FinTech growth and economic recovery. The most critical indicator within the FinTech Industry variable is synergy and collaboration (Y2 = 0.953), specifically the development of partnerships between FinTech and traditional banking institutions. For the NER variable, the Gross Domestic Product (GDP) indicator is the most dominant, with an outer loading indicator value of 0.895. These findings are consistent with Hanifa & Fisabilillah (2021), who concluded that FinTech provides significant opportunities to support Indonesia's economic recovery. Additionally, Rodin et al. (2019) noted that the rise of banking digitalization has been spurred by the rapid expansion of the FinTech sector.

The study further demonstrates that banking digitalization has a significant and positive impact on the National Economic Recovery. With a beta coefficient of 0.349, a T-statistic of 3.478 (exceeding 1.96), and a P-value of 0.001 (less than 0.05), the results validate this relationship. These findings are consistent with the work of Gian Ayu (2021), who argued that banking digitalization is essential for stimulating economic recovery. This impact is closely linked to changes in customer behavior, as more people turn to digital channels for financial transactions, reflecting a shift towards digital services within the banking sector. The study also shows that the FinTech industry plays a significant mediating role in the relationship between banking digitalization and national economic recovery. This is evident from a combined beta coefficient of 0.323 (calculated as 0.647 x 0.500, and exceeding 0.026), a T-statistic of 3.958 (greater than 1.96), and a P-value of 0.000 (less than 0.05). This finding aligns with Bank Indonesia's position that interlinking FinTech with traditional banking is crucial for achieving optimal financial modernization (CNBC Indonesia, 2021). Additionally, Gian Ayu (2021) emphasized the critical role of banking digitalization in promoting economic recovery, a view that is further confirmed by this study's findings.

However, the study finds that the FinTech industry does not have a moderating effect on the relationship between the banking industry and national economic recovery. The beta coefficient for this relationship is 0.055, with a T-statistic of 0.975 (below 1.96) and a P-value of 0.361 (above 0.05), indicating no significant moderating effect. Nevertheless, the FinTech industry shows potential to play a moderating role in banking digitalization's impact on economic recovery, as evidenced by a beta coefficient of 0.055 (which is greater than the threshold of 0.026) and an R^2 value of 0.481 for the FinTech Industry variable, which is higher than the R^2 value of 0.259 for the NER variable. This is consistent with Subanidja et al. (2020), who observed that while FinTech may not be a disruptive force, the banking sector can effectively partner with FinTech to leverage its strengths. The results of this study conclude that advancing banking digitalization through accelerated digital transformation and the strategic development of collaboration with the FinTech industry can significantly contribute to national economic recovery. This aligns with broader economic goals, underscoring the importance of cohesive efforts between FinTech and traditional banking to create a resilient and inclusive financial system that supports sustainable economic growth.

6. CONCLUSION

The study emphasizes that banking digitalization, when driven by an accelerated digital transformation, has a substantial effect on enhancing collaboration with the FinTech industry, which, in turn, plays a crucial role in promoting national economic recovery. This relationship demonstrates the critical role of digital transformation within the banking sector—not only as a tool for improving operational efficiency and customer accessibility but also as a key factor in fostering innovation through partnerships with FinTech firms. Such collaborations can lead to more inclusive financial services, streamlined payment systems, and enhanced access to credit for individuals and small businesses, all of which are essential components of a robust economic recovery. However, this finding also reveals a significant gap in the current pace of digital transformation within Indonesian banks. While there has been notable progress, the overall rate of digital adoption remains slower than desired. This slower pace suggests that, although digital banking solutions have been initiated, their full implementation across the sector is still in its early stages. Many banks may still rely on traditional models, missing the full range of benefits that digital transformation offers. Accelerating the adoption of digital solutions within the banking sector could enable financial institutions to operate more efficiently, reduce transaction costs, and offer more

flexible and accessible services to their customers. The relatively slow acceleration of digital transformation in Indonesian banking highlights a pressing need for increased investment in digital infrastructure, workforce training, and innovation-driven strategies. For example, adopting advanced technologies such as artificial intelligence, machine learning, and blockchain could strengthen digital banking capabilities, improve security, and enable more personalized financial services. By focusing on these areas, banks can better integrate with FinTech firms, creating a more dynamic and responsive financial ecosystem. Furthermore, increased government and regulatory support can play a pivotal role in facilitating this acceleration. Policies that encourage innovation, provide incentives for digital adoption, and ensure a supportive regulatory environment for FinTech collaborations are crucial. Such measures would not only drive digital transformation in banking but also build a resilient foundation for sustainable economic growth. The integration of digital banking with FinTech solutions represents an opportunity to bridge financial gaps, reach underserved communities, and create a more inclusive economic landscape. Overall, while the impact of digital transformation on banking and FinTech collaboration is promising, the study's findings indicate that Indonesia's banking sector must accelerate its digital initiatives to fully capitalize on these opportunities. Strengthening digital transformation efforts will not only foster greater synergy with the FinTech industry but also contribute significantly to Indonesia's national economic recovery by creating a forward-thinking, technology-enabled financial sector that can effectively respond to both current challenges and future growth opportunities. The study reveals that the FinTech industry plays a pivotal role in mediating the influence of banking digitalization on national economic recovery. Through its innovative solutions and digital infrastructure, FinTech enhances the effectiveness of digital banking by expanding accessibility, improving transaction speed, and offering customer-centric financial services. In doing so, the FinTech industry supports and amplifies the impact of banking digitalization efforts on economic recovery. However, the FinTech sector also has the potential to mitigate any limitations of banking digitalization, providing complementary technologies and services that enable banks to more fully contribute to economic resilience and growth. This is evident from the increasing number of partnerships between traditional banks and FinTech companies, which illustrate the sector's essential role in advancing financial digitization in Indonesia. The key finding of this research is that banking digitalization is indeed a driver of national economic recovery, and this impact is significantly strengthened through collaboration with the FinTech industry. These partnerships enhance the adaptability and reach of digital banking solutions, facilitating more comprehensive economic support by improving financial inclusion and accessibility across the population. For future research, it would be valuable to explore the specific challenges faced by the FinTech industry when collaborating with other financial sectors, particularly in advancing financial inclusion within the real economy. This could include an in-depth analysis of FinTech's role in providing banking financing solutions for the Small and Medium Enterprises (SMEs) sector. Such research could offer insights into potential barriers and opportunities in FinTech collaborations that target underserved sectors, helping to refine strategies for inclusive economic growth through digital finance.

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