
The Evolution of Fintech and Traditional Banking in India: A Contingent Conceptual Framework

Dr. Rajnish Kumar Mishra Rohit¹, Dr Divya choudhary², Dr. Rajat Pratap Singh³, Dr. Raj Kumar⁴,
Anuj Kumar⁵, Tanu Gupta⁶

¹Assistant Professor, Institute of Management Studies, Ghaziabad (University Courses Campus)

Email Id: rajnish.rohit10@gmail.com

²Assistant professor GNIOT MBA INSTITUTE, Email ID: balyandivya@gmail.com

³Assistant professor GNIOT MBA INSTITUTE, Email ID: rajatranaip@gmail.com

⁴Associate Professor GNIOT MBA INSTITUTE, Corresponding Author: Pal.drajnkumar@gmail.com

⁵Assistant Professor GNIOT MBA INSTITUTE, caanujkagrwal7@gmail.com

⁶Assistant Professor GNIOT MBA INSTITUTE, tg9784@srmist.edu.in

ABSTRACT

The interaction between Traditional Banking & Financial Technology (FinTech) has been an evolving and transformational process in India. In this paper, we have reviewed the current literature on the Indian FinTech market as well as its overall impact on the traditional banking sector. The development of FinTech in India can be differentiated from the FinTech developments seen in Developed Markets due to a number of factors including the role of the government in building out Digital Public Infrastructure. Using Disruptive Innovation Theory, Intermediary Theory of Financial Institutions and Technology Diffusion Theory we have created a Conceptual Framework based on our findings related to how FinTech interacts with the traditional banking system in Emerging Markets. Three possible Interaction Modes have been identified in this study; Competition, Collaboration and Capture. Similar to other Global Markets where Banks have maintained significant levels of Power and Influence over customers and their accounts, the authors believe that India is moving towards a model where FinTech companies will continue to maintain control over the relationship they establish with their customers and where Banks will function solely as Regulated Balance Sheet Utilities. Six Testable Propositions have been proposed in order to provide evidence supporting our research. Additionally, the authors identify areas of Research Gaps related to Digital Financial Inclusion, Regulatory Effectiveness and Systemic Stability. The purpose of this paper is to add value to Literature by showing that many Western-Origins Theories significantly Underestimate the Transformative Potential of FinTech within Developing Countries supported by Government Built-Out Digital Public Infrastructure.

Keywords: *FinTech, Digital Banking, India Stack, UPI, Financial Innovation, Financial Intermediation, Emerging Markets.*

1. BACKGROUND AND LITERATURE REVIEW

1.1 Background on FinTech in India

FinTech refers to the fusion of finance and technology. It encompasses both innovations in business models and the use of emerging technologies to facilitate, enhance and/or disrupt traditional financial services (Arner et al., 2015). FinTech firms are defined here as

those using information technology to support or replace parts of the financial services supply chain. There has been significant interest in FinTech globally, particularly since the 2008 financial crisis. However, there has also been skepticism about the potential of FinTech to transform the delivery of financial services. Much of the skepticism is based on a view that FinTech represents simply another form of alternative financial service provider. As such, it may simply offer

consumers a choice among competing products rather than represent a transformative change.

In India however, the relationship between FinTech and traditional banking has taken on a unique character. In many countries, including China and the US, FinTech was largely seen as a response to perceived failures of traditional banking systems post the 2008 financial crisis. For example, Philippon (2016) argued that dissatisfaction with traditional banking following the 2008 financial crisis led to the emergence of private sector alternatives such as peer-to-peer lending. By comparison, India's FinTech ecosystem evolved from the foundation of state-built, open access digital public infrastructure – commonly referred to as "India Stack." (D'Silva et al., 2019).

1.2 India Stack

"India Stack" is an open-source software platform for developing digital public infrastructures. It comprises five main layers:

- **Aadhaar** (a biometric identity system for India's population)
- **Unified Payment Interface (UPI)** – instant interbank payment rails
- **e-KYC** (electronic Know Your Customer – paperless identity verification)
- **e-Sign** (digital signatures)
- **Account Aggregation Framework** (consent-based financial data sharing)

Each component within "India Stack" was designed to operate as a public good, available to all service providers at near zero marginal cost (NITI Aayog, 2021).

The key implication of this design is that traditional barriers to entry in financial services – including customer acquisition costs, payment infrastructure, identity verification, and regulatory compliance

overheads – have been dramatically reduced. For example, Suri & Jack (2016) argue that these barriers to entry have been reduced by an order of magnitude. A new customer can now be onboarded to a digital financial service in India for less than ₹1. This compares to around \$35 in developed economies (NITI Aayog, 2021).

1.3 Research Gap

There is currently a limited body of academic research on FinTech in India. Although India is one of the world leaders in terms of Fintech adoption rates, it receives relatively little attention in academic research. For example, a recent systematic review identified 247 peer reviewed papers related to fintech published during 2015-2023. Of these studies, just 16 examined India specifically (i.e. around 6%), while fewer than two percent attempted to develop an India specific theoretical framework (Mention, 2019; Frost, 2020).

1.4 Theoretical Limitations of Existing FinTech Theory

As mentioned above, much of what we know about fintech today comes from research conducted in western contexts, including the US and EU. However, because the architecture of financial infrastructure differs significantly in India (for example due to the availability of public digital platforms), existing theories are unlikely to provide accurate explanations of how fintech is transforming traditional banking in India.

Moreover, even if some elements of existing fintech theory apply in India, they are likely to require substantial modification to capture accurately the Indian experience. For example, Boot (2017) argues that banks will maintain permanent advantages in terms of regulatory expertise, customer trust and balance sheet capacity. While this may be true in Europe or other western jurisdictions, it does not appear to reflect current trends in India where fintech firms are rapidly acquiring retail banking relationships.

Similarly, Christensen's (1997) framework for understanding disruptive innovation assumes that incumbent firms will ultimately adopt new technologies and migrate upmarket. However, in India, a very different phenomenon appears to be occurring — the complete unbundling of the banking value chain into separate customer facing distribution activities and regulated balance sheet provision.

1.5 Objectives of This Paper

This paper has three interrelated objectives:

1. **Critical Evaluation:** Assessing whether existing global fintech theories can explain what is happening in the Indian institutional context.
2. **Development of Contingent Conceptual Framework:** Developing a conceptual framework that explains how fintech interacts with traditional banking in infrastructure led emerging markets.
3. **Identifying Gaps and Proposing Testable Propositions:** Identifying critical gaps in existing knowledge and proposing testable propositions for further empirical study.

1.6 Contributions to the Literature

This paper makes three contributions to the Fintech literature:

First, it provides a systematic assessment of the geographic and institutional limits of extant fin-tech theory. We establish that major theoretical frameworks were developed for and remain tied to Western institutional settings and therefore have limited explanatory capability regarding emerging market contexts.

Second, we create a contingent three mode conceptual framework (competition-collaboration-capture) that accounts for the observed patterns in India that prior theories fail to explain. This framework explicitly

includes digital public infrastructure as a variable not present in Western Fintech Theory.

Third, unlike the majority of Fintech literature which focuses upon either disruption or non-disruption as being mutually exclusive options for the long run competitive outcome between traditional banking institutions and fintech firms, we show that neither complete disruption nor steady-state co-existence captures what is occurring in India; instead we find that there is a process of vertical separation underway whereby fintech companies control customer relationships while traditional bank balance sheets become regulated utility provision entities.

1.7 Structure of Remaining Parts of the Paper

The remaining sections of this paper proceed as follows. Section 2 describes our methodology used to address each objective. Section 3 contains a review of relevant theoretical background and empirical findings from both global and Indian contexts. Section 4 presents our conceptual framework and six testable hypotheses. Section 5 explores implications for theory, practice and policy. Section 6 identifies possible limitations and avenues for additional research. Finally Section 7 presents conclusions.

2. METHODOLOGY

Whetten (1989) and MacInnis (2011) outline standard procedures for conceptual research in business and finance. Conceptual papers rely upon synthesized empirical results, not novel empirical data. They can clarify conflicting theoretical explanations, help identify patterns across various contexts, and create testable frameworks to support future empirical studies (Gilson & Goldberg, 2015).

Since empirical evidence regarding FinTech is incomplete, constantly changing, and dispersed geographically, the use of conceptual approaches is ideal for developing an emerging field like FinTech. Moreover, since much of the current theoretical foundations for banking were developed in environments vastly different from those currently

prevalent in India, using conceptual methods can assist in making theoretical frameworks applicable across differing institutional contexts (Khanna & Palepu, 2010).

2.1 Literature Review Process

Our study used a systematic review of academic and policy literature related to FinTech and banking released from January 2015 through August 2024. Our search was performed on six major databases: EBSCOhost Business Source Complete, JSTOR, Google Scholar, SSRN, RePEC, and Web of Science and Scopus.

Additionally, the search terms were comprised of the following combinations of the following search terms: "FinTech", "Financial Technology", "Digital Banking", "Banking Disruption", "India Stack", "UPI", "Financial Inclusion", "Digital Payment Systems", "Peer-to-Peer Lending", and "Neobank".

To better understand literature unique to India, we also searched: Reserve Bank of India Working Papers, NITI Aayog Policy Documents, IDRBT Research Reports, and Proceedings from the India Finance Conference.

2.2 Inclusion and Exclusion Criteria

Inclusion criteria:

- Articles from peer reviewed journals, working papers from well-established institutions, and policy documents from regulatory bodies
- Published in English between 2015-2024
- Examined the effect of FinTech on traditional banking, financial intermediation, or financial inclusion
- Used theoretical frameworks, empirical evidence, or policy analysis

Exclusion criteria:

- Tech-only papers on cryptography, blockchain protocol, or software architecture and did not apply to financial service applications
- Blog entries/opinion pieces/industry reports that lacked rigorous methodologies
- Papers examining speculative cryptocurrency pricing

After performing the searches listed above and after excluding duplicate records, we identified 89 papers for further examination. Among those selected for further examination, we referenced 72 separate studies in this article. The remaining references include 11 RBI working papers, 4 NITI Aayog reports, and 6 other reports/reports from other organizations/institutions.

2.3 Analysis Procedure

Using Mayring's (2014) structured content analysis procedure, we evaluated: (1) the dominant theoretical paradigms in the literature; (2) empirical evidence presented in the literature; (3) contradictions/consistencies in empirical evidence reported in the literature; (4) geographic and institutional contexts represented in the literature; and (5) explicit and implicit assumptions supporting theoretical propositions.

Using a coding system that allowed us to evaluate: (a) theoretical paradigm(s); (b) geographic context; (c) methodology; (d) key findings; and (e) conclusions drawn regarding interactions between FinTech and banking; we identified several common themes. Most notably, theories developed in western contexts often suggested less significant impacts from FinTech than were observed empirically in India.

2.4 Limitations of Analytical Procedures Used

There are three general limitations of analytical procedures used to examine literature that should be acknowledged. First, publication bias exists throughout the literature reviewed herein. Successful

experiences with FinTech applications are more likely to be published than unsuccessful ones. Furthermore, a relatively large portion of research regarding FinTech conducted within India was funded either indirectly or directly by private sector entities interested in promoting FinTech development. Therefore, there may be a bias toward optimism in assessing outcomes associated with FinTech implementation within India. Third, due to the rapidly evolving nature of FinTech applications in India, some empirical evidence may have been rendered dated prior to publication. Fourth, similar to all conceptual research studies, the validity of our proposed framework will depend on both the quality and representative sample size of existing empirical studies.

3. LITERATURE REVIEW

3.1 Global Theoretical Paradigm Development

Three primary theoretical paradigms are commonly applied to evaluate the impact of FinTech on banking: disruptive innovation theory; financial intermediation theory; and technology diffusion theory. While each provides insightful perspectives concerning FinTech's impact on banking, each paradigm also contains inherent biases resulting from its application in distinct institutional settings outside of India.

3.1.1 Disruptive Innovation Theory

Disruptive innovation theory as described by Christensen (1997) is now the primary paradigm used to analyze FinTech's impact on traditional banking practices. Christensen states that disruptive innovations initially provide adequate levels of performance for "overserved" consumers at significantly reduced prices compared to incumbent providers. As time passes and products continue to evolve, the innovator improves its product line and expands into higher-priced markets until they replace the incumbent companies.

According to King (2014), examples of disruptive innovations exist within FinTech. Early entrants into

FinTech targeted areas of the marketplace deemed unprofitable by incumbent bankers--such as remittances, micro-loans and unbanked population. At first these early entrants provided lower-quality products than incumbent banks on multiple dimensions; however they provided lower prices and greater convenience than incumbent banks for specific use-cases.

However, Christensen et al. (2015) indicate that empirical evidence indicates that FinTech represents more sustaining innovation rather than disruption. Sustaining innovation refers to incremental improvements to a product/service offering that make it incrementally better than what existed before. Boot (2017) argued that even if some degree of disruption occurred, traditional banks would continue to enjoy durable competitive advantages--including regulatory knowledge/trust with customers acquired over decades and scale to absorb losses on their balance sheets.

Thus far this debate has gone unresolved primarily because it treated "FinTech" as a single entity and ignored the role of institution-specific factors. We argue that the extent to which FinTech disrupts banking depends heavily on: (i) the type of function being examined among banking functions; (ii) the level of economies-of-scale in acquiring customers; (iii) the presence of economies-of-scale in complying with regulations; and (iv) whether digital infrastructures are owned/managed by public/private sector entities.

3.1.2 Financial Intermediation Theory

Traditional financial intermediation theory (Gurley & Shaw, 1960; Diamond, 1984) describes why banks exist. Banks facilitate transactions between depositors/savers and debtors/borrowers. They achieve this by reducing transaction costs and information asymmetry between parties involved in transactions. Banks have comparative advantages in the following aspects: borrower screening; loan monitoring; liquidity transformation; risk diversification; and long term relationships between

bank employees/depositors/customers (Bhattacharya & Thakor, 1993).

FinTech diminishes traditional banking functions through two mechanisms: disintermediation--connecting borrowers/lenders via platforms removes middlemen (Morse, 2015); superior information processing—machine learning/big data reduces information asymmetry as effectively as relationship banking (Jagtiani & Lemieux, 2018).

However Philippon (2016) demonstrates that unit cost of financial intermediation in U.S.A. has remained virtually unchanged at around 2 percent of total assets for over a hundred years regardless of tremendous technological advances. Thus technology appears to have not greatly affected intermediation economics at least not in developed markets.

Boot (2017) and Thakor (2020) suggest while technology has decreased some transaction costs, banks maintain comparative advantages in the following areas: trust/certainty; specifically in times of crisis; regulatory knowledge/compliance infrastructure; and balance sheet capacity to provide liquidity/support risk absorption during periods of extreme uncertainty.

Similar to previous debates regarding disruptive innovation theory, this debate ignores institutional differences. Economics of intermediation differ profoundly when customer acquisition costs decrease by 97%, when identity verification occurs instantaneously/free or when digital identities are created simultaneously with opening a bank account. These conditions exist within India but do not exist within Western markets where intermediation theory was originally developed.

3.1.3 Technology Diffusion Theory

Technology diffusion theory as defined by Rogers (2003) describes how new technologies spread through populations over time utilizing communication channels. Rate of adoption depends upon perceived characteristics of a new technology:

relative advantage, compatibility, complexity, trialability, and observability.

Davis' (1989) Technology Acceptance Model (TAM), which is arguably the most widely applied model to information systems research regarding acceptance/adoption behavior by users regarding new technologies, proposes that user adoption is influenced by perceived utility/usefulness and perceived ease of use. Several studies validate TAM in FinTech-related contexts (Ryu, 2018; Stewart & Jürjens, 2018).

Extensions to TAM propose additional variables that may influence adoption behavior among users utilizing financial services: trust/security perceptions/regulatory climate/social influence (Venkatesh et al., 2012). Cultural influences affect rates at which new technologies are adopted across countries (Teng et al., 2015).

However diffusion theory does not adequately address behavioral changes associated with structural drivers of technology adoption such as India's November 2016 demonetization decision that forced millions into digital payments regardless of individual preference choices (Chodorow-Reich et al., 2020). Diffusion theory also does not account for network effects/tipping points where users feel compelled to adopt new technologies once a certain threshold is met.

3.2 Empirical Evidence Regarding Impact on Banking Globally

Research studies evaluating the impact of FinTech on banking have generated inconsistent/contradictory empirical findings.

3.2.1 Payments Innovation

While digital payments demonstrate the most prominent manifestation of FinTech's impact on banking practices globally, mobile payment platforms have revolutionized payment behaviors worldwide: M-Pesa in Kenya; Alipay and WeChat Pay in China;

Venmo in the USA (Shin & Choi, 2019; Suri & Jack, 2016).

M-Pesa demonstrates FinTech's transformative potential in emerging markets: launched in Kenya in 2007; M-Pesa achieved 96 percent household penetration within ten years; despite Kenya possessing one of Africa's lowest traditional banking penetration rates (Suri & Jack, 2016). The success experienced by M-Pesa resulted from Safaricom's pre-existing national-wide distribution/customer base. Similar patterns repeat globally: non-bank firms utilize pre-existing distribution/customer bases to enter into financial services markets.

China's experience is less conclusive. Near universal adoption has been achieved by Alipay/WeChat Pay for consumer payments. However commercial banks in China remain highly profitable/dominant in lending/wealth management activities (Huang et al., 2020). This suggests deconstruction rather than disruption: FinTech applications capture specific functional areas while banks retain others.

3.2.2 Alternative Lending Platforms

Peer-to-peer lending platforms were initially touted as fundamental disruptions to traditional credit intermediaries. Directly connecting borrowers/lenders via online platforms purportedly eliminated inefficient bank-based credit intermediation processes (Morse, 2015).

Reality proved more complicated. Within U.S.A., peer-to-peer lending platforms captured significant market share within consumer/personal loan/small business loan categories—particularly for borrowers with FICO scores ranging from 660-720—not prime but slightly above sub-prime (Jagtiani & Lemieux, 2018). Tang (2019) shows peer-to-peer lending complements rather than substitute traditional banking practices. Peer-to-peer platforms primarily serve borrowers who are denied credit by banks thereby increasing access to credit rather than directly competing with them.

3.2.3 Wealth Management

Robo-advisors have promised to democratise wealth management via automated platforms using algorithms for portfolio management. They offer services that are 0.25–0.50% of assets, compared to 1–2% for traditional advisors (Fisch et al., 2019).

Although robo-advisors experienced fast early growth, they manage less than 1% of global total investible assets (Jung et al., 2018). As evidenced by consumer surveys, people prefer to use human advisers for complex decisions, retirement planning and large account balances (Baker & Dellaert, 2018).

The most popular model seems to be hybrid; that combines the ability to produce low-cost portfolios using algorithms and the human adviser for complex decision making (Beketov et al., 2018). Importantly, the largest "robo-advisor" in terms of total assets is Vanguard Personal Advisor Service; which is run by a traditional asset manager and not a Fintech start-up.

3.3 Indian Context – Institutional Foundation

India's Fintech Ecosystem is constructed on fundamentally different institutional foundations than any other significant market. Therefore, an understanding of these foundations is necessary for an appreciation of how well established theoretical frameworks apply.

3.3.1 Indian Stack – Digital Public Infrastructure

India stack represents a conscious policy choice to develop financial infrastructure as a public good rather than permitting private capture of it (D'Silva et al., 2019). The primary components of India Stack are:

Aadhaar: A Biometric Identity System that covers 1.34 billion citizens (99.9% of adults), allows instant, paperless identification of a citizen at minimal cost. This single innovation removed one of the biggest impediments to financial inclusion - the impossibility of identifying customers in rural locations (Muralidharan et al., 2016).

Unified Payment Interface (UPI): An instantaneous, interbank transfer platform, permits instant transfers between any two bank accounts with simply a mobile number or virtual payment address. Crucially, UPI has no fee charged to either consumers or merchants, removing the revenue stream that permitted payment network providers in India to exist (NPCI, 2024).

eKYC and eSign: Use Aadhaar-based digital identity verification and legally binding electronic signatures. These permit the creation of completely paperless account openings and contracts (UIDAI, 2023).

Account Aggregator: A permissioned architecture for the sharing of financial information across institutions, operational since 2021. Enables comprehensive credit assessment using data from several parties with user consent (RBI, 2022).

Important point here is that all of these components are open, interoperable and accessible at equivalent price to all service providers (banks or non-banks). Creates a level playing field that cannot happen in markets where the infrastructure is owned by a private entity.

The impact on costs is huge. The cost of acquiring a customer for digital financial services in India is Rs. 1-5 (compared to US\$35-50 globally), and per transaction cost for UPI is Rs. 0.07 (versus Rs. 10-15 for card transactions) (NITI Aayog, 2021). These are orders of magnitude differences in costs that will totally alter competitive dynamics.

3.3.2 Regulatory Development - India

India's regulatory development approach to Fintech has been practical and flexible, although not without controversy. The Reserve Bank of India (RBI) has followed a strategy called 'Contained Experimentation', i.e. allowing innovation inside clearly demarcated boundaries and increasing those boundaries based upon evidence generated by such innovations (Ranjan & Malik, 2021).

Some key developments in Indian regulation related to Fintech have included:

- **2016:** Licenses for Payments Banks were granted to eleven organizations, including telecommunications companies and Fintech firms; which resulted in regulated competition being opened up to traditional banks (RBI, 2016)
- **2017:** Guidelines for Prepaid Payment Instruments (PPI) were developed; which enabled digital wallets with KYC limits on withdrawals (RBI, 2017)
- **2018:** Approval was received for Account Aggregators Framework; which enabled consent-based sharing of financial data (RBI, 2018)
- **2020:** First round of NBFC-AA licences were awarded to establish Account Aggregation Network (RBI, 2020)
- **2021:** RBI issued guidelines regarding Digital Lending; which addressed concerns about predatory lending behaviour and debt trap issues (RBI, 2021)
- **2023:** RBI started discussions regarding establishment of a comprehensive regulatory environment for FinTech (RBI, 2023)

Therefore, this evolutionary process was driven by learning by doing rather than comprehensive ex ante regulation. Allowed innovation in very short time span while providing some disruptions every once in a while when regulations tighten up (Agrawal & Toh, 2019).

Also importantly, India did not experience the complete regulatory capture that occurred in Chinese FinTech space between 2013 and 2017. RBI continued to maintain its oversight over systemically relevant functions whilst permitting innovation in adjacent spaces (Buckley et al., 2020).

3.4 Empirical Evidence - Indian Context

3.4.1 Payment Systems Transformation

The growth trajectory of UPI does not have a precedent anywhere else in world. Transaction numbers grew from 17 million in FY16/17 to 131 billion in FY23/24; a growth of approximately 7700 fold in seven years (NPCI, 2024). Transaction value grew from Rs. 68 billion to Rs. 200 trillion over same period.

There was no gradual growth. Growth was characterized by clear network effect and tipping point behavior. From FY16/FY18 monthly UPI transaction numbers were relatively stable around 100-200 million, after which there was sudden inflection; and reached 1 billion by end-FY19 and ten billion by FY22 (RBI, 2024).

It is also notable that nearly all of the growth happened at the expense of both cash and cards rather than bank-to-customer relationships. Banks are actually the settlement layers behind UPI - every transaction settles between bank accounts. Nevertheless customer facing interaction with UPI happens through third party applications such as PhonePe, Google Pay and Paytm (Ashta & Herrmann, 2021).

Therefore this creates a paradox: Total bank transaction volumes are massive in India, however bank customer contact points have significantly decreased. According to research conducted by Deloitte (2022) 73% of UPI users use third-party application for transactions, as opposed to their bank's application.

3.4.2 Financial Inclusion Impact

The financial inclusion impact of India Stack has been significant but complicated. There are now over 1.5 billion bank accounts in India (up from approximately 557 million in FY14); with over eighty percent of adult population having bank account versus thirty-five percent in FY11(FY11) (World Bank, 2022).

However account possession does not equate to account utilization. Over five hundred million new accounts were created through Jan Dhan Yojana (financial inclusion scheme); yet thirty percent are

inactive accounts with zero balance (Muralidharan et al., 2016). Clearly there exists a distinction between formal availability of access and effective inclusion.

Digital payments present more positive trends. Adoption rates for digital payments in rural India rose from eight percent in FY17 to forty-seven percent in FY23 (NITI Aayog, 2023). Importantly, this trend is inversely related to the density of physical bank branches - higher levels of digital payment penetration occur where fewer bank branches physically exist (Ashta & Herrmann, 2021).

In regard to small businesses; UPI eliminated merchant discount rate barriers that prevented many merchants from accepting cards. Traditional card acceptance required an expenditure of Rs.10,000-Rs.15,000 in hardware along with a transaction fee ranging from one-and-a-half percent to three percent. Acceptance through UPI requires nothing more than printing a QR code and charging zero merchant fees. By FY23, over eight-point-five million merchants had accepted UPI transactions; whereas approximately five-million merchants had accepted card transactions over thirty-years prior (NPCI, 2024).

However digital inclusion created new forms of exclusion. Elderly people, disabled persons and digitally unskilled people encounter barriers accessing digital only services (Pal et al., 2020). Reliable high-speed Internet continues to be absent in much of rural India thereby creating a digital divide that correlates strongly with pre-existing economic disparities (Chaudhuri et al., 2021).

3.4.3 Credit Market Evolution

India's credit markets exhibit a different trajectory than payments. Although Fintech firms have taken control of payment interfaces; Fintech firms continue to rely heavily on bank and NBFC (non-banking finance company) balance sheets for actual lending.

Digital lending expanded from \$9 billion in FY17 to \$270 billion in FY23; representing twenty-three percent of total retail lending (BCG, 2023).

Nonetheless over eighty-five percent of lending done through digital channels was originated by banks or NBFCs utilizing Fintech platforms for customer acquisition and servicing (RBI, 2022).

The current dominant paradigm therefore appears to be FinTech serves as the distribution channel; banks serve as the source of funds for lending. Some examples include:

- **Paytm Postpaid:** The front end is controlled by Paytm; multiple NBFCs provide financing.
- **Amazon Pay Later:** Amazon controls the user interface; credit is extended from AXIO and Capital Float.
- **PhonePe lending:** PhonePe acquires customers; multiple banks/NBFCs extend loans.

To date only handful of FinTech firms possess NBFC licenses permitting them to originate loans from their own balance sheet; although these are tiny compared to size of bank lending (Prasad, 2023).

The major breakthrough therefore appears to be in assessment of credit risk as opposed to provisioning balance sheet resources for lending. Alternative data utilized by FinTech lenders include historical payment activity; e-commerce purchase histories; etc.; used instead of credit bureau reports to assess creditworthiness of individuals with thin or no credit bureau records (Kshetri, 2021). Research studies indicate that alternative methodologies can accurately identify credit worthy borrowers who would otherwise be rejected due to adverse selection or bad data quality characteristics by traditional credit scoring models (Frost et al., 2019).

Predatory lending and debt trap concerns eventually caused RBI to intervene during FY21-FY23 period. RBI published Digital Lending Guidelines in February FY22 requiring stringent disclosures and restrictions

on pricing and collections practices effectively halting growth in FinTech credit originations (RBI, 2022).

3.4.4 Market Structure and Concentration

A striking feature of Indian FinTech is extreme concentration in each segment:

Payments: PhonePe and Google Pay together account for 85% of UPI transactions (NPCI, 2024). This duopoly emerged despite over 400 banks and 50+ FinTech firms offering UPI.

Wallets: Paytm historically dominated but has declined from 70% market share in 2017 to 15% in 2023 as UPI cannibalized wallet usage (BCG, 2023).

Digital Lending: Top 5 platforms account for 62% of all FinTech-enabled lending (BCG, 2023).

This concentration creates regulatory concerns. The NPCI introduced market share caps in 2021, limiting any single UPI app to 30% of transaction volume, to be implemented in phases (NPCI, 2021). However, enforcement has been repeatedly delayed, and the cap has never been operationalized.

The concentration pattern differs from payments networks in Western markets but resembles Chinese experience with Alipay and WeChat Pay. It appears that in digital payments, network effects and ecosystem lock-in lead naturally to winner-take-most outcomes (Rochet & Tirole, 2006).

3.5 Research Gaps and Contradictions

There are numerous important gaps and contradictions found through an examination of the literature available globally and specifically for India.

Although there has been significant advancement in the field of FinTech research; it is largely descriptive. There are virtually no frameworks developed to explain FinTech in the context of developing/emerging economies (Mention, 2019).

Additionally, nearly every study examines short term adoption/usage of FinTech products/services.

Relatively few studies follow up over time to assess longer term effects such as increased bank profitability, financial stability and/or sustained inclusion (Gomber et al., 2017).

Finally, although theoretically interesting, the unbundling of customer relationships from balance sheet provision, which we can see increasingly in India is a topic that has received very little attention in terms of its theory development (Boot, 2017).

There is also limited understanding regarding the comparative effectiveness of different regulatory approaches used across jurisdictions (Ringe & Ruof, 2020).

Further, while concentration in FinTech platforms presents a new form of systemic risk; operational dependence upon technology providers creates additional risks that are also poorly understood; finally, interdependencies between FinTech platforms and traditional banking present yet another set of interconnected risks. These issues represent areas

where our current understanding of systemic risk is limited (FSB, 2019).

As noted by Gabor & Brooks (2017) although much is written about financial inclusion; the emerging forms of digital exclusion and the distributive consequences of FinTech driven financial systems are two topics that require significantly more focus and research.

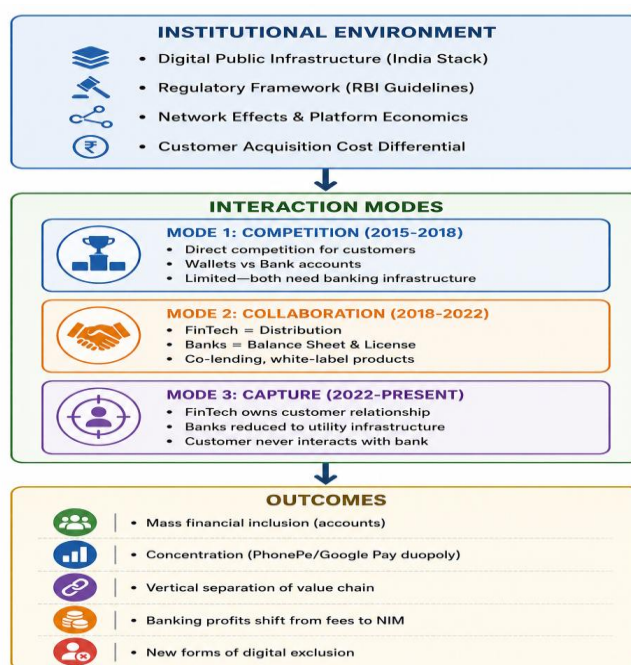
Finally, one of the most fundamental ways in which this paper will build on prior research is in treating institutional context as a constitutive aspect of FinTech processes rather than simply as a control variable.

4. CONCEPTUAL FRAMEWORK

4.1 Framework Overview

Drawing on the literature review and India-specific empirical evidence, we propose a three-mode contingent framework of FinTech-banking interaction in infrastructure-led emerging markets. The framework is presented in Figure 1 and elaborated in the following sections.

Figure 1: Contingent Framework of FinTech-Banking Interaction in India



4.2 Mode 1: Competition (2015 – 2018)

In India, the first stage of interaction between FinTech and banking was competition, although it did not exist to the same extent as described globally.

Domains of Competitive Activities: Digital wallets (Paytm, Mobikwik, Freecharge) were competing with bank saving accounts as places of value storage and payment tools. FinTech firms (Capital Float, LendingKart) were competing with banks for financing of small businesses.

Advantages in Competitive Activity: FinTech companies provided better user experiences, faster processing times and lower transaction costs. Paytm could enable a merchant in five minutes, whereas enabling a merchant via a bank would take several days. LendingKart could provide a loan for a small business in three hours, whereas traditional banks took 3-4 weeks (Kshetri, 2021).

Limitations in Competitive Activity: Although FinTech firms had certain limitations, they were significant. FinTech firms lack banking licenses and therefore cannot accept deposits. FinTech firms also lack the capacity to create a balance sheet and therefore cannot provide financing on a large scale. Finally, there were customer distrust issues with FinTech firms, especially when dealing with secure-related transactions such as the safekeeping of funds (Ashta & Herrmann, 2021).

Most significantly, however, all FinTech payment firms remained fully reliant upon bank infrastructure to settle transactions. All wallet transactions ultimately settled between two bank accounts. Therefore, there existed inherent limits to how much disruption FinTech could cause — it worked on top of banking rails and not instead of them.

Regulatory Triggers: There were two regulatory actions that contributed to a transition away from this competitive mode. First, the requirement for Know Your Customer (KYC) for all wallets in 2017 removed the primary benefit of using wallets over bank

accounts — the ability to onboard users with little documentation (RBI, 2017). Second, the introduction of Unified Payments Interface (UPI) in 2016 allowed for bank-to-bank instant payments and thus removed the primary reason for users to utilize wallets as a payment instrument.

4.3 Mode 2: Cooperation (2018 – 2022)

A new equilibrium formed in India by 2018. In this equilibrium, FinTech firms have technical capabilities and advantages related to acquiring customers. On the other hand, banks possess regulatory licenses, balance sheet capacity and customer trust. Thusly cooperation became the prevailing way for interaction.

Structures: The above mentioned cooperation among stakeholders materialized itself through various structural types of structures.

Co-lending: FinTech firms source and serve loans, while banks provide 80 percent of capital for the loan. Both parties are responsible for risk and return. Co-lending is becoming standard in MSME lending and consumer lending (BCG, 2023).

White label: White label refers to the situation where a bank provides cards, accounts or credit products to consumers and/or merchants; FinTech firms provide the application layer/customer facing interface/brand. A classic example for white labeling is the Amazon Pay ICICI Credit Card.

Banking-as-a-service: Banks provide API access to its core banking functions; FinTech firms build applications based on APIs that allow customers to interact with core banking functions. Yes Bank and RBL Bank introduced banking-as-a-service in India (Prasad, 2023).

Payment Orchestration: FinTech firms collect numerous payment methods and connect those payment methods to banks in a unified interface that merchants use. Classic examples for payment orchestration are Razorpay and Cashfree.

Value Creation: In cases where cooperative structures are established, the value generated is distributed among stakeholders according to specific patterns. For instance, FinTech firms generate 60-80% of total value generation despite generating less than half of total value generation (BCG, 2023). Banks operate with lower margins since FinTech facilitates access to customer groups that banks cannot enter into profitably by using traditional sales channels.

Differential Scarcity: The distribution of values among stakeholders in cooperative structures reflects the concept of differential scarcity. Technological capabilities and distribution capabilities are abundant and inexpensive in India's digital ecosystem. Banking licenses and the capability to maintain a balance sheet are scarce and expensive.

Win-Win Logic: Cooperative structures became widely used since they represented a genuine win-win situation. Banks obtained access to profitable customer groups at reasonable customer acquisition costs. FinTech firms obtained the necessary regulatory approval and funding without having to obtain banking licenses.

However, the emerging cooperative equilibrium was fragile. When FinTech firms grew large enough to build sufficient capabilities themselves — either by being granted an NBFC license or by developing strong enough bargaining position vis-a-vis banks — they internalized banking capabilities.

4.4 Mode 3: Seizing Control (2022 – Present)

The last development represents something fundamentally distinct from both competition and cooperation. We refer to "capturing" as the point at which FinTech firms gain control over client relationships, while banks functioned as regulated utility infrastructures.

Characteristics of Capturing:

Ownership of Client Relationships: The customer conducts all transactions through the FinTech

company. Customers may not know which bank provides the underlying service, nor do they care (Deloitte, 2022).

Commodification of Banking: Banks become indistinguishable backend service providers. FinTech firms frequently switch banks based on pricing considerations alone to acquire new clients or maintain existing ones with no interruption to customers (Prasad, 2023).

Compression of Margins: Banks primarily compete with each other regarding prices to win or retain partnerships with FinTech firms, resulting in margin compression for customers acquired through FinTech companies approaching nearly zero (Prasad, 2023).

Reversal of Lock-In Effectiveness: Traditionally, banks employed client lock-in mechanisms by making it costly for customers to switch between banks. In contrast to this traditional approach, FinTech firms now employ client lock-in mechanisms (by utilizing apps and collecting client data), while banks incur almost no costs to lose clients — FinTech companies can immediately switch banking partners if desired.

Evidence Empirically Supporting the Model of Capturing:

Use of UPI for Payment Settlement: Of users who primarily use third party apps (e.g., PhonePe and Google Pay) to conduct transactions for payments purposes, 73% do so regardless of banks' provision of underlying accounts and settlement facilities (Deloitte, 2022). Frequently, users are unaware of which bank maintains their linked account(s).

Credit Provided Digitally: Paytm Postpaid clients receive credit from a variety of providers (i.e., Clix Capital, Aditya Birla Finance, etc.) and may not recognize which entity provided the credit.

Models of Neobanks: Products offered by Jupiter, Fi, and Niyo provide full banking services branded as products from FinTech companies. Clients do not see

that underlying accounts are maintained with Federal Bank or another partner bank(s).

Implications for System Structure: The capturing model fundamentally transforms the architecture of financial systems. Historically, banking combined all aspects of customer relationships including distribution, origination, underwriting and provisioning of balance sheet within a single firm. The capturing model forever breaks apart these functional areas across separate firms.

Disintegration along Vertical Dimensions may enhance operational efficiencies; nevertheless it produces new risks. Concentration of operational risk in a few major platforms is increased. Importance of systemic nature of non-regulated entities is increased. Protection of customers during individual transactions becomes uncertain when multiple parties are involved.

4.5 Contingent Factors

Factors contingent on time do not determine the mode of interaction. Instead, contingent factors determine the modes of interaction:

Complexity of Service Offerings: Standardized offerings of simple services (payment/savings) progressed through competition/cooperation/capture modes relatively quickly. More complex services necessitating relationship management (corporate lending/wealth advisory) progress through cooperative/banking modes or remain within traditional banking modes.

Stringency of Regulatory Requirements: Regulated services (foreign exchange/deposit taking) remain largely exclusive to banks. Less regulated services (payment/wallet/Buy Now Pay Later) progress through modes of capture more quickly.

Segments of Customers: Retail services applicable to mass-markets demonstrate rapid progression toward capture modes. High net worth and corporate segments continue to engage in direct banking relationships.

Effects Based Upon Network Dynamics: Network effects occur rapidly and lead toward capture modes in services exhibiting strong network effects (payment). Services demonstrating weak network effects (lending) remain relatively decentralized.

4.6 Propositions

Using the outlined framework for analysis, we advance six empirically-testable propositions for future empirical research:

P1: *The competitive advantage of FinTech firms over traditional banks in India is roughly an order of magnitude greater than observed in developed economies due primarily to vastly differing customer acquisition costs made possible by digital public infrastructure.*

Proposition P1 clearly contradicts an implicit assumption in global literature on FinTech that competitive dynamics are similarly structured across various contexts. Thusly we suggest that researchers develop context-specific theories that replace universally applicable theoretical frameworks.

P2: *The degree of collaboration between traditional banks and FinTech firms grows exponentially with stringency of regulation and declines as FinTech firms acquire regulatory licensure.*

Thusly P2 indicates that collaboration represents a transitional state rather than an enduring state. Once FinTech firms develop regulatory capabilities required for their operations, then collaboration becomes unnecessary.

P3: *In retail financial services the long-run equilibrium in India will not represent co-existence or disruption but rather will represent vertical separation where FinTech companies control relationships with customers and banks will provide regulated infrastructure.*

P3 challenges both narratives that banks will survive or that FinTech will disrupt. Instead P3 suggests a third

option representing structural change without firm-level disruption.

P4: *Traditional banks will maintain sustainable competitive advantages in services that require complex judgement, relationship capital and large-scale risk absorption (trade finance/corporate lending/treasury management).*

Thusly P4 identifies boundaries beyond which FinTech firms can capture client relationships.

P5: *The impact of FinTech on financial inclusion demonstrates an inverted-U relationship curve such that maximum financial inclusion occurs around 60-70% penetration level; beyond which additional adoption leads to emergence of new forms of digital exclusion.*

Thusly P5 contradicts a common narrative that more FinTech implies more financial inclusion. Rather P5 suggests decreasing marginal benefits followed by negative returns on financial inclusion from continued growth in FinTech adoption.

P6: *Public digital infrastructure permanently alter financial system structures in ways that cannot be replicated by private innovation; thereby establishing path dependency that determines long-run competitive outcomes.*

Perhaps the most critical proposition we advanced is P6. P6 suggests that India Stack does not merely represent a policy decision but represents a structural factor influencing long-run trajectories of financial systems' evolutions.

5. IMPLICATIONS

5.1 Theoretical Implications

The theoretical implications of this study make several contributions to FinTech theory:

We demonstrate that there are dominant FinTech theories that were developed for western institutional settings. These dominant FinTech theories are context bound and therefore do not apply well to emerging

markets that have infrastructure driven development. In addition, we demonstrated that the dominant FinTech theories (disruption versus co-existence) fail to explain the outcomes observed in our case studies. Specifically, we found vertical separation and capture of the financial sector, neither of which was predicted by the dominant theories. Therefore, we argue that the dominant FinTech theories are inadequate and propose the need for middle range theories (Khanna & Palepu, 2010).

In addition to demonstrating that the dominant FinTech theories are context specific and incomplete, we also demonstrate that the infrastructure used to support FinTech is more than simply a background factor. Instead, we argue that the infrastructure used to support FinTech plays a constitutive role in determining competitive dynamics among firms. Therefore, our results have implications for FinTech as well as for platform economies and digital markets in general.

Finally, whereas traditional equilibrium based theories assume that a competitive dynamic can be captured at one point in time, we incorporate dynamic evolution into our model through explicit descriptions of distinct phases. This allows us to better capture observed patterns than do traditional equilibrium based models.

5.2 Practical Implications

5.2.1 For Traditional Banks

From a practical standpoint, the capture model raises existential questions for traditional banks. That is, is it an acceptable long term position for banks to become regulated utilities?

Some banks may find that being regulated utilities is an acceptable long term position for them. If so, then banks could potentially be profitable as utilities provided they are willing to accept lower profit margins than they currently experience, achieve massive scale, and operate with extreme operational efficiencies. This is exactly the strategy that Yes Bank and RBL Bank adopted in India. Both of these banks

became the infrastructure providers for numerous FinTech firms in India (Prasad, 2023).

Most banks, however, will likely view becoming a regulated utility as an unacceptable future. As a result, banks are developing various strategies to respond to capture. Strategies include:

Aggressive digital transformation: Develop proprietary digital capabilities that are competitive with those offered by FinTechs. Examples of this strategy include state-owned State Bank of India's YONO platform; HDFC Bank's Payzapp; and ICICI Bank's iMobile. To date, these platforms have had tens of millions of users but have not yet regained market share dominance from PhonePe and Google Pay.

Selective partnerships: Partner with FinTechs in commoditized segments (e.g., payments), while defending high value relationships (e.g., wealth management and corporate banking). Developing selective partnerships will require banks to clearly define areas in which they possess durable competitive advantage.

Acquisitions: Acquire FinTech firms to internalize their digital capabilities. This is a more commonly used strategy globally than it has been in India because regulations restrict bank ownership of non-financial firms.

Orchestrate platforms: Rather than vertically integrating services offered by others (FinTechs), become platforms that connect multiple service providers. Implementing this strategy will require significant changes to a bank's business model, something that few Indian banks have successfully done.

Denial is perhaps the worst strategy adopted by many banks. By continuing to treat customer relationships as permanent while simultaneously losing 80% of their customer touch points to FinTech platforms, banks will inevitably suffer margin erosion and eventual irrelevance.

5.2.2 For FinTech Firms

For FinTech firms, the capture model presents a favorable competitive position. Nevertheless, several risks merit consideration:

Regulatory backlash: As FinTech firms grow in size and become increasingly systemically important, they will attract increased scrutiny from regulators. The RBI's recent 2021-23 interventions in digital lending demonstrate early examples of this phenomenon. Thus, FinTech firms must develop regulatory capabilities and compliance infrastructure commensurate with those established by banks.

Concentration limits: Proposed regulations (e.g., NPCI's proposal to establish a 30% market capitalization cap on UPI apps) could constrain the market positions of FinTech firms. Thus, FinTech firms should anticipate regulatory intervention that constrains their market positioning.

Margin compression: Successful FinTech firms will attract competitors offering similar services. As more competitors enter the market for partnerships with a finite number of banks, banks will acquire greater bargaining leverage. Consequently, sustainable profitability requires either: (i) establishing their own banking licenses; or (ii) creating sufficient customer loyalty to deter banks from circumventing the FinTech layer.

Risk associated with technology platforms: Most Indian FinTech firms rely on a narrow group of technology providers (e.g., AWS, Google Cloud, RazorPay APIs). Concentrating operational risk within these providers generates systemic vulnerabilities.

Protecting customers' trust: As FinTech firms increasingly facilitate financial transactions, protecting trust becomes paramount. A single major cybersecurity failure or widespread fraud event could damage the reputation of the entire sector; e.g., Chinese peer-to-peer lending experienced such a downturn when it suffered large-scale scams and

failed to adequately protect user assets (Huang et al., 2020).

5.2.3 Regulatory and Policy Implications

Capture creates unique regulatory issues for governments and policymakers. Traditionally, banking regulation assumed integrated institutions delivering all banking functions. Unbundling creates regulatory gaps and overlap:

Regulatory perimeter: Which entity regulates each function when a customer uses Paytm to take a loan serviced by Capital Float and funded by ICICI Bank? Who protects the customer rights related to data privacy and fair lending?

Systemic importance: Non-bank FinTech platforms now play an essential role in supporting real-time payment systems. Together, PhonePe and Google Pay account for approximately 85% of India's real-time payment ecosystem. Although they are regulated as tech companies, not financial institutions, should FinTech firms with systemic importance receive bank-equivalent regulation?

Competition/concentration: The duopoly in UPI payment services creates customer lock-in and possible anti-competitive behavior. On the other hand, market concentration could create efficiencies through network effects. How should regulators weigh competition against efficiency?

Data governance: FinTech firms collect unparalleled amounts of data related to individuals' financial behaviors. This data can be valuable in evaluating creditworthiness and detecting fraudulent activities. At the same time, collecting such vast amounts of data generates significant privacy-related concerns and the potential for price discrimination. India's Account Aggregators framework address some of these concerns; nevertheless, many are still unresolved.

Cross border implications: A number of Indian FinTech firms have international owners (PhonePe – Walmart; Google Pay – Google; BharatPe – Sequoia);

additionally, some utilize international cloud computing services (e.g., AWS or Azure). This creates cross-border data sovereignty and financial stability risks in the event of rising geopolitical tensions.

Therefore, regulatory responses should be adaptable and empirically grounded. Potential templates for adaptive regulation include the UK's regulatory sandbox model (Jenik & Lauer, 2017) and Australia's graduated licensing approaches (ibid.). Moreover, regulation should be activity based instead of entity based to ensure competitive parity among banks and FinTech firms that deliver similar services (Zetzsche et al., 2017).

5.3 Social and Developmental Implications

Beyond implications for the financial sector itself — including implications for financial inclusion — the transition from traditional banking to FinTech-facilitated banking has broader societal implications:

Improvements in financial inclusion: Digital financial services significantly expanded formal access to finance for Indians. The number of Indians with bank accounts grew from 300 million to 1.5 billion during a ten year period (World Bank, 2022). Digital credit extended reach to millions of micro-enterprises previously excluded from formal finance.

Despite this tremendous expansion in formal access to finance, account ownership does not imply active use of financial services. Over 30% of Jan Dhan accounts remained inactive after opening (Muralidharan et al., 2016). Meaningful inclusion requires not only having access to a bank account but also having access to affordable and applicable financial services that users actually employ.

New Exclusions: Digital finance created new types of exclusion. Older adults, people with disabilities, rural communities with poor connectivity, and financially illiterate individuals will encounter obstacles when attempting to engage with completely digital services (Pal et al., 2020). The RBI issued directives in March 2023 compelling banks to continue providing

minimum banking services in physical locations even as they pursue digital-only banking initiatives acknowledging this issue.

Privacy of Data: Business models for digital finance depend heavily upon acquiring vast amounts of data about customers and analyzing this data. There is relatively limited knowledge among Indian consumers about how their personal information is utilized by FinTechs; equally limited is their practical ability to govern utilization of their personal information (Chaudhuri et al., 2021). Absence of a comprehensive data protection statute (as of 2024) exposes consumers to risks related to loss of personal data due to unauthorized disclosures or theft.

Debt/Financial Stability: Access to easy digital credit has caused growing concerns about excessive debt burdens among young consumers participating in BNPL schemes. RBI's 2022 regulations addressing predatory lending practices in digital lending have improved consistency of enforcement; however, ongoing issues remain (RBI, 2022).

Labor Market Effects: Automating processes involved in financial services creates unemployment in banking sectors. Employment numbers among Indian banks fell from 1.5 million employees in 2018 to 1.3 million employees in 2023 despite dramatic increases in transaction volume processed by banks (IBA, 2023). New jobs are generated in technology fields; however, these jobs require different skill sets than banking jobs and tend to be clustered primarily in metropolitan regions.

6. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

6.1 Limitations of This Study

As outlined above this conceptual paper has several limitations that affect how readers interpret the results:

Reliance on secondary data: As a conceptual paper this study relies on the quality and comprehensiveness of secondary data sources. Publication bias may

influence available research regarding success cases relative to failure cases; therefore results reported here may reflect optimism about the impact of FinTechs.

Bias towards positive assessment of FinTech: It should be acknowledged that a considerable proportion of academic research on Indian FinTech has been sponsored directly or indirectly by parties with interests in promoting optimistic views of FinTechs. Consequently readers may observe publication bias favoring positive evaluations of Indian FinTechs.

Rapid Evolution: Indian FinTech develops extremely fast. Trends identified using data collected in 2023 may differ considerably by 2025 as CBDC expands its reach and Account Aggregator reaches maturity. Therefore the study describes contemporary competitive dynamics but cannot forecast future regulatory or technological shock waves affecting Indian FinTechs.

Uncertainty about Generalizability: We contend that India provides a paradigmatic example of an emerging market driven by digital public infrastructure that is relevant to other emerging markets with similar characteristics; however additional empirical research is necessary to confirm whether our framework can be generalized across different country contexts.

Insufficient Long-Term Evidence: India Stack is less than ten years old; furthermore UPI did not begin scaling until 2019; thus long term consequences relating to profitability, financial stability and continued financial inclusion are unknown.

Measurement Challenges: Two key variables in our study ("customer relationship ownership," and "vertical separation") are conceptual constructs lacking standard empirical definitions; consequently additional empirical research is required to identify operational definitions permitting rigorous testing.

6.2 Future Research Opportunities

There are several potential research paths:

6.2.1 Testing Propositions

There are six proposals in Section 4.6 that need to be tested through empirical study. These include large-scale econometric studies examining customer acquisition cost, switching costs, margin compression, and market concentration.

Natural Experiments: The varying levels of digital infrastructure and regulations in each state of India provide numerous natural experiments for studying causal effects.

Long-Term Tracking: A panel study following a select number of banks and fintech companies over five to ten years could help document how each company evolves strategically, their profit trends, and the competitive results.

6.2.2 Comparative Institutional Analysis

Brazil (Pix), Ghana (E-cesi), and China (Digital Yuan) all represent comparative examples of infrastructure-led digital finance. In order to understand what aspects of India's model are generalizable and which are unique to the Indian context, researchers could use a systematic comparative method.

Key questions include:

- **Public Infrastructure Ownership vs. Openness and Interoperability:** Is public infrastructure ownership a more important factor than openness and interoperability?
- **Role of Regulatory Capacity:** What role does regulatory capacity play in determining the success of digital finance?
- **Cultural Factors:** To what extent do cultural differences influence the acceptance of new technologies and the establishment of trust in digital transactions?

6.2.3 Systemic Risk and Financial Stability

Although researchers have been working to understand the implications of fintech for financial stability, little is known about this topic. Researchers should focus on the following key issues:

Concentration Risk: What are the systemic consequences of having 85% of all payment transactions depend upon only two private platforms? What happens if one of those platforms fails to operate normally?

Interconnectedness: How are fintech firms, banks, nonbank financial corporations (NBFCs), and technology platforms connected? Can distress spread throughout these connections?

Procyclical Nature: Do algorithms used in lending models amplify credit cycles? Some research indicates that they may (Braggion et al., 2020), however, there is no data from India regarding this issue.

Crisis Resilience: How well would fintech business models perform during times of economic crisis? Fintech firms in India have operated only in positive economic environments since 2015.

6.2.4 Distributional Analysis

Who gains and who loses from the transition to fintech? Researchers should investigate the following:

Regional Inequality: Are the advantages gained from fintech concentrated in urban areas, thereby increasing regional inequality?

Income Inequality: Does fintech benefit primarily middle-income people while excluding both lower income people (who lack smart phones) and higher income people (who prefer to bank traditionally)?

Gender Dimensions: Do digital financial services diminish or enhance existing gender disparities in accessing and utilizing financial services?

Intergenerational Effects: Are older generations systematically excluded from using solely digital financial services?

6.2.5 Regulatory Effectiveness

Different governments have employed different methods of regulating fintech. Researchers could evaluate the effectiveness of these differing methods through comparative studies:

- **Regulatory Sandboxes:** Are regulatory sandboxes really a means to encourage innovation or simply a form of regulatory theater?
- **Activity-Based vs Entity-Based Frameworks:** Which type of regulatory framework is more effective (activity based or entity based)?
- **Balance Between Innovation Promotion And Consumer Protection:** What is the right level of balance between promoting innovation and protecting consumers?
- **Cross-Border Services:** How can government regulate cross border fintech services?

6.2.6 Emerging Technologies

A variety of emerging technologies will continue to evolve and impact finance. These include:

CBDC (Central Bank Digital Currencies): India launched its Digital Rupee Pilot in 2022. If CBDC achieves widespread adoption, how will it change the position of fintech firms and banks? Will CBDC allow for banks to be bypassed for retail transactions?

AA at Scale: As AA continues to grow in popularity, how will it alter competitive dynamics in lending and wealth management?

DeFi (Decentralized Finance): DeFi utilizes blockchain technology and although small now in India, it has the ability to further disrupt banking. Researchers should keep track of developments and evaluate the potential impacts.

AI/ML (Artificial Intelligence/Machine Learning):

AI/ML has the potential to revolutionize underwriting, fraud detection, and personalized finance. What implications will AI/ML have for competition and consumer welfare?

7. CONCLUSION

This paper examines the relationship between FinTech and traditional banking in India, a country that has evolved into the world's leading testbed for digital finance. By conducting a systematic review of 72 academic papers, 11 regulatory documents, and multiple industry publications, we developed a contingent three-mode theoretical model describing FinTech-banking interactions in infrastructure-led emerging markets.

Our primary assertion is that India represents a separate third trajectory of FinTech development as opposed to Western nations. This divergence is due to a previously unconsidered structural element: digital public infrastructure offered as an open, interoperable public good. Compared to traditional banking, India Stack has reduced customer acquisition costs by approximately 97% and transaction costs by 95%, resulting in competitive dynamics that did not exist according to prior theory.

We found three time-contingent modes of interaction between FinTech and Banking: Competition (2015–18), Collaboration (2018–22), Capture (2022–present). Contrary to popular narrative, our findings indicate that the eventual equilibrium is not the disruption of banks or stable co-existence but rather vertical separation. FinTech companies have taken possession of customers' relations while banks are increasingly being converted into regulated utility providers providing basic infrastructure functions.

These changes have significant ramifications for banks, regulators, and inclusive access to finance. For banking strategy, it implies that banks' attempts to protect their traditional integrated models in retail finance are doomed. Banks will either have to become low-margin utilities or establish digital capabilities

comparable to those established by FinTech companies. For regulatory policy, it emphasizes new challenges for defining regulatory scope, controlling concentration and protecting consumers when multiple entities take part in a single transaction. For financial inclusion, it illustrates substantial improvements in formal access but also highlights growing digital exclusion barriers.

Theoretically, this paper contributes in three areas. First, we demonstrate that current FinTech theories are institutionally constrained to Western contexts and are therefore less applicable to infrastructure led developing economies. Second, we created the first framework that considers digital public infrastructure as a constitutive variable affecting competitive outcomes. Finally, instead of continuing the "disruption" debate without resolution, we identified vertical separation as a new competitive outcome that was not forecasted by previous theories.

The framework includes six testable propositions for future research. Perhaps most critically, we assert that public digital infrastructure establishes permanent structures within financial systems that private innovations cannot replicate and lead to path dependency influencing financial systems for decades.

7.1 Limitations of Study

As a conceptual piece, this work relies upon existing empirical evidence which is incomplete and possibly biased. The competitive dynamics being studied are changing rapidly; the results documented here may significantly differ from the competitive dynamics in 2030.

7.2 Generalization Beyond India

Generalizing this study beyond India necessitates empirical verification.

However, the Indian experience provides several important lessons for other developing economies contemplating digital finance plans. The experience demonstrates that decisions made regarding

infrastructure today will define competitive dynamics for decades. Additionally, it shows that achieving digital inclusion necessitates more than merely technology – it necessitates connecting people via reliable networks, teaching them how to utilize new technologies appropriately, establishing trust among users with respect to the security of those technologies.

Finally, it shows that network effects and platform economics inevitably produce concentration among participants in the same marketplace; thus, governments must proactively intervene through regulation to limit monopolies.

Most importantly, perhaps this study challenges the notion that financial systems evolve along a predetermined pathway followed by developed economies. India has not followed Western patterns; it has established a completely different model that may better serve other developing economies than models developed by OECD nations.

Countries around Africa, Southeast Asia, and Latin America developing digital finance plans can learn from both inspirational experiences and cautionary tales exhibited by India. They can learn inspiration from the fact that thoughtful design of digital public infrastructure has greatly expanded access to financial services and reduced associated costs. They should exercise caution knowing that concentrating market power, generating new exclusions, and producing complex regulatory issues result even when seemingly successful transitions occur.

India's finance system development is far from complete. New waves of transformative technological advancements such as central bank issued digital currencies (CBDC), account aggregator at scale and new emerging technologies are likely to follow.

Tracking these developments empirically with continued research on testing the hypotheses set forth in this paper will be necessary for fully comprehending the future direction of finance — both domestically within India as well as internationally.

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