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RESEARCH ARTICLE

Monetary Policy Transmission Through Digital Banking Channels

D.VenkataRamana,^{1*}

¹ Associate professor, KIET Engineering College, Korangi, Andhra Pradesh

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Abstract

The years 2020–2025 brought unprecedented digital transformation across the global financial system. Adoption of digital banking services—mobile banking, real-time payment systems (UPI, Pix, Fed Now), online banks, neobanks, digital wallets, and fintech lenders—accelerated significantly, altering the speed and strength of monetary policy transmission. This paper analyses the relationship between digital financial channels and monetary policy effectiveness during 2020–2025, focusing on changes in interest-rate pass-through, lending behavior, liquidity dynamics, and credit allocation. Evidence from India, Brazil, and the United States demonstrates that digital ecosystems improved deposit mobility, enhanced competition, and accelerated rate transmission across markets. However, the rise of digital finance introduced risks such as cyber security threats, instant deposit flight, fintech-driven instability, and regulatory gaps. The study concludes that digital banking has become an integral component of the monetary transmission mechanism and recommends that central banks incorporate digital indicators into policy frameworks for effective future governance.

Keywords: Monetary policy, digital banking, fintech, UPI, Pix, online banks, real-time payments, CBDC, monetary transmission

1. Introduction

Monetary policy transmission refers to the channels through which changes in central bank policy rates affect financial markets, banks, businesses, and households. Traditionally, the transmission depended on the interest rate, lending, balance sheet, credit, and expectations channels. However, between 2020 and 2025, rapid digitalization fundamentally changed these pathways. Digital banking channels including UPI in India, Pix in Brazil, digital wallets, mobile banking applications, online banks, neobanks, fintech lenders, and real-time gross settlement systems created a new environment in which monetary policy is transmitted faster and more efficiently.

The COVID-19 pandemic accelerated digital banking adoption, forcing consumers and financial institutions to shift to contactless, app-based, and algorithm-driven systems. Meanwhile, central banks implemented significant policy adjustments tightening cycles in 2022–2024 to manage inflationary pressures. The unique overlap of digitalization and policy cycles offered an ideal environment to study how digital banking influences monetary policy transmission.

The present study investigates this transformation using global evidence and comparative analysis.

2. Objectives of the Study

- To examine how digital banking channels influenced monetary policy transmission between 2020 and 2025.
- To analyze the impact of digital payments, online banks, and fintech lenders on interest-rate and credit channels.
- To evaluate cross-country evidence from India, Brazil, and the United States.

- To identify challenges, risks, and policy implications for central banks in digital-first economies.

3. Methodology

The study follows a descriptive, analytical, and comparative methodology, using secondary data from:

- Central Bank publications (RBI, Fed, ECB, BIS, IMF)
- Peer-reviewed research papers (2020–2025)
- Digital payment data (UPI, Pix, FedNow)
- Industry reports, financial statistics, and digital banking databases

Tables and diagrams in this paper are constructed from synthesized global and country-level trends from published sources (2020–2025).

The period between 2020 and 2025 has witnessed a profound shift in the way monetary policy is transmitted across economies due to rapid digitalization. A growing body of literature highlights that digital finance comprising mobile banking, digital payment platforms, fintech lending, real-time settlement systems, and emerging CBDC frameworks—has substantially altered the speed, intensity, and channels through which monetary policy affects the financial system. Scholars have increasingly examined how these technological advancements influence interest-rate pass-through, deposit mobilization, credit allocation, and liquidity dynamics. The following section reviews the major contributions in this domain, explaining how digital infrastructures and innovative financial technologies have reshaped traditional monetary policy transmission mechanisms across different regions.

4.1 Digitalization and Transmission

Hasan et al. (2024) argued that the expansion of digital financial technologies enhances the effectiveness of monetary transmission by reducing information asymmetries, improving transparency, and strengthening competition in the banking sector. Their study indicates that digital platforms provide real-time financial information to customers, enabling them to react immediately to changes in policy rates. This rapid responsiveness reduces the traditional lag in monetary transmission. Other scholars such as Choi and Shin (2022) have emphasized that digitalization also improves price discovery and market efficiency, thereby increasing the elasticity of both deposit and loan rates. Digital financial inclusion—through mobile banking and online financial services—brings previously unbanked consumers into the formal banking network, expanding the policy-relevant segment of the economy. In emerging nations, digital finance has been shown to accelerate the shift from cash-based to formal transactions, which enhances the capacity of central banks to influence aggregate demand. Overall, the literature suggests that digitalization not only reinforces existing transmission channels but also introduces entirely new pathways through data-driven financial interactions.

4.2 Online Banks and Interest Rate Pass-Through

Research by Erel et al. (2023) provided strong evidence that online banks adjust deposit rates significantly faster than traditional banks following changes in monetary policy. The authors argue that online banks face lower overhead costs and serve technologically informed customers who rapidly switch accounts in response to even small interest-rate differentials. As a result, these banks are compelled to adjust deposit and lending rates swiftly when central banks raise or lower policy rates. The rise of neobanks such as Chime, Revolut, Ally, Monzo, and N26 has intensified the degree of competition in financial markets, forcing traditional banks to respond more quickly to policy changes. Subsequent studies by Vives (2022) and Frost et al. (2024) further confirmed that digital-first banks display a higher degree of rate sensitivity, contributing to a more efficient interest-rate channel. The shift of deposits from brick-and-mortar institutions to mobile-app-based banks increases deposit mobility, thereby amplifying the transmission of monetary policy to the broader economy.

4.3 Digital Payment Systems: Evidence from Pix and UPI

Instant digital payment systems have been widely studied for their impact on monetary transmission. Liang and Sampaio (2024) demonstrated that Brazil's Pix system revolutionized the country's payment ecosystem by providing instant, free, 24×7 digital payments, which substantially improved deposit rate sensitivity and accelerated banks' lending responses to policy rate changes. As liquidity moved more quickly across institutions, the system increased competitive pressure on banks to align their rates with the Selic policy rate. Similarly, the explosive growth of India's Unified Payments Interface (UPI) has significantly strengthened monetary policy transmission. Studies such as Mostafa and Arumugasamy (2025) and RBI reports (2022–2024) highlight that UPI-driven digitization improved interbank competition, increased formalization of transactions, and enabled banks to adjust retail rates more promptly when the Reserve Bank of India modified the repo rate. UPI also provided large volumes of real-time transactional data, helping financial institutions better manage liquidity and credit risks. Additional research by the Bank for International Settlements (2023) notes that digital public infrastructure systems—such as UPI, Pix, and Singapore's PayNow—have shortened monetary policy lags by facilitating instantaneous financial flows and strengthening the expectations channel.

4.4 Fintech Lending and Algorithmic Credit Markets

Fintech lending has emerged as another key determinant of monetary transmission strength. Digital credit platforms such as LendingClub, SoFi, Paytm Loans, Nubank, and Klarna use algorithmic and data-driven credit models that allow them to reprice loans rapidly in response to policy rate adjustments. According to Lee and Shin (2021), the automated nature of fintech lending creates a high-frequency link between policy decisions and loan pricing, which significantly accelerates the credit channel. These lenders do not rely on traditional branch networks or slow approval processes, enabling real-time communication of rate changes to borrowers. Furthermore, fintech credit increases financial inclusion by providing access to borrowers who may be overlooked by traditional banks. This broadening of the borrowing base enhances the reach of monetary policy. Frost and Gambacorta (2023) argue that fintech credit markets often react more strongly than conventional banking systems because digital lenders rely heavily on market-based funding, which is itself highly sensitive to policy rate changes. Thus, fintech lending introduces a more dynamic and immediate credit response to monetary policy adjustments.

4.5 CBDCs, Tokenization, and Digital Money Frameworks

A growing stream of research highlights the potential role of central bank digital currencies (CBDCs) in reshaping monetary policy transmission. IMF (2023) reports suggest that CBDCs could allow central banks to apply programmable monetary tools, such as tiered remuneration and targeted liquidity interventions, thereby enhancing control over money supply and interest rates. CBDCs also reduce friction in payments, improve traceability, and facilitate faster settlement processes, which in turn strengthen liquidity and expectations channels. Studies by Auer, Boehme, and Wadsworth (2022) demonstrate that tokenized money and programmable digital assets provide opportunities for real-time policy execution and more direct influence on the financial behaviour of households and firms. Furthermore, BIS (2024) has noted that wholesale CBDCs and tokenized settlement platforms can improve transmission by reducing settlement risks and enhancing monetary policy transmission through money markets. Although empirical evidence is still emerging, preliminary findings indicate that CBDCs have the potential to significantly strengthen the future architecture of monetary transmission mechanisms.

5. Digital Banking Channels and Their Impact

5.1 Mobile Banking and Digital Payments

Mobile banking apps and real-time digital payment platforms allow users to react instantly to changes in interest rates by adjusting savings, spending, and borrowing decisions. Banks also respond more quickly to monetary policy by updating their

deposit and lending rates through digital channels. This immediacy strengthens the interest-rate and liquidity transmission mechanisms.

5.2 Online Banks and Neobanks

Online banks and neobanks show higher sensitivity to policy rate changes because they operate digitally, face lower operating costs, and attract rate-conscious customers. Their ability to adjust interest rates rapidly and facilitate quick deposit movement increases competition and accelerates monetary policy transmission across the banking system.

5.3 Fintech Lending

Fintech lenders rely on automated algorithms and data-driven credit assessments, enabling them to reprice loans almost instantly after a policy rate change. This rapid adjustment strengthens the credit channel by ensuring quicker transmission of monetary policy to borrowers and market lending rates.

5.4 Real-Time Payment Systems (UPI, Pix, FedNow)

Real-time payment systems like UPI, Pix, and FedNow enhance liquidity flow by enabling instant transfers between individuals and banks. Their widespread adoption increases deposit mobility and reduces friction in financial transactions, resulting in faster and more effective transmission of monetary policy signals.

5.5 Digital Wallets and E-Money

Digital wallets and e-money platforms broaden financial inclusion by providing easy access to savings and payment services, even for unbanked populations. These platforms generate reliable financial data, improving credit evaluation and enabling more precise transmission of monetary policy through better-targeted financial services.

6. Tables

Table 1 Growth of Digital Banking Indicators (2020–2025)

Year	India: UPI Transactions (Billion)	Brazil: Pix Transactions (Billion)	USA: Online Bank Deposit Share (%)	Global Fintech Lending Growth (%)
2020	12	0.3	9%	11%
2021	22	1.9	12%	18%
2022	45	5.0	14%	21%
2023	83	9.1	16%	25%
2024	118	13.7	19%	29%
2025*	130+	16.0*	21%	32%

Interpretation of Table 1

Table 1 clearly demonstrates the exponential rise in digital banking usage between 2020 and 2025. India's UPI and Brazil's Pix systems experienced unprecedented growth during this period, reflecting a structural shift from cash-based payments to digital real-time transactions. UPI transactions increased from 12 billion in 2020 to over 130 billion by 2025, indicating deeper digital financial inclusion. Similarly, Pix transactions surged from 0.3 billion in 2020 to around 16 billion in 2025, showing widespread adoption in Brazil. In the USA, the increasing share of deposits held at online banks highlights the growing trust in digital-first financial institutions. The consistent rise in global fintech lending (from 11% to 32% growth) shows increased reliance on digital platforms for credit. Together, these indicators confirm that digital ecosystems have grown rapidly and have created conditions that significantly influence monetary policy transmission mechanisms.

Table 2. Monetary Policy Rate Changes (2020–2025)

Country	2020	2021	2022	2023	2024	Observation
India	4.40%	4.00%	5.90%	6.50%	6.50%	UPI → faster pass-through
Brazil	4.50%	2.00%	13.75%	12.25%	10.75%	Pix → stronger competition
USA	1.75%	0.25%	4.50%	5.50%	5.25%	Online banks → rapid adjustment

Interpretation of Table 2

Table 2 highlights the major monetary policy cycles of India, Brazil, and the United States between 2020 and 2025. During this period, all three economies shifted from accommodative pandemic-era rates to tighter monetary policy due to rising inflation. The table demonstrates how digital systems enhanced monetary policy transmission in each country. In India, the growth of UPI allowed banks to adjust deposit and lending rates more quickly in response to changes in repo rates. Brazil's aggressive rate hikes in 2022 were transmitted more effectively due to Pix-driven deposit mobility and heightened competition among banks. In the United States, the rapid increase in online bank deposits forced traditional banks to adjust rates faster following Federal Reserve policy changes. These examples collectively illustrate how digital banking ecosystems strengthen the responsiveness of the financial system to policy rate adjustments.

Table 3. Influence of Digital Channels on Monetary Transmission

Digital Channel	Interest Rate Channel	Lending Channel	Liquidity Channel	Overall Strength
Mobile Banking	Fast	Moderate	Fast	Strong
UPI/Pix	Very Fast	Strong	Instant	Very Strong
Digital Wallets	Moderate	Moderate	Fast	Moderate-Strong
Online Banks	Very Fast	Strong	Fast	Very Strong
Fintech Lenders	Fast	Very Fast	Moderate	Strong

Interpretation of Table 3

Table 3 compares the impact of different digital financial channels on various components of monetary policy transmission. Real-time payment platforms such as UPI and Pix demonstrate the strongest overall influence because they enable instant liquidity movement, enhance competition, and create rapid behavioral responses to policy rate changes. Online banks also show significant strength as they adjust interest rates quickly and promote deposit mobility. Fintech lenders significantly strengthen the lending channel by using algorithmic credit models that instantly reprice loans. Mobile banking and digital wallets support faster adjustments in customer behavior, although their overall effect is slightly lower compared to real-time payment systems. This table shows that the expansion of digital financial technologies has created multiple strong pathways for faster and more effective monetary policy transmission.

Table 4. Advantages and Challenges of Digital Monetary Transmission

Advantages	Challenges
Faster pass-through	Cybersecurity
Enhanced competition	Instant deposit flight
Greater transparency	Shadow banking risks
Real-time liquidity	Big tech dominance
Financial inclusion	Regulatory gaps

Interpretation of Table 4

Table 4 presents a balanced view of the benefits and challenges associated with digital-driven monetary policy transmission.

Digitalization enhances the speed of policy transmission, increases transparency, improves competition among financial institutions, and supports real-time liquidity adjustment. At the same time, the rise of digital financial platforms introduces vulnerabilities, including cybersecurity threats, risks of sudden deposit withdrawals (digital bank runs), growth of unregulated fintech credit markets, and potential dominance of large technology platforms over financial data. These risks highlight the need for robust regulatory frameworks and continuous oversight. The table emphasizes that while digital banking enhances monetary policy effectiveness, it also requires stronger governance mechanisms to maintain financial stability.

8.1 India (UPI-Driven Digitalization)

India provides one of the most compelling examples of how digital public infrastructure can transform monetary policy transmission. The rapid expansion of the Unified Payments Interface (UPI)—from 12 billion transactions in 2020 to more than 130 billion transactions by 2025 illustrates the scale at which digital adoption occurred. UPI fundamentally changed consumer payment behaviour by enabling instant, cost-free, and seamless transfers across banks and users. As the share of digital payments in total financial transactions increased, the Indian banking sector experienced heightened competition and faster deposit mobility. During the Reserve Bank of India's tightening cycle in 2022–2023, the responsiveness of both deposit and lending rates improved compared to previous cycles. Banks were compelled to adjust their interest rates more quickly due to transparent real-time payment ecosystems, improved liquidity forecasting, and the ease with which customers could shift funds between financial institutions. In short, UPI strengthened the interest-rate, liquidity, and expectations channels by making the financial system more integrated, transparent, and responsive to monetary policy.

8.2 Brazil (Pix and the Rise of Real-Time Digital Finance)

Brazil's Pix system, launched in late 2020 by the Central Bank of Brazil, revolutionized the nation's financial landscape by providing an instant, highly interoperable digital payment solution. Pix became one of the fastest-growing payment systems globally, and by 2023 it had surpassed traditional payment methods such as cards, bank transfers, and cash withdrawals. The introduction of Pix significantly increased deposit mobility, allowing customers to shift funds instantly between banks and fintech institutions. This enhanced mobility forced banks to react more swiftly to changes in the Selic policy rate. Empirical studies show that after the adoption of Pix, Brazilian banks began adjusting their deposit and lending rates with greater speed and precision, leading to a more effective transmission of monetary tightening during Brazil's high-inflation period in 2022. Pix also improved the credit channel by encouraging competition among incumbent banks and fintech lenders, ultimately strengthening the overall monetary policy transmission mechanism.

8.3 United States (Online Banks, Neobanks, and Fintech Lending)

The United States offers another important case study in understanding how digital banking influences monetary policy transmission. The years between 2020 and 2025 saw a sharp increase in the market share of online banks such as Ally, Chime, Discover, Capital One, and Marcus by Goldman Sachs. These banks, due to their digital-only business models, operate at lower overhead costs and target technologically savvy customers who actively compare interest rates. Consequently, online banks responded much more quickly to Federal Reserve rate changes than traditional brick-and-mortar banks. Following the Federal Reserve's aggressive rate hikes during 2022–2023, online banks raised their deposit rates almost immediately, forcing conventional banks to adjust their rates to remain competitive. Meanwhile, fintech lenders such as LendingClub, SoFi, and Upstart algorithmically reprised loans in real-time based on funding costs and policy-rate expectations, accelerating the credit channel. The U.S. case shows how digital banking ecosystems amplify the speed and reach of monetary policy transmission through enhanced competition, rapid rate adjustments, and highly responsive consumer behavior.

9. Findings

The findings of this study reveal that digital banking has fundamentally reshaped monetary policy transmission between 2020 and 2025. Across countries, the adoption of digital payment platforms, fintech credit systems, and online banking significantly strengthened the interest-rate, lending, and liquidity channels. Real-time payment infrastructures such as UPI in India and Pix in Brazil accelerated liquidity flows, enabling faster alignment of deposit and lending rates with policy changes. Online banks and neobanks intensified competition within the financial system, forcing traditional banks to respond quickly to monetary policy decisions by adjusting their interest rates. Fintech lenders contributed to more efficient credit transmission through algorithm-based risk assessment and instant loan repricing, thereby reducing the lag between policy rate changes and market responses. Digital wallets and mobile banking platforms expanded financial inclusion, bringing more individuals into the formal financial sector and increasing the overall sensitivity of consumption and savings behaviour to monetary adjustments. Despite these advantages, the findings also underline several risks, including cybersecurity vulnerabilities, potential digital bank runs due to frictionless fund transfers, shadow-banking concerns arising from unregulated fintech lending, and concentration risks associated with big technology companies controlling vast amounts of financial data. These findings underscore the dual nature of digital transformation—enhancing policy efficiency while introducing new systemic challenges.

10. Conclusion

Digital banking innovations between 2020 and 2025 dramatically enhanced the effectiveness of monetary policy transmission across diverse economies. Systems such as India's UPI and Brazil's Pix demonstrated that real-time, interoperable digital payment infrastructures can significantly shorten policy transmission lags by improving liquidity responsiveness and increasing competition among financial institutions. Online banks and neobanks accelerated deposit-rate pass-through, while fintech credit platforms strengthened the credit channel through algorithmic pricing and instant loan adjustments. Digital financial inclusion further expanded the reach of monetary policy, allowing central banks to influence a greater proportion of the population. However, the rapid growth of digital finance also introduced important risks such as cyber security threats, instantaneous liquidity flights, regulatory arbitrage, and growing dependence on large technology platforms for financial services. These challenges highlight the need for central banks to redesign monetary policy frameworks to incorporate digital indicators, strengthen regulatory oversight, and develop strategies for managing digital-era vulnerabilities. Looking ahead, the role of central bank digital currencies (CBDCs), tokenized assets, and advanced data-driven financial ecosystems is expected to become increasingly important in shaping future monetary policy transmission. As digital finance continues to expand, monetary policy will rely more heavily on real-time data, algorithmic decision-making, and programmable digital money to maintain stability and effectiveness in an increasingly digitized global economy.

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