



Financial digitization and Fintechs development in BRICS nations: A cross-country analysis

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Received:10/05/2026 Accepted:25/05/2026. Published:25/06/2026

Abstract

The rapid pace at which technology is evolving and the changing dynamics of the business processes are emerging as the key focus areas of research in the “banking and finance” space. In emerging markets (e.g., Brazil, Russia, India, China and South Africa (BRICS)), banking and technology have undertaken transformational digitisation, as they relate to banking and the growth of financial technologies (FinTech), plays a major role in bringing about improved access to finance for all individuals, accounting for better efficiency in operations and for the improvement of oversight through regulation.

This paper seeks to evaluate digital programs that have been developed within the context of the banking sector and the different stages of the growth of FinTech within the BRICS. The primary emphasis will be on payments using various forms of payment methods, foreign transactions, rules and regulations governing these transactions based on the applicable statutory authorities. The article also seeks to analyze various regulations on FinTech, different stages of FinTech development, key FinTech players and the various applications of FinTech across the five BRICS countries. The paper will explore how advanced technologies such as chatbots and fraud-deterrent systems are helping to improve digital banking ecosystems. A qualitative comparative research methodology, consisting of both secondary data and case-based research, have been utilized by the researchers to develop patterns of activity and regulatory gaps that exist between the five BRICS countries and to identify future challenges that will arise. Findings of this study indicate that BRICS countries have different levels of technological and regulatory maturity’ however, they are all in agreement that they are all placing a high priority on digital payments, cybersecurity and consumer protection. This paper adds to the current body of literature by providing a comparative, cross-country perspective on the evolution of digital banking and FinTech in an emerging market and therefore provides characteristic to this segment of the economy.

Keywords: Digital Banking, Fintech, BRICS Nations, Regulation, Payment Systems, Fraud Detection, Chatbox

1 Introduction

The global financial services industry is currently undergoing a major change, driven by the fast-paced development of new technologies, the evolving needs of consumers and regulatory reforms. Key enablers of this change are digital banking and fintech, which are changing how financial services are developed, delivered and regulated. A number of digital initiatives are now key components of the modern banking ecosystem, including mobile banking real time payment solutions, AI driven support for customers and sophisticated fraud detection systems. In emerging economics, particularly the BRICS nations (Brazil, Russia, India, China and South Africa), the adoption of digital banking and fintech solutions has been both a developmental necessity and a strategic policies priority. These countries collectively represent more than forty percent of the world’s population and a significant share of global economic growth. However, they also face structural challenges such as financial exclusion, uneven technological infrastructure, cyber security risks and regulatory complexity. Digital banking and Fintech innovations are increasingly viewed as tools to address these challenges by expanding access to financial services, reducing transaction costs, improving transparency.



In developing nations, particularly the BRICS the adoption of digital banking and Fintech Solutions have been both a key development Priority and a key strategic policy priority. However, they are also faced with some structural barriers to economic development including: Financial exclusion, Lack of access to technology, Cybersecurity threats and Complexity of regulatory regimes. Digital banking and FinTech innovations are increasingly seen as mechanisms to overcome these barriers to increase access to financial services, reduce transaction costs and improve transparency.

This paper will evaluate current trends in banking as they relate to digital technology initiatives as well as the progress that has been made with respect to fintech in BRICS countries. The paper will provide analysis of each of the four core dimensions:

- (i) Methods of digital payment and international remittances
- (ii) The legal/ regulatory framework for digital banking and fintech
- (iii) The rate of progress or evolution of fintech companies and how they are being applied (i.e. the use of digital banking) and finally
- (iv) The role of chatbots and fraud detection software within the context of digital banking.

2 Literature Review

2.1 Digital Banking and fintechs

The future of finance is being shaped increasingly by the close relationship of digital banking and Fintech. Digital banking is a way to change old-fashioned bank products (like deposits, loans, payments) into online products that customers can access through mobile applications, Web pages and/or automatic systems. Digital banking refers to using technology to improve the efficiency, convenience and access of existing banking processes; therefore, digital banks will always be controlled by a regulated institution. In comparison, fintech encompasses a broad range of technology based financial innovation that aren't just limited to banking and can include things like digital payments peer to peer lending platforms, robo advisor services for wealth management, insurance technology (InsurTech) and regulatory technology (Regtech) (Arner et al, 2015). Fintech creates new business models by using disruptive technologies like block chain, artificial intelligence and big data to break down barrier to financial services and provide access to financial services for more people.

Digital banking and FinTech interact in two ways: as partners and as rivals. Digital banks work with FinTech companies to enable greater flexibility, enhanced customer experience and greater ability to personalize service. Similarly, FinTechs utilize the established banking frameworks, compliance procedures and regulatory approvals on which to grow successfully and securely (Nicoletti, 2017). Conversely, FinTechs, especially Neobanks and digital wallets, are in direct competition with traditional banks by providing services that are faster, less expensive and more user friendly than services offered by banks. This dual interaction between traditional banks and FinTechs is particularly prevalent in developing countries, where banks offer the underlying support systems and trusted reputation that enable FinTech start-ups to innovate on top of these existing systems and establish new ways to serve previously unserved populations (Micu & Micu, 2016). For example, financial transactions conducted using mobile devices have been tremendously successful in developing countries, such as Kenya and India, where banks and FinTechs are collaborating to leverage both the strengths of their respective organizations to achieve economies of scale while at the same time continuing to innovate (Jack & Suri, 2011).

Digital banking is now the standard option for banks across a variety of industries; however, to remain competitive, banks will need to integrate FinTech innovations like artificial intelligence (AI)-driven credit scoring systems, embedded finance & blockchain-based settlement systems into their operations (Vives, 2019). Similarly, FinTech companies gain credibility by partnering with banks and have access to an expanded client base. However, Fintechs must also be careful to balance innovation with compliance with regulations. Regulators have a dual challenge of protecting consumers while maintain systemic stability (Asongu & Odhiambo, 2024). Together, digital banking and fintech represents a dual engine of financial information at both the institutional and consumer level; one based on the regulatory framework and a trust of the institution while the other is based on the disruptive nature of innovation and customer driven design. The combined effects of digital banking and FinTech are creating a new, more inclusive, more efficient and more technology-based finance ecosystem (Boot et al, 2021).

2.2 FinTech in Emerging Economies and BRICS Nations

Emerging economies' literature focuses on Application of FinTech in Emerging Markets has the potential to enhance financial inclusion, eliminate information asymmetries and create greater support for SMEs. The literature related to the BRICS countries identifies that state roles, public digital infrastructure and adaptive regulation all play a key part in the uptake of FinTech by these countries. The majority of existing literature is focused on India and China and addresses issues specifically relating to digital payments, platform-based ecosystems and big data analytics (Denirguc et al, 2022).



However, very few comparative studies currently exist across the whole of BRICS. Most of the literature is considered to be based purely on single countries and does not consider cross-country differences between them in their regulatory approach, technology readiness and market dynamics. Thus, this gap in the literature demonstrates the need for a comparative, holistic analysis to develop a better understanding of digital banking initiatives (Fintech stages) and regulatory frameworks throughout the BRICS (Lee & Shim 2018, Ozili 2026).

2.3 Regulation, Risk and Innovation

Regulation can fuel FinTech innovation as a result of both providing legal certainty and protecting consumers, while at the same time putting a curb on FinTech innovation by meaningfully increasing the cost of compliance. The current literature highlights the emergence of regulatory sandboxes, proportional regulation and principles-based regulation as methods to manage the dichotomy of innovation and stability in the FinTech sector. The speed and trajectory of FinTech will in large part depend upon how well BRICS countries develop their regulatory capabilities and coordinate their institutions involved with FinTech (Arner et al, 2017).

2.4 Emerging Technologies: Chatbots and Fraud Detection

Digital Banking literature highlights the rise of Ai enabled chatbots and fraud detection solutions lately. Using chatbots to engage customers can help create an experience where customers get instant, tailored service. Machine learning is used with fraud detection software to detect unusual behavior in transactions data. Research indicates these technologies contribute to better operational efficiency and increased confidence in digital banking (Alshawabkeh, 2026).

Despite growing interest, empirical evidence on the development and impact of these technologies in BRICS banking systems remain fragmented, highlighting another gap addressed by this study.

3 Methodology

The literature on digital banking mentions the recent growth of chatbots supported by Artificial Intelligence and fraud detection technologies. Deploying AI-based chat in the form of chatbots can deliver an interactive experience through instant personalized responses to consumer needs. Machine learning improves fraud detection systems that rely on monitoring for abnormalities within transaction activity. These technologies provide improved efficiencies to banking operations and increased trust in the security digital banking.

The goal of this comparative framework research is to evaluate the BRICS countries digital financial services initiatives as well as their respective stages in Fintech adoption with one another. To do this, the researchers will compare and contrast their individual country's payment methods, regulatory systems and technological infrastructures between the five BRICS nations. To demonstrate the real-world application of these digital financial services initiatives they will refer to case examples from each of the above-mentioned BRICS countries as they relate to digital banking, chatbots and fraud detection systems.

The result will be synthesized from a thematic analysis of external data sources and researchers will closely consider the following themes: regulatory frameworks, initiatives as well as their respective stages in Fintech adoption within one another. Although the research was not conducted using primary data sources, analytical rigor was maintained through the triangulation of numerous reputable data sources.

4 Digital initiatives in banking and state of affairs of fintechs in BRICS nations

4.1 Digital payment mechanisms and foreign transactions

BRICS nations use digital payment systems as their backbone of FinTech development. India has implemented the Unified Payments Interface to provide low cost and rapid retail payment options through mobile devices. This platform can freely connect to others with the assurance of regulatory support.

Alipay and WeChat Pay in China provide an entire ecosystem for digital payments that connect social media, ecommerce and wealth management into one platform. The development of these platforms will significantly reduce reliance on cash and allow for seamless transactions domestically, while cross-border transactions will be regulated.

In Brazil, Pix is a new instant payment system; run by the government, Pix has received a quick uptake in use. In South Africa, new real-time clearing systems have been put in place, while in Russia, there is now a system of similar type to reduce reliance on foreign based systems.

BRICS nations have digitized the majority of transactions outside their borders, but regulators continue to tightly limit these due to risks of money laundering, capital controls and concerns about geopolitical issues. The Central Banks in each nation are critical in monitoring the flow of capital across borders and for providing compliance with international regulations.



4.2 Regulation by statutory authorities and rules of digital banking

The central banks, financial regulators and agencies that protect customers are the statutory authorities that control the fintech and digital banking sectors within the BRICS countries. The common principles for these regulation include : licensing requirements & conditions, KYC & ReKYC provisions, risk policies, AML standards, data localization and consumer protection

In India, the shift towards interoperability, data privacy and risk based inspection are key pillars of the current regulatory framework supporting digital banking. In China however, a far more intrusive method of regulation exists whereby platform based fintech companies are heavily monitored. Brazil and South Africa encourage innovation through regulatory sandboxes while Russia places emphasis von building domestic strength and marinating cyber security.

There is a delicate balance between innovation and system stability in the regulation of Fintech across BRICS countries. Initiatives including regulatory sandboxes open banking and digital identity systems have been developed to support innovation while managing risk. Nevertheless, the fragmentation of regulation and inconsistencies in enforcement continue to present significant obstacles.

Country	Regulator	Key Regulations (2015–2025)	Explanation
India	Reserve Bank of India (RBI)	- <i>PSS Act</i> - <i>FinTech Sandbox</i> - <i>Digital Lending Guidelines</i>	The PSS Act provides the legal foundation for electronic payments. The FinTech Sandbox allows startups to test innovations under supervision. Digital Lending Guidelines ensure transparency, prevents predatory practices and protect consumers.
China	People’s Bank of China (PBOC)	- <i>Data Localization</i> - <i>AML Rules</i> - <i>e-CNY Framework</i>	China requires financial data to be stored domestically, ensuring sovereignty, AML rules strengthen monitoring of digital transactions. The e-CNY framework establishes the regulatory basis for China’s central bank digital currency (CBDC).
Brazil	Banco Central do Brasil (BACEN)	- <i>Open Banking</i> - <i>PIX Regulation</i> - <i>Cybersecurity Norms</i>	Open Banking mandates data – sharing among banks and Fin techs to foster competition, PIX regulation govern Brazil’s instant payment system, which transformed digital payments. Cybersecurity norms protect against digital threats.
Russia	Central Bank of Russia (CBR)	- <i>Digital Ruble Law</i> - <i>AML Rules</i> - <i>Data Sovereignty</i>	The Digital Ruble Law provides a framework for Russia’s CBDC. AML rules strengthen oversight of digital transactions. Data sovereignty laws require financial data to be stored domestically, similar to China’s approach.
South Africa	South African Reserve Bank (SARB)	- <i>FinTech Sandbox</i> - <i>Crypto Asset Regulation</i>	The sandbox allows controlled testing of innovative financial solutions. Crypto asset regulation introduces rules for crypto currencies and digital assets, focusing on consumer protection and systematic stability.

Table I: Comparative insights on digitization

Source: Authors

Comparative Insights

- India & Brazil Focus on financial inclusion and innovation using sandboxes, open banking and instant payment systems.
- China & Russia: Emphasize sovereignty, security and state backed digital currencies with strict data localization laws.
- South Africa: Balances innovation with regulation of emerging technologies, especially crypto assets.

This table shows how regulatory strategies reflect each county’s priorities: inclusion and competition in INDIA/BRAZIL, Sovereignty and control in China/Russia and cautious innovation in South Africa.



4.3 Stages of Fintech, key players and areas of application in BRICS nations

The evolution of Fintech in BRICS nations can be broadly categorized into stages: - digitization of traditional banking, emergency of FINTECH startup, platform- based ecosystem and integrations of advanced technologies such as AI and block chain. Key applications area include payments, lending insurances, wealth management and regulatory compliances.

Country	Stage	Application	Firm
India	Mature	UPI, Chatbots, Fraud Detection	Paytm, PhonePe, Razorpay
China	Advanced	e-CNY, AI credit scoring	Ant Group, Tencent
Brazil	Growing	PIX, Open Banking	Nubank, PagSeguro
Russia	Developing	MIR, SPFS, AML tech	Tinkoff, Sberbank
South America	Emerging	Blockchain, Mobile Lending	TymeBank, Yoco

Table II: Comparative insights on fintech stages

Source: Authors

Few common things that comes out from the progress of fintech acceptance in BRICS nations are:

- The development of this segment has improved significantly in the BRICS nations. India and China are seen leading the same.
- With the expansion of financial services being associated with Fintechs, it is seen as a driver of financial inclusion. Previously uncovered population and businesses (read small) are able to come to mainstream financing.
- Access and usage varies across each of these countries.
- Regulation around fintechs is the common challenge across these countries. Constant debates ensures slow evolution in the segments of consumer protection and financial stability.
- The future scaling up will involve cross-border payments and digital currencies.
- There is a general consensus on the objectives i.e. improved financial access, improve digital payments, enhance resilience to economic shocks (Dhaya & Sundaram. 2025).

4.4 Headwinds and tailwinds for fintechs in BRICS nations

- Increased digital payments across each of the countries in terms of wallets and cashless transactions.
 - Financial inclusion initiatives by the government is bringing the unbanked into the fold.
 - Adoption of BCT, AI and cloud computing have improved fraud detection, risk management, and the delivery of personalized financial services. This is not only improving the acceptance of fintechs but also enhancing the confidence of the users.
 - It is clear that cross-border payments are going to become seamless across BRICS nations These points are pushing the acceptance and business oppurtunities of the Fintech companies.
- Regulatory frameworks are significantly varied across BRICS nations creating complex issues and hurdles for the fintech firms.
 - Issues like cybersecurity and data (theft and privacy) issues are typical problems faced by the fintech firms.
 - Non-uniformity of digital infrastructure is evident across the BRICS nations.
 - Digital literacy and awareness levels are low and sparse in substantial tracts of the BRICS nations. These points hinder the growth of the fintechs as a segment.

5 Conclusion and future scope

This research indicates that the evolution of banking and Fintech in BRICS countries through digital technologies results from a complicated interaction of technology, regulation, institutional context although there is already considerable achievement regarding digital payments and customer oriented innovations, challenges around cyber security harmonization of regulations and borderless interoperability still exists.



Future studies might use empirical approaches to evaluate the impact of different digital initiatives of financial inclusion and stability, it would also be beneficial for future work on comparative analyses to include other developing nations to better understand global finTech trends.

References

1. Abdelkader, S. B., Si Mohammed, K., & Shah, S. A. R. (2026). FinTech and Financial Stability in BRICS Economies. *Energies*, 19(1), 263. <https://doi.org/10.3390/en19010263>
2. Alshwabkeh, E. M., Mahdee, J., & Fauzi, N. B. M. (2026). Evaluating Artificial Intelligence (AI) Effect on Consumer Behavior on Purchasing Through E-commerce. In B. Alareeni (Ed.), *Technology and Entrepreneurship: Systems Driving Innovation* (Vol. 612, pp. 921–931). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-99466-1_83
3. Arner, D. W., Barberis, J. N., & Buckley, R. P. (2015). The Evolution of Fintech: A New Post-Crisis Paradigm? *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2676553>
4. Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech and RegTech in a nutshell and the future in a sandbox. *CFA Institute Research Foundation*, 3(4), 1–20.
5. Arzova, Sabri Burak and Çağlar, Mehmet and Şahin, Bertaç Şakir, Fintech Investment Dynamics in G7 and BRICS Countries: The Role of Demand, Supply, and Risk Factors.
6. Asongu, S., & Odhiambo, N. M. (2024). Guest editorial: The new economy and employment in Africa: an introduction. *African Journal of Economic and Management Studies*, 15(2), 173–176. <https://doi.org/10.1108/AJEMS-06-2024-580>
7. BIS. (2021). Sound practices: Implications of fintech developments for banks and bank supervisors. Bank for International Settlements.
8. Boot, A., Hoffmann, P., Laeven, L., & Ratnovski, L. (2021). Fintech: What's old, what's new? *Journal of Financial Stability*, 53, 100836. <https://doi.org/10.1016/j.jfs.2020.100836>
9. Demircuc-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19 (English)* (Publication No. 173780). <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099818107072234182>
10. Dhaya, M., & Sundaram, N. (2025). Financial technology: The catalyst for BRICS' economic and financial leap. *The Economics and Finance Letters*, 12(1), 50–60.
11. Frost, J., Gambacorta, L., Huang, Y., Shin, H. S., & Zbinden, P. (2019). BigTech and the changing structure of financial intermediation. *Economic Policy*, 34(100), 761–799.
12. Gomber, P., Koch, J. A., & Siering, M. (2019). Digital finance and FinTech: Current research and future research directions. *Journal of Business Economics*, 89(5), 537–580.
13. Jack, W., & Suri, T. (2011). *Mobile Money: The Economics of M-Pesa*. NBER Working Paper.
14. Lee, I., & Shin, Y. J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. *Business Horizons*, 61(1), 35–46
15. Micu, I., & Micu, A. (2016). Financial technology (FinTech) and its implementation on the banking market. *Financial Technology (FinTech) and Its Implementation on the Banking Market.*, IV(2(11)).
16. Nicoletti, B. (2017). *The Future of FinTech Integrating Finance and Technology in Financial Services*. palgrave macmillan.
17. Ozili, P. K. (2021). Financial inclusion research around the world: A review. *Forum for Social Economics*, 50(4), 457–479.
18. Ozili, Peterson K, 2026. "Artificial intelligence (AI) innovation and economic growth: asymmetric analysis and role of stock market, financial stability and trade openness," [MPRA Paper](https://www.mpra.de/handle/document/128950) 128950, University Library of Munich, Germany.
19. Philippon, T. (2020). On fintech and financial inclusion. *BIS Working Papers*, No. 841.
20. RBI. (2023). Annual Report on Payment Systems.
21. Skinner, C. (2014). *Digital Bank: Strategies To Succeed As A Digital Bank*. Marshall Cavendish International.
22. Thakor, A. V. (2020). Fintech and bank *Journal of Financial Intermediation*, 41, 100833.
23. Vives, X. (2019). Digital Disruption in Banking. *Annual Review of Financial Economics*, 11(1), 243–272. <https://doi.org/10.1146/annurev-financial-100719-120854>
24. Zetzsche, D. A., Buckley, R. P., Arner, D. W., & Barberis, J. (2020). Regulating a revolution: From regulatory sandboxes to smart regulation. *Fordham Journal of Corporate & Financial Law*, 23(1), 31–103.