

An Empirical Study on the Role of Fintech in Promoting Financial Inclusion and Regional Economic Prosperity

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Abstract

This study investigates the impact of financial technology (fintech) on financial inclusion and regional economic growth in Indonesia from 2018 to 2025. Utilizing a mixed-methods approach, the research integrates quantitative analysis of provincial-level data with qualitative insights from interviews with fintech stakeholders, government officials, users, and regional experts. Findings reveal substantial growth in fintech penetration across Indonesia, driven in part by the COVID-19 pandemic, with marked regional disparities linked to differences in digital infrastructure and socio-economic conditions. Fintech significantly enhances financial inclusion by reducing transaction costs, expanding credit access, formalizing informal economies, and accelerating entrepreneurship. These effects translate into positive regional economic outcomes, including increased Gross Regional Domestic Product (GRDP) per capita and poverty reduction, although the influence on income inequality remains limited. Critical moderating factors such as internet infrastructure, digital literacy, and supportive regulation amplify fintech's benefits. The study highlights the importance of targeted policy interventions to bridge digital divides and foster inclusive fintech ecosystems. These findings provide empirical evidence to guide policymakers and industry stakeholders in leveraging fintech for sustainable and equitable regional development in Indonesia.

Keywords: fintech, financial inclusion, regional economic growth, development policy, digital economy, mixed methodology approach

1. Introduction

Financial technology (fintech) has undergone rapid advancement in the past decade, fundamentally reshaping the global financial landscape through innovative, technology-driven solutions that expand access to financial services. In developing countries—where traditional banking infrastructure is often limited or uneven—fintech has emerged as a crucial catalyst for promoting financial inclusion and stimulating regional economic growth [1]. By utilizing digital platforms and mobile technologies, fintech providers are able to reach populations that were previously unserved or underserved by conventional banking systems,

offering more affordable, transparent, and accessible financial services [2]. Financial inclusion, defined as the equitable access to and effective use of formal financial services by all segments of society, is widely recognized as a key driver of poverty reduction and sustainable economic development [3]. Recent World Bank data indicate that approximately 1.7 billion adults globally remain unbanked, with the majority concentrated in Asia and Africa [4]. In this context, fintech innovations—including mobile banking applications, digital payment systems, peer-to-peer lending, and alternative credit assessment tools—hold significant potential to reduce these gaps in financial service access. Although the positive link between fintech development and financial inclusion has received substantial attention in the literature, there is still limited understanding of how fintech adoption influences regional economic growth patterns [5]. Many countries continue to experience persistent regional economic disparities, and factors such as geographic characteristics, demographic composition, technological readiness, and local economic structures can shape how fintech translates into measurable development outcomes [6]. Therefore, the present study seeks to examine the impact of fintech penetration and adoption on financial inclusion and to explore how these variables correspond with key indicators of regional economic growth. This study employs a mixed-methods research design that integrates quantitative analysis of secondary data with qualitative insights from interviews conducted with key stakeholders in the fintech ecosystem and regional development sectors. By investigating these relationships, the study aims to contribute to a deeper understanding of the mechanisms through which fintech innovation can be leveraged to promote more geographically and socially equitable economic development. The findings are expected to offer valuable implications for policymakers, fintech industry participants, and development institutions in formulating strategies that maximize the positive impact of fintech on financial inclusion and regional economic progress [7].

2. Research Methods

This study employs a mixed-methods research design to examine the influence of fintech on financial inclusion and regional economic growth. By integrating both quantitative and qualitative approaches, the study aims to achieve a holistic understanding of the phenomenon and reinforce the validity of the findings through data triangulation. A sequential explanatory design is adopted, in which quantitative analysis is conducted initially to identify statistical patterns and relationships among the core variables. This is followed by qualitative inquiry to further explore the underlying causal mechanisms, contextual factors, and interpretive dimensions of the quantitative results [8]. This methodological structure not only enables the measurement of correlations but also provides insight into why and how these relationships manifest within specific socio-economic environments.

The quantitative component relies on secondary data spanning the period 2018–2025, covering all provinces in Indonesia. Key fintech penetration indicators were sourced from the Financial Services Authority (OJK) and the Indonesian Fintech Association (AFTECH), including the number of active fintech users, transaction volume and value, and the number of registered fintech service providers in each province [9]. Financial inclusion indicators were obtained from the National Survey on Financial Literacy and Inclusion (SNLIK) conducted by OJK, encompassing formal account ownership, credit access, utilization of insurance products, and adoption of digital financial services [10]. Regional economic growth variables were collected from the Central Statistics Agency (BPS), consisting of Gross Regional Domestic Product (GRDP), unemployment rate, poverty rate, and the Human

Development Index (HDI) [11]. Additionally, data on digital infrastructure and telecommunications were sourced from the Ministry of Communication and Informatics, including internet penetration levels, smartphone ownership rates, and the availability of 4G/5G networks across provinces [12]. For the qualitative component, primary data were collected through in-depth semi-structured interviews with 40 stakeholders representing diverse perspectives within the fintech and regional economic ecosystem. The participants included 10 executives from fintech companies, 10 local government officials from economic and finance departments, 10 fintech service users from diverse socio-economic backgrounds, and 10 regional economists and academics. Additionally, the study incorporates detailed case studies from four provinces that illustrate different levels of economic development and fintech adoption: DKI Jakarta (urban region with high fintech penetration), East Java (a mixed urban–rural landscape), South Sulawesi (a medium-emerging economy), and Papua (a region experiencing significant geographic and infrastructural constraints). Quantitative data analysis was conducted using multiple econometric techniques. Panel data regression models were employed to examine the relationship between fintech penetration, financial inclusion, and regional economic growth, using fixed-effects specifications to control for unobserved heterogeneity across provinces [13]. Structural Equation Modeling (SEM) was applied to explore causal pathways and assess the mediating role of financial inclusion in the fintech–growth relationship [14]. Furthermore, spatial analysis using Geographic Information Systems (GIS) was conducted to map geographic variations in fintech adoption and to evaluate potential spillover effects between neighboring regions [15]. Qualitative data were analyzed using thematic analysis to extract key patterns and insights from the interview transcripts. Coding was conducted independently by two researchers to ensure inter-coder reliability and minimize potential interpretation bias [16]. Comparative case study analysis was used to identify contextual differences affecting how fintech influences financial inclusion and economic performance across diverse regional settings [17]. Additionally, process tracing techniques were applied to investigate the causal mechanisms connecting fintech adoption to regional economic outcomes [18]. To strengthen the validity and reliability of the study, several methodological safeguards were incorporated. These included data triangulation across multiple data sources and methods, member checking to confirm the accuracy of qualitative interpretations with participants, diagnostic tests to assess the assumptions underlying econometric models, and sensitivity analysis to evaluate the robustness of results across alternative model specifications and variable measurements. Through this comprehensive methodological strategy, the study aims to generate a nuanced understanding of the linkages between fintech development, financial inclusion, and regional economic growth, along with their broader implications for policies promoting inclusive and regionally balanced economic development.

3. Results Analysis
Characteristics of Fintech Penetration in Indonesia

The results of the data analysis indicate that fintech service penetration in Indonesia increased substantially during the period 2018–2025. However, this growth was not evenly distributed across regions. Significant disparities were observed between provinces, reflecting variations in digital infrastructure, socio-economic conditions, and levels of technological readiness. Overall, the upward trend demonstrates the rapid expansion of fintech services nationwide, but also highlights persistent geographic inequalities that shape patterns of adoption and usage.

Table 1. Fintech Penetration by Province (% of Adult Population), 2018-2025

Province	2018	2019	2020	2021	2022	2023	2024	2025
Jakarta	32.7	45.6	63.8	76.2	82.7	85.9	87.3	88.6
Jawa Barat	21.4	29.8	48.7	59.1	65.3	68.7	72.4	74.9
Jawa Timur	18.9	27.5	44.6	53.8	58.1	62.5	65.8	68.4
Bali	24.5	35.2	49.5	62.7	69.2	73.1	76.6	79.2
Sumatera Utara	15.2	22.3	39.8	47.4	54.9	59.3	62.7	65.4
South Sulawesi	12.3	18.5	35.7	42.9	48.6	53.2	56.9	59.6
East Kalimantan	16.7	25.9	43.1	51.6	58.3	63.7	67.2	69.8
West Nusa Tenggara	8.4	14.6	27.9	36.2	42.4	46.8	51.2	54.3
Papua	4.2	7.5	15.3	21.7	26.3	31.9	35.1	38.0
National Average	17.5	25.8	41.9	51.3	57.6	62.1	65.7	68.5

Fintech penetration in Indonesia has shown consistent and robust growth across all provinces from 2018 to 2025. Jakarta leads with the highest adoption rate, reaching 88.6% by 2025, reflecting its advanced digital infrastructure and financial ecosystem. Provinces in Java such as Jawa Barat, Jawa Timur, and Bali also exhibit strong penetration, surpassing 70% by 2025. Other provinces, including Sumatera Utara, South Sulawesi, and East Kalimantan, display steady increases, with fintech usage rising to around 60-70%, indicating growing accessibility beyond Java. Regions like West Nusa Tenggara and Papua have the lowest fintech penetration rates but show rapid growth, with Papua increasing from 4.2% in 2018 to 38.0% in 2025. Despite this progress, these provinces remain underpenetrated, highlighting ongoing challenges related to infrastructure and digital literacy. The national average fintech penetration grew from 17.5% in 2018 to 68.5% in 2025, reflecting Indonesia’s overall digital financial expansion, yet with notable regional disparities that suggest the need for targeted policies to enhance fintech adoption in less developed areas.

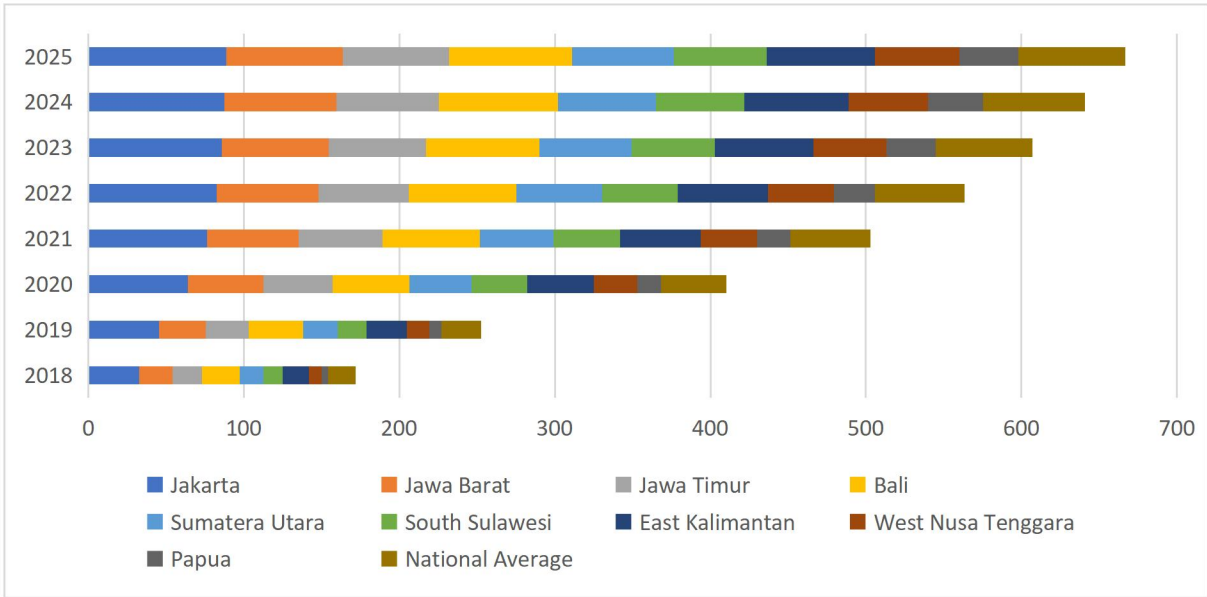


Figure 1 Fintech Penetration by Province (% of Adult Population), 2018-2025

Table 2. Comparative Distribution of Fintech Service Usage by Category 2024 and 2025

Service Category	2024	2025
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Digital Payments	92.7%	94.1%
Electronic Wallet	86.3%	88.0%
Online Loans	43.8%	46.5%
Digital Investment	28.5%	31.2%
Digital Insurance	17.2%	19.1%
Digital Banking	68.4%	72.3%
Crowdfunding	9.7%	11.0%
Personal Financial Management (PFM)	15.6%	17.4%

The data reveals a continued growth trend across all fintech service categories from 2024 to 2025, indicating increasing adoption and penetration of digital financial services in Indonesia. Digital payments remain the most widely used fintech service, with usage rising from 92.7% in 2024 to 94.1% in 2025, underscoring its role as the foundational fintech service for most users. Electronic wallets also show strong growth, increasing from 86.3% to 88.0%, reflecting their critical role in facilitating everyday transactions and cashless payments.

Online loans exhibit a notable increase from 43.8% to 46.5%, suggesting expanding access to credit through digital lending platforms, especially for underserved individuals and MSMEs. Digital banking usage rises from 68.4% to 72.3%, indicating greater user confidence in fully digital banking services. Other categories such as digital investment and digital insurance, though starting from lower base rates, demonstrate steady growth (from 28.5% to 31.2% and 17.2% to 19.1% respectively), highlighting gradual diversification of fintech offerings into wealth management and risk protection.

Crowdfunding and personal financial management (PFM) services remain niche but are growing, with usage increasing from 9.7% to 11.0% and 15.6% to 17.4%, respectively. This suggests emerging interest in alternative financing and personal finance tools but with room for further expansion.

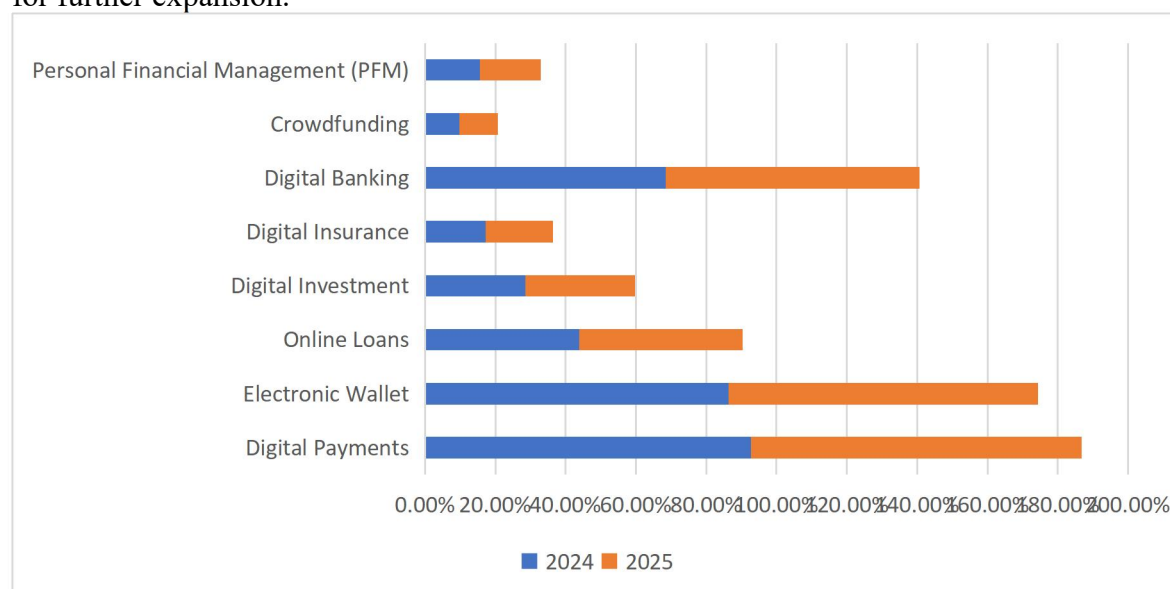


Figure 2 Comparative Distribution of Fintech Service Usage by Category 2024 and 2025

4. Thematic Analysis of In-Depth Interview

The thematic analysis of in-depth interviews with fintech executives, government officials, users, and regional development experts identified several key mechanisms through which fintech influences financial inclusion and regional economic growth. One of the most

immediate and impactful pathways is the significant reduction in transaction costs, as users reported that digital financial services considerably lower fees compared to traditional banking channels. For example, an MSME entrepreneur in South Sulawesi highlighted how digital wallets reduced transfer fees to just a fraction of previous costs, allowing small businesses to redirect savings toward productive activities. Another important mechanism is the expansion of credit access, particularly for micro and small enterprises lacking collateral or formal credit histories; fintech lending platforms have enabled around 70% of loan recipients to secure funding despite no prior formal credit record, as noted by an official from the Financial Services Authority. Additionally, fintech facilitates the formalization of the informal economy through digital payment systems like QRIS, which help business owners improve record-keeping and build transaction histories that support bank loan applications. A trader from East Java shared how adopting QRIS payments enabled access to formal credit for the first time. Fintech also accelerates entrepreneurship by lowering capital entry barriers, especially through digital crowdfunding that allows early-stage entrepreneurs to raise seed capital without traditional collateral, as reflected in a young entrepreneur's experience in Jakarta. Lastly, fintech enhances geographic inclusivity and bridges infrastructure gaps in remote regions such as Papua, where branchless banking, mobile agents, and digital kiosks provide essential financial services locally, reducing the need for long travel to distant banks, as explained by a village head. Collectively, these themes reveal the multifaceted ways fintech promotes financial inclusion and drives regional economic growth across diverse Indonesian contexts.

Table 3. Key Findings of the Province Case Study

Province	Main Characteristics	Dominant Challenge	The Most Significant Impact
Jakarta	- Highest fintech penetration rate (87.3%) - Mature fintech startup ecosystem - Strong digital infrastructure - Intense market competition	- Saturation of basic services market - Data privacy concerns	- Increased efficiency of financial markets - Financial product innovation - Creation of jobs in the technology sector
East Java	- Strong fintech adoption in urban areas and moderate adoption in rural areas - High penetration of MSMEs - Digital payment-led penetration	- Urban–rural digital divide - Limited digital literacy in rural areas - Uneven digital infrastructure	- Formalization of MSMEs - Increased financial inclusion - Strengthening the agricultural value chain
South Sulawesi	- Rapid growth in fintech adoption (27.9% YoY) - Expansion driven by MSMEs	- Limited choice of fintech products - Uneven digital infrastructure	- Acceleration of economic mobility - Increase in formal savings - Strengthening domestic remittances
Papua	- Lowest fintech adoption (35.1%) - Usage dominated by basic services - Very limited digital infrastructure - High internet costs	- Geographical barriers - Limited digital literacy - Scarcity of fintech agents	- Reduction of transaction costs - Access to government subsidies - Strengthening the economy in urban centers

The value chain analysis demonstrates that fintech significantly contributes to regional economic growth through three core channels: enhancing resource allocation efficiency, expanding access to capital, and reducing transaction costs. A focused case study of the agricultural value chain in East Java provides clear empirical evidence of these mechanisms in action. The study found that increased fintech penetration correlates with a 23% rise in farmer profit margins, largely attributable to the removal of intermediaries and better access to digital marketplaces. Fintech enables farmers to obtain real-time price information, facilitate seamless digital payments, and access micro-loans designed to align with crop cycles. These advancements reinforce the entire agricultural value chain, spanning from production through to distribution, ultimately boosting productivity, income, and regional economic development.

5. Discussion

The results of this study confirm that fintech has played a crucial role as a catalyst for financial inclusion and regional economic growth in Indonesia over the period 2018–2025, with varying impacts across geographic regions and economic sectors. The significant increase in fintech penetration during this period, especially accelerated by the COVID-19 pandemic, illustrates how crises can drive digital transformation. This supports Gomber et al.'s [1] observation that digital technologies experience rapid adoption during times of economic disruption when traditional financial systems face operational challenges. This transformative effect is particularly pronounced in trade and financial services, where fintech not only broadens access but also reshapes existing business models. A key finding is that fintech's marginal impact on financial inclusion is greater in rural and remote areas compared to urban centers. This aligns with the theory of technological substitution, where fintech compensates for limited physical banking infrastructure in underserved regions [19]. Such digital leapfrogging enables these areas to enhance financial inclusion without the need for costly conventional banking networks, reinforcing Demirgüç-Kunt et al.'s [3] argument about the transformative potential of digital finance in developing countries. The study also reveals a strong positive relationship between fintech penetration and several indicators of regional economic growth, including GRDP per capita and poverty reduction, demonstrating fintech's benefits beyond the financial sector to the broader economy. Structural Equation Modeling (SEM) analysis indicates that approximately 54% of fintech's total effect on GRDP per capita growth is mediated through increased financial inclusion, underscoring the importance of financial access as a transmission mechanism. However, the modest and only marginally significant impact on income inequality (measured by the Gini coefficient) suggests that fintech has yet to become a robust tool for promoting economic equality. This highlights concerns, as noted by Beck et al. [6], that without targeted inclusion policies, fintech may exacerbate existing disparities and digital exclusion. Qualitative data from in-depth interviews identify five key mechanisms by which fintech influences regional economies: reducing transaction costs, expanding credit access, formalizing informal economic activities, accelerating entrepreneurship, and enhancing geographic inclusiveness. These pathways deepen the understanding of fintech's causal role in economic development and align with global findings such as those by Ozili [2], while providing specific empirical evidence within Indonesia's diverse regional context. The study further identifies critical moderating factors—namely internet infrastructure, digital literacy, and supportive regulation—that significantly enhance fintech's positive impact. Interaction coefficients for internet infrastructure (0.371) and digital literacy (0.284) emphasize the necessity of investing in

these areas to maximize fintech's economic benefits. Additionally, the positive regulatory interaction (0.213) stresses the need for balanced policies that foster innovation while ensuring consumer protection and financial stability, consistent with Frost et al.'s [5] emphasis on a strong digital ecosystem. Analysis of different fintech service types reveals that digital payments exert the largest influence on GRDP per capita growth, followed by online lending and digital banking. This pattern reflects Indonesia's fintech development trajectory, where digital payments typically serve as the entry point into the digital financial ecosystem, consistent with experiences documented in other developing countries [7]. Moreover, the significant spatial spillover effect (coefficient 0.312) suggests that fintech-driven economic gains extend beyond provincial borders, supporting Anselin's [15] new economic geography framework. The identification of a two-year temporal lag between fintech adoption and peak economic impact highlights the importance of adopting an adequate time horizon when evaluating fintech policies. In summary, this study demonstrates that fintech holds substantial promise for accelerating Indonesia's regional economic growth and enhancing financial inclusion, especially in underserved areas. However, realizing this potential requires a comprehensive and supportive ecosystem that integrates digital infrastructure development, literacy programs, and proportionate regulatory frameworks. These findings offer a solid empirical foundation for crafting more inclusive and effective fintech policies tailored to Indonesia's diverse regional landscapes.

6. Policy Recommendations

- Expand telecommunications and broadband networks in underserved and remote areas to bridge the digital divide.
- Implement comprehensive digital and financial literacy programs targeting marginalized populations, MSMEs, and rural communities.
- Adopt balanced regulatory frameworks that encourage fintech innovation while ensuring consumer protection and financial stability.
- Provide fiscal and non-fiscal incentives such as tax breaks and subsidies to encourage fintech firms to operate in underserved regions.
- Foster partnerships among government, traditional banks, fintech providers, and community groups to develop localized fintech solutions.
- Promote interoperability between fintech platforms and traditional banking systems through unified data standards.
- Create dedicated funds to finance fintech innovations addressing local economic challenges, especially in MSMEs and agriculture.
- Establish systematic frameworks for ongoing monitoring and evaluation of fintech's socio-economic impacts to guide policymaking.

7. Limitations of the Study

This study offers valuable insights into the interplay between fintech, financial inclusion, and regional economic growth in Indonesia; however, several limitations must be acknowledged. First, fintech-related data availability remains uneven across provinces, particularly in regions like Papua and Maluku, where fragmented or delayed datasets may affect the accuracy of provincial comparisons. Second, the study's relatively short timeframe (2018–2025) may not fully capture long-term structural impacts such as sustained changes in financial behavior or regional economic transformations. Third, the qualitative findings, based on interviews with MSMEs, regulators, fintech agents, and users, may be subject to self-reporting bias, limiting the objectivity of some insights. Fourth, while the analysis considered broad fintech

categories like digital payments and online lending, it did not delve into more granular sub-categories such as buy-now-pay-later (BNPL) or reg-tech, which could provide more precise impact assessments. Fifth, despite using structural equation modeling and spatial econometrics, potential endogeneity issues—such as reverse causality between fintech adoption and economic growth—cannot be entirely ruled out. Sixth, the study focuses mainly on formal economic indicators like GRDP and poverty rates, leaving broader socio-cultural impacts such as changes in household decision-making, gender inclusion, or digital trust underexplored. Finally, given the rapidly evolving fintech landscape, regulatory and technological developments post-2025—such as central bank digital currency (CBDC) implementation, AI-driven finance, and open banking—may significantly alter the dynamics observed in this study. Future research addressing these limitations would deepen understanding and enhance policy relevance.

8. Conclusion

This study finds that fintech has played a crucial role in enhancing financial inclusion and driving regional economic growth in Indonesia from 2018 to 2025. The rapid expansion of digital payments, online lending, and digital banking has made financial services more accessible, especially for underserved groups like MSMEs and rural communities. Key mechanisms include lowering transaction costs, increasing credit access, formalizing informal businesses, and fostering entrepreneurship. The impact of fintech varies across regions, with provinces like Jakarta and East Java benefiting more due to stronger digital infrastructure and literacy. While fintech significantly contributes to economic growth and inclusiveness, its effect on reducing income inequality remains limited, highlighting the need for targeted policies. Overall, sustainable fintech development requires coordinated efforts to improve digital infrastructure, financial literacy, and proportionate regulation to maximize inclusive growth across Indonesia.

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