
Financial Innovation and Bank Performance in India: A Conceptual Framework

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Abstract

Banks in India are under constant pressure to modernise their products, processes and organisational systems in order to stay competitive in a fast-changing digital economy. This paper builds a conceptual framework that explains how financial innovation affects bank performance, and it gives a clear place in that model to artificial intelligence and digital technology as an enabling mechanism. It draws on the Resource-Based View and combines these with a structured review of empirical studies on financial innovation and Indian bank performance.

The review shows that financial innovation is best understood as a multi-dimensional construct made up of product, process, marketing and organisational innovation. Its effect on bank performance is not simple or automatic. financial innovation raise profitability and efficiency over the medium term, but can reduce short-term returns because of adjustment costs, and its benefits depend heavily on bank ownership, scale and the surrounding regulatory environment. Artificial intelligence and digital capability appear to work mainly as a mechanism that carries the benefits of innovation through to performance, rather than as a source of advantage on its own. This paper proposes a model that treats financial innovation as a higher-order construct, positions AI/digital capability as a mediating mechanism, and sets out boundary conditions that are particularly relevant to an emerging economy such as India.

Keywords: *Financial innovation, bank performance, artificial intelligence, Resource-Based View, Indian banking, digital transformation*

Introduction

Banking has always changed with the tools available to it. From the introduction of cheques and credit cards to the arrival of internet banking, ATMs and now artificial intelligence, banks have repeatedly reshaped how they design products, deliver services and organise their internal work. In India, this process has moved faster than usual over the last decade. The push for financial inclusion, the growth of the Unified Payments Interface (UPI), the spread of smartphones, and government programmes aimed at digital banking have together created an environment where innovation is no longer optional for a bank that wants to remain competitive.

At the same time, banks everywhere are also being asked to show that innovation actually pays off. Boards, regulators and shareholders want to know whether the money spent on new digital platforms, mobile applications, and now AI-based tools for credit scoring, fraud detection and customer service, actually improves profitability and market value, or whether it is simply a cost of staying in the game. This question is harder to answer than it looks. Innovation is not one single thing. A bank can innovate in the product it offers, in the process used to deliver it, in how it markets itself, or in how it organises its internal operations, and each of these can have a different effect on performance. This paper responds to that gap by building a conceptual framework of how financial innovation affects bank performance, with a particular focus on the

Indian banking sector The primary focus of, the paper is to draws together theory and existing empirical evidence to propose a structure that future researchers, and practitioners, can use.

The three question that this research address is below:

1. What are the main dimensions of financial innovation in banking, and how should they be understood together as one broader construct?
2. How financial innovation translate into improved financial and market performance, and what role does artificial intelligence play in this mechanism?
3. What conditions specific to a developing economy like India shape how strongly, or weakly, this relationship holds?

The Reserve Bank of India, along with the National Payments Corporation of India, has actively encouraged the shift toward digital payments and account-based banking over the last decade, through initiatives ranging from the Jan Dhan Yojana financial inclusion drive to the rollout of UPI. This has created a banking sector where public sector banks, private sector banks, and a growing set of non-banking financial companies and fintech firms all compete for the same customers, often using very different levels of technological sophistication. A conceptual model built for this setting needs to take account of this variation, rather than assuming that all banks innovate, or benefit from innovation, in the same way. It also needs to recognise that Indian banks operate under a fairly active regulatory regime, where new products and technologies, including AI-based lending and advisory tools, are still being brought under formal supervision, which means that the practical experience of innovating in India can differ from the experience of banks in more mature, and more lightly regulated, financial systems.

The paper proceeds as follows. Section 2 sets out the theoretical background. Section 3 reviews the literature on the dimensions of financial innovation and its links to financial and market performance, with attention to global, emerging-market and Indian evidence. Section 4 presents the proposed conceptual framework and a supporting diagram. Section 5 discusses the framework and offers research propositions. Section 6 considers theoretical and managerial implications. Section 7 notes limitations and directions for future research, followed by a conclusion.

Theoretical Background

1 Resource-Based View

The Resource-Based View (RBV), developed by Wernerfelt (1984) and formalised by Barney (1991), argues that a firm gains a lasting competitive advantage not simply by having resources, but by having resources that are valuable, rare, hard to copy, and hard to substitute (often summarised through the acronym VRIN). This idea is useful for banking because most banks, at least on paper, have access to broadly similar technologies. What differs between them is how well they combine and use those technologies.

Mata, Fuerst and Barney (1995) made an important extension to this argument that is directly relevant here. They pointed out that basic information technology, on its own, is usually easy for competitors to copy, and so does not by itself create a durable advantage. What is harder to copy is the organisational skill needed to manage that technology well: the people, processes and decision-making culture built around it. This distinction matters for the present paper, because it suggests that a bank's AI capability is not simply about buying AI software, but about the organisational capacity to apply it meaningfully to lending decisions, fraud detection, customer service and risk management. This paper treats financial innovation, together with the

digital and AI capability that supports it, as the kind of firm-level resource that RBV describes: something that is built up over time inside a bank rather than something that can be bought off the shelf.

2 Diffusion of Innovations

Rogers' (2003) Diffusion of Innovations theory adds a further, practical layer. It explains why some innovations spread quickly through an organisation or a market while others do not, based on five characteristics: relative advantage, compatibility with existing systems, complexity, the ability to trial the innovation on a small scale, and how visible its results are to others. This theory is useful in the Indian context because it helps explain uneven adoption patterns across the country's banking sector, where private banks have often introduced digital services earlier than public sector banks, and where customer adoption of AI-based services still varies widely between urban and rural areas.

Taken together, these theoretical strands, RBV and diffusion theory, support the idea that financial innovation is not a single event but an ongoing organisational capability, whose benefits depend on how well it is built, how it spreads, and how it is combined with supporting technology.

Literature Review

A recurring problem in this literature is that “financial innovation” is used loosely, sometimes to mean a new product, sometimes a new process, and sometimes just “going digital”. The Oslo Manual (OECD/Eurostat, 2005) offers a widely accepted general innovation taxonomy with four categories: product innovation, process innovation, marketing innovation and organisational innovation. Frame and White (2004) apply a closely related idea specifically to banking, describing financial innovation as covering new products and services, new production processes, and new organisational forms. Tufano (2003) adds a functional view, describing financial innovation as the creation and popularisation of new instruments, technologies, institutions and markets.

Bringing these views together, this paper treats financial innovation in banking as a higher-order construct built from four dimensions:

Product innovation – new financial products and services, such as new types of loans, cards, or investment instruments.

Process innovation – new ways of delivering existing services, such as internet banking, mobile banking, and automated loan processing.

Marketing innovation – new methods of promoting and pricing financial products, including digital marketing and personalised offers built on customer data.

Organisational innovation – new ways of structuring internal operations, decision-making and staff roles, often needed to support the first three dimensions.

Treating financial innovation as a single, multi-dimensional construct, rather than testing each dimension in isolation, is important because banks rarely innovate along only one dimension at a time. A new digital lending product (product innovation) usually also requires a new back-end process (process innovation) and often a change in how staff are organised around it (organisational innovation).

2 Financial Innovation and Financial Performance

There is a reasonably large body of evidence linking financial innovation to conventional financial performance measures such as return on assets (ROA) and return on equity (ROE). Berger (2003) reviewed how technological progress in banking, both in back-office processing and in customer-facing services, tended to raise productivity, expand lending capacity and improve service quality. Berger and Mester (2003)

found that although cost efficiency in United States banks did not always improve alongside new technology, profit efficiency generally did, suggesting that innovation was raising revenue and quality even where it was not cutting costs.

More recent and more specific evidence supports a positive link, though usually with qualifications. Scott, Van Reenen and Zachariadis (2017) studied the long-term effect of a major digital innovation in financial messaging (SWIFT) and found that banks which adopted it earlier enjoyed higher profitability over the long run, with the benefit being especially large for smaller banks. Chipeta and Muthinja (2018), studying Kenyan banks, found that branchless banking innovations produced measurable gains in industry-adjusted ROA and ROE. Lee, Wang and Ho (2020) showed, across a cross-country sample, that the strength of the link between financial innovation and bank growth depends heavily on the quality of a country's institutional environment, a point of direct relevance to emerging economies like India. Most recently, Baffour Gyau, Appiah, Gyamfi, Achie and Naeem (2024), studying banks across twenty countries, found that technology innovation had a clear positive effect on banks' return on assets.

Not all evidence points only in one direction. A study set in the Organisation of Islamic Cooperation region found that fintech investment reduced short-term profitability, mainly because of high upfront costs, even though it improved the market's expectations for the bank's longer-term profitability. This pattern, a short-run cost that only pays off later, appears repeatedly in the literature and is important for setting realistic expectations about how quickly innovation should be expected to show up in a bank's accounts.

3 Financial Innovation and Market Performance

Financial performance, measured through accounting ratios like ROA and ROE, is only part of the picture. Market performance, usually measured through Tobin's Q (the ratio of a firm's market value to the replacement cost of its assets, as defined by Tobin, 1969) or through stock returns, captures how investors judge a bank's prospects, which is not always the same as how its current accounts look.

Bardhan, Krishnan and Lin (2013) found, in a broader information-systems context, that the combination of information technology spending and research and development had a positive effect on Tobin's Q, suggesting that markets do reward firms that combine technology with genuine innovative effort, not technology spending alone. In banking specifically, the evidence is more mixed. Carlini, Del Gaudio, Porzio and Previtali (2022) studied banks that invested directly in fintech firms and found that these investments were often followed by negative abnormal stock returns, particularly when the fintech firm invested in was young and highly technology-focused, which the market seems to read as risky. A related regional study found that country-level fintech implementation could hurt short-term profitability in emerging markets specifically, while still improving the market-to-book ratio that reflects investors' longer-term expectations.

Taken together, this suggests that market performance and financial performance can move in different directions, at least in the short run, and a conceptual model of financial innovation should not assume that both will always respond the same way.

4 The Indian Context

India offers a particularly useful setting for this discussion because its banking sector combines large, older public-sector banks with newer private banks, a strong government push toward digital payments, and a fast-growing base of technology-literate customers.

Malhotra and Singh (2009), in an early and still frequently cited study, found that Indian banks offering internet banking were, on average, more profitable and had lower costs than those that did not, though newer private

banks adopting internet banking sometimes saw a temporary dip in profitability because of higher initial operating costs. Ghose and Maji (2022), studying sixty-seven Indian commercial banks over almost a decade, found that the volume and value of internet banking transactions had a positive effect on both ROA and ROE, and that this effect was actually stronger for public sector banks than for private ones, a finding that runs against the common assumption that private banks always benefit more from innovation.

Saroy, Jain, Awasthy and Dhal (2023) looked specifically at digital payment adoption, including NEFT, RTGS and card-based payments, and found that it improved the overall efficiency of the Indian banking sector, using a combination of efficiency measurement and panel data methods. Bhattacharya, Das and Basu (2023) offer one of the more nuanced findings in this literature. Studying fifty-two Indian commercial banks and grouping them into “high-innovation” and “low-innovation” clusters based on a composite index of digital and payment technologies, they found that innovation improved performance mainly for banks that were still in the early stages of adopting it, while for banks that had already innovated heavily, further innovation did not improve, and in some cases reduced, measures of financial soundness. This is an important qualification: the relationship between innovation and performance may not be a straight line, but may flatten out, or even reverse, once a bank has already captured the easy gains.

More recent work by Goel and Kashiramka (2025/2026) examined whether fintech advancement was actually improving efficiency in Indian banking. Podder and Ghosh (2025), studying all commercial banks listed on Indian stock exchanges between 2016 and 2021, found that digital transformation raised both revenue and profitability, although costs tended to rise briefly before falling. Rebekah and Afjal (2025), working with survey data collected in Chennai, found that fintech adoption and digital transformation acted as a genuine mediating mechanism between a bank’s underlying capabilities and its performance outcomes, rather than those capabilities affecting performance directly. This last finding is particularly important for the model proposed in this paper, since it supports treating technology as a mediating mechanism rather than as a standalone driver of performance.

5 Barriers to Adoption

Financial innovation in India does not happen in a frictionless environment. A study using a Fuzzy hybrid approach with over two hundred banking and information technology professionals identified a lack of clear government regulation, together with concerns about safety and reliability, as the most significant barriers to fintech adoption in the Indian context. Broader work on financial inclusion has also pointed to the digital divide and cybersecurity concerns as recurring constraints in developing economies. These barriers matter because they help explain why the same innovation can produce very different performance outcomes in different banks, or different regions of the country, depending on how well these constraints have been managed.

Proposed Conceptual Framework

This research consider financial innovation as a higher-order construct made up of the four dimensions discussed in Section 3.1: product, process, marketing and organisational innovation. This reflects the observation that banks typically innovate across several of these dimensions together, and that treating them as entirely separate variables risks missing how they reinforce one another.

Second, we consider technology capability as a mediating mechanism, sitting between financial innovation and the performance outcomes, rather than as an independent driver of performance on its own. This follows directly from the RBV-based argument of Mata, Fuerst and Barney (1995), and is supported empirically by Rebekah and Afjal (2025), who found that fintech and digital transformation carried the effect of underlying

capabilities through to performance, and by Baffour Gyau and colleagues (2024), who found a direct link between technology innovation and financial performance.

Third, we consider performance outcomes as financial performance and market performance rather than treating “performance” as one single outcome. This distinction is necessary given the evidence, that financial innovation can affect these two outcomes differently, sometimes even in opposite directions in the short run.

Discussion

The framework set out above leads to several propositions that could guide future empirical work, particularly research based in India. Financial innovation, treated as a combined construct across product, process, marketing and organisational dimensions, will have a stronger relationship with bank performance than any single dimension considered alone. The relationship between financial innovation and both financial and market performance will be significantly mediated by a bank's technology capability, rather than occurring only through a direct path.

The strength of the relationship between financial innovation and financial performance will differ from its strength with market performance, with financial performance more likely to show short-term costs and market performance more likely to reflect longer-term expectations.

We found that positive effect of financial innovation on performance will be stronger for banks that are earlier in their innovation journey (lower existing innovation intensity) than for banks that have already achieved a high level of digital and technological maturity. The relationship between financial innovation and performance will be moderated by bank ownership type, regulatory clarity, and digital literacy, such that the relationship is weaker where regulation is unclear or digital literacy, among staff or customers, is low.

Implications

This paper contributes in two ways. First, it brings together product, process, marketing and organisational innovation into a single higher-order construct, rather than treating them as separate variables. Second, For regulators and policymakers, the barriers literature reviewed suggests that regulatory clarity is not a minor administrative matter but a significant condition affecting whether financial innovation actually translates into better bank performance and better outcomes for customers.

Limitations and Future Research

As this paper is a conceptual work, it does not test the proposed model with new primary data. Future research could test the model using survey data from bank managers, following an approach similar to Rebekah and Afjal (2025) and Ghose and Maji (2022). Given the mixed evidence on market performance discussed in Section 3.3, future studies should consider including both accounting-based and market-based performance measures rather than relying on one alone. Comparative research across public and private Indian banks, can also be considered in future research.

Conclusion

Financial innovation in Indian banking is not a single event but an ongoing, multi-dimensional process spanning products, processes, marketing methods and organisational structures. The evidence reviewed here suggests that this innovation generally supports better bank performance, but the relationship is neither automatic nor uniform: it depends on how innovation is combined with genuine AI and digital capability, on whether performance is measured through accounting ratios or market value, on how far along a bank already

is in its innovation journey, and on the regulatory and digital-literacy environment surrounding it. The conceptual framework offers as a starting point for future empirical research into how Indian banks, and banks in other emerging economies, can turn innovation into lasting performance gains.

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