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The Digital Leap: FinTech Transformations in Eastern Indian Banking Sector

[1]Durga Prasad Sahu*, [2]Dr. Saumendra Das, [3]Dr. Santanu Kumar Das

[1]Research Scholar, GIET University, Gunupur

durgaprasadsahu786@gmail.com

(*Corresponding author)

[2]HoD, School of Management Studies

saumendra@giet.edu

[3]Dean (MBA), GIET University, Gunupur

santanu.das.kumar@gmail.com

Abstract

This study evaluates the transformative impact of digital disruption in finance, with a particular focus on FinTech adoption in Eastern India's banking sector. The aim is to explore how FinTech innovations reshape banking operations, customer experiences, and competitive strategies. Employing a comprehensive review methodology, the paper synthesizes existing literature on FinTech applications. The analysis highlights key drivers, challenges, and opportunities in FinTech adoption. Findings reveal that while FinTech accelerates digital transformation and financial inclusion, traditional banks face challenges in seamlessly integrating these technologies. The study emphasizes the strategic need for collaboration between FinTech firms and banks to foster innovation. Implications suggest policymakers and banking leaders prioritize adaptive strategies and digital literacy to sustain growth in a rapidly evolving financial ecosystem.

Keywords: Technology Readiness, FinTech Adoption, Banking Sector, Eastern India, Financial Inclusion

1. Introduction

The banking sector is witnessing digital disruption marked by FinTech adoption in the Indian scenario. The technological revolutions are seen through telephone, telex, and fax messages in the 1970s, computerization in the 1980s, ATMs during the green channel in 1998, mobile banking in 2002-2003, internet banking, stock trading on the electricity platform, and online trading at the stock exchange during 1995, internet banking in stock trading in 2000, and many e-commerce transactions before the initiation of bank adoption of FinTech. Moreover, computers and machines are constantly replacing human hands in almost every field. There is no exception to the banking industry, as well as to accommodate these technological advancements. The banking industry moves towards digital transformations (Moid & Shankar, 2022; Muduli & Choudhury, 2024). The technological disruptions are coming at a speed with continuous updates. This leads to a revolution in the banking sector. Now, in the modern era, customer relationships are driven through technology solutions, and banks are not only demanded as a loan interface but also as personal financial advisors. A set of digital solutions, in addition to banking activities, adds value and attracts millions of customers.

In the recent past, a number of distributed ledger technologies have emerged, like blockchain and cryptocurrencies. Thus, the banking sector is disrupted in several directions. The new concept of bank-less financial transactions in the form of cryptocurrencies has also disrupted the banking sector (Agarwal, 2021). It is against this backdrop that FinTech starts as an innovation for the retail customer. Therefore, this research aims to fill this gap with an examination of the FinTech environment in the Indian banking sector. In this regard, it identifies the factors for FinTech adoption from the perspective of Eastern India's banking sector. This research contributes to the understanding of the known factors for FinTech adoption in a less-studied region of Eastern India. Specifically, it adds to the field of FinTech research as well as the concept of e-commerce and the adoption of technology for providing a set of new tools, playing a vital role in reshaping the preferences and characteristics of bank customers, improving operating efficiency, and changing the competitive dynamics.

The focus is on the banking sector in a new market context with a specific focus on the less covered regions of Eastern India. It targets the regional public and private sector banks operating in the region and aims to study how the banks are under pressure to adopt new technology innovations and the drivers and inhibitors of FinTech adoption in Eastern India. Banks are expected to adopt FinTech (Venkatesh, Bala & Skyes, 2010). There are several advantages and challenges faced by the banks in Eastern India, and a study of these factors may provide a better understanding. This research will be able to guide the development of a framework through the identification of cases, by developing reasoning drawn from multiple cases.

1.1. Research Background

Banking in Eastern India has always been a combination of conventional and contemporary. New banks take traditional steps to establish branch banking, and old banks follow conservative policies to sustain their position in the market. The economic transformation in the form of globalization, financial liberalization, and India's highly recognized emerging market has been intertwined with revolutionary changes (Kaul, 2015; Roy, 2017). The banking sector in Eastern India displays recent phenomena that clearly portray its movement into digital finance or e-commerce. The Indian government has urged financial inclusion to enhance the country's rural population by easing direct bank transfers through deposit accounts for everyone scheme. Similarly, more than 134 million operational bank accounts have been opened across Eastern Indian states in a financial inclusion campaign. The share of these fully functional bank accounts in the unbanked population is 55% (Fitzpatrick, 2015).

The recent policy change and steps taken by the Indian government have provided a significant amount of push to financial inclusion and Digital India initiatives. People's rising preferences and behavior to opt for mature banking methods have experienced a new relationship between traditional banking and financial firms in volume (Stulz, 2019). Instead of opting for standard banking or free checking facilities, people in India choose from a list of banks that offer services through digital media. Since then, the banking sector of the country has had to go a step farther. The use of new technical applications to innovate with traditional banking evolves into digital banking, also known as fintech or electronic finance (Gomber, Koch & Siering, 2017; Alt, Beck & Smits, 2018). Recent studies show that banks providing Fintech or electronic banking transactions have become a revolution for banks.

1.2. Research Objectives

According to the research questions this study seeks to answer, the proposed objectives of this study are as follows:

- To determine the existing level of technology readiness among banking practitioners and banking users for FinTech adoption in Eastern India.
- To assess the practical challenges that other banks encounter in their attempts to enhance the perceived ease of use and the perceived usefulness of the alternative solutions offered.

- To examine the possibilities that exist for changing the attitude of users and enhancing intention towards FinTech in professional banking services.
- To recommend practicable strategies to enhance the intention of customers and employees towards adoption of FinTech.

2. Review of Literature

This section of the study focuses on the existing literature on the FinTech sector and the significant aspects of digital technology solutions and their adoption in the banking and financial sector. It primarily focuses on understanding the issues and challenges. It provides the decision factors in different categories acknowledged to increase the propensity of the different external FinTech actors contributing to the FinTech models to accelerate FinTech adoption.

2.1. Conceptual Framework of FinTech

Today's banking industry is going through a period of digital disruption. Over the past decade, tech-savvy financial start-ups have emerged across the globe, looking to reshape money management and revolutionize the way one stores, saves, borrows, lends, and invests. This huge wave of start-up activities in the field of financial technology is termed FinTech. Users of this technology include individuals, small and medium-sized organizations, and also traditional organizations in the financial services sector that have a vast customer base and perform regular banking services (Awotunde et al., 2021; Javaid et al., 2022).

FinTech markets include payments and transfer operations, consumer, business lending, traditional banking services, equity investments, raising new funds, alternative financing services, and back-end and infrastructural services (Gomber et al., 2018). The global FinTech phenomenon, in which tech-savvy start-ups supported by venture capital are trying to disrupt traditional banking and finance, has already resulted in important market shifts and a race among traditional financial institutions to innovate and offer technology-based financial services. The FinTech revolution will likely not be isolated to a few developed financial centers. The increasing adoption of mobile-first financial services in developing countries is driving a major increase in the potential number and rate of innovation of financial products distinct from the traditional model, and these emerging market-based FinTech are distinct from developed country FinTech (Odorovic et al., 2020; Arayesh et al., 2022).

2.2. Global Trends in FinTech Adoption

Digital finance has been creating a major disruption in the world of finance. The rise of digital finance gained importance after the global financial crisis. The crisis did not just change the way people looked at traditional banking, but through the introduction of regulations that ensued, it also opened up opportunities for specialized start-ups to innovate around the gaps in the traditional delivery of finance. Even though the traditional banks are still leading in overall market presence, FinTech is catching up swiftly and could replace traditional payment services and monetary transactions (Iman, 2018).

The current global economic slowdown is visible through a steep drop in figures of employment and consumption across borders. One of the primary reasons behind this trend is the disintermediation caused by the FinTech companies which challenged the traditional banking, financial services, and insurance models with their innovative products and services that catered to unmet customer demand (Anand & Mantrala, 2019; Muthukana et al., 2021). Initially, FinTech served the 'underserved', but due to increasing customer demand and the complexity of FinTech offerings, they are now directly competing with traditional ways across service lines such as payments, asset and wealth management, money transfers, checking and savings accounts, and mortgage lending.

2.3. FinTech Regulation and Policy

The Indian financial system has rapidly evolved through years of governmental controls, but only in subsequent years of financial liberalization, technological development, and expansion of financial infrastructure (Mohan & Ray, 2018; Kapoor, 2014). This evolution is driven by a rise in technology adoption, the flow of information across the economy, and deep financial reforms. This government role is evident not only in the pursuit of national development goals but also in sectoral initiatives of financial technology. Concerns about the stability and functioning of the financial system and their resultant underlying network effects make reform adaptation difficult (Challoumis & Eriotis, 2024). Furthermore, a shift in political and industrial power would occur in the current state of legacy systems. Markets and institutions would need regulation similar to banks and financial institutions. In recent times, Indian regulators are keen to explore such roles, and the government has introduced several reform policies that have ramifications for FinTech (Anagnostopoulus, 2018).

2.4. FinTech Landscape in Eastern India

Eastern India as a region is experiencing rapid socioeconomic growth and change. The states in the Eastern regions have a rich demographic profile, with a young population. They are naturally attracted to adopting digital technologies, since rapid urbanization, fast-increasing primary income levels, and a relatively high quality of life make consumers open to adopting digital services. The high concentration of small businesses conducive to technology adoption has welcomed these fintech services to boost their reach and accessibility by enabling a digital financial architecture and digital market (Palmie et al., 2020).

The growth of FinTech is leading to the financial sector innovating and becoming more modern (Alt, Beck & Smits, 2018; Gomber et al., 2018). The services offered by traditional banks are augmented by FinTech. They are reaching out to the unbanked and underbanked populations of Eastern India, enabling clients with limited access to efficient and affordable financial services.

2.5. Challenges and Opportunities

Personalization of service is a core challenge for FinTech entrepreneurs who have to maintain the legacy costs for nationwide service deployment. Providing the best service at the most effective price point is a challenge due to the lack of applications in FinTech. Micro-segmenting users can help in the analysis of usage and application, and then help customize needed products and applications for customers. By looking at customers' buying power and serving them with need-based products, it will also help to scale better for FinTech. The primary challenge of FinTech is that they must serve a large geographical area, while local banks have some legacy customers whom they know well.

This study has identified the lack of awareness among banking staff. Bankers, primarily from the operational and management areas, are not tech-savvy, and even if they are, they have very little exposure to FinTech to carry real-world FinTech knowledge. The misalignment of the company's goals among employees can be seen in the light of the lack of role clarity for issues other than mere operational levels. The real speed of chase and adaptation lies in the services that FinTech can provide. FinTech support for technology and innovative investments, and challenges will arise for them (Lee & Shin, 2018; Hung & Luo, 2016). We must understand that such challenges and opportunities should be carefully understood and prioritized for the future development of industries and participants. Such decisions may help provide us with more opportunities that are specific to the Indian markets.

2.6. Case Studies

A number of studies have explored the adoption of FinTech in the banking sector. Factors such as perceived usefulness, perceived ease of use, external variables, intention to use, customer satisfaction, and behavioral

intention influence the adoption of FinTech. High-income, high-asset, and young customers are more likely to use robo-advisors. By contrast, educated individuals, as well as those with moderate income, are likely to use mobile financial services. There is a significant relationship between customer satisfaction and behavioral intention for FinTech adoption. FinTech solutions enhance financial intermediation for those sectors of the population and businesses that are overlooked by traditional bankers and can create business opportunities worldwide, including in eastern India's banking regime.

The use of FinTech tools has transformed the operation of regional rural banks, more so in the case of financial inclusion. For example, Odisha Grameen Bank‘s adoption of digitised wallets and UPI has simplified the ability of rural customers to access various banking services. Rao and Naik (2020), articulated that the technologies served to decrease the time taken to deliver services, hence, withdrawal the necessity of clients to go to the bank’s branch, and brought more visibility to the tactical functioning of the finances. Such integration has greatly helped in empowering financially marginalized citizens and more inclusive banking.

State Bank of India’s YONO platform exemplifies how the integration of banking and FinTech should be done. Customers can use artificial intelligence to perform seamless transactions, apply for loans, and shop online. Goyal et al. (2021) noted the significant increase in customer engagement in Eastern India’s semi-urban and rural areas resulting from YONO’s customer-centric design and ease of use. The platform didn’t just set a new standard for digital banking in the region, it also helped reduce the bank’s operational costs.

After the implementation of blockchain technology, Kolkata banks also modernized their trade financing processes. It helped to streamline the network systems, coupled with document support verification, and to reduce fraudulent activities. According to Mitra (2019), blockchain technology increased the level of trust among the participants of a particular trade, as it provides a means for stakeholders to maintain a transparent and unchangeable record of trade transactions. This particular case study provided an insight to modern banking practices FinTech solutions which drives modernization of operational processes in trade financing, enabling increased efficiency in processes that are traditionally considered high risk.

HDFC and ICICI provide customer service aided by machine learning and artificial intelligence. These banks offer personalized loans and investment products and services based on predictive analytics and competitors. Chatterjee (2022) showcased the services of AI automation which, along with customer satisfaction, reduced the turnaround time of loans and improved the efficiency of banking operations.

In locations such as Bhubaneswar, the collaboration of banks with FinTech companies is remarkable. With the help of Paytm and Razorpay, banks can seamlessly embed digital payment services into their offerings. Sahoo and Mohanty (2023) argue that such collaborations enhanced the digital readiness of conventional banking firms and attracted a younger audience. This collaboration model is an example of how legacy banking institutions and emerging FinTech firms can succeed together.

2.7. Research Gap

The analysis reinforced that knowing the need for a digital transformation isn't enough and a deep understanding of digital banking is also required. The findings indicate that Indian banks do not accord digital literacy the importance it deserves in ensuring successful adoption. Lack of education and understanding hampers banks from keeping track of the latest digital experiences. Participants revealed that among the barriers, the digital literacy of customers is one factor that tends to hold banks back. It was notable that participants' perceptions about the digital literacy of their target customers were less than optimistic. They contended that many customers are still more comfortable with traditional banking methods. Such concern is not unusual or unexpected given that the majority

of India's rural unbanked and underbanked population finds it challenging to utilize financial technology innovations. Many have no prior experience in using digital methods.

Results identified lack of digital literacy as a barrier to success and a crucial factor in the adoption and use of e-banking (Alhakimi & Esmail, 2020). Interviews with the banks' top managers revealed that poor attitudes toward, lack of knowledge about, or interest in new technology are significant concerns that impact digital adoption across banks. Furthermore, negative attitudes on the side of the banks were perceived to result in a lack of cooperation when it came to developing and deploying existing digital technology (Pirhonen et al., 2020). Some managers paused for thought that there are not enough different aspects to banking in order to interest the customer and foster a relationship. Furthermore, it was the customer's perception that they had no need for a bank's digital technology that stopped them from utilizing digital banking tools. Since selecting digital banking products was perceived as being purely a customer's choice, the banks must therefore be patient and prepared to wait for customers to enjoy the benefits of digital banking products and adopt them.

2.8. Impact of FinTech on Financial Inclusion

FinTech is bridging services-led financial inclusion gaps effectively and hence drawing significant traction. Financial inclusion via traditional banking lacks pace and affordability, whereas fintech services have immense penetration reach via devices like phones and computers delivering a wide range of financial services across various hierarchies, so it has been used synonymously with the democratization of financial services. The mass deployment of technology-led procedures by FinTech's to cater to the underserved and unbanked areas has found incredibly meaningful paths (Gazi, 2022). This has reduced the risk and cost engagement of a bank in opening and managing micro accounts for financially unsophisticated clients. This has completely decentralized private, formal banking.

Big Data has been transformed by machine learning into a useful decision-making tool, factoring in its optimal profit (Singh et al., 2022; Awontunde et al., 2021). Their institutional speedy handling of intra-consumer messages, especially personalized for the financially uneducated consumer, has reduced the propensity to lapse and churn. The technology, highly focused and intuitive, has significantly curtailed large controllable expenses of human capital. The diffusion of the right payment systems has made the under banked and unbanked willing associates. The disproportionate performance can indeed be attributed to FinTech's.

2.9. Role of FinTech in Promoting Financial Inclusion

The potential for FinTech to promote financial inclusion is widely recognized. Inclusion implies the broadening of institutional access to a wider base of clientele who are traditionally excluded, especially the poor, unbanked, and excluded segments of society. As the majority in the Asia-Pacific region, the poor seek to have access to—on fair and affordable terms, a range of financial services without having to travel for transaction services. Such services include credit for investment and working capital, savings facilities, and insurance, which can smooth consumption and ameliorate the risks facing both the poor and middle-income citizens (Makina, 2019; Arner et al., 2020).

Financial inclusion forms an integral piece of the broader economic development strategies of China and India, more so in the context of India (Liu et al., 2021; Qin et al., 2021). The need to adopt a digital strategy to improve access was realized, and FinTech has become the chosen vehicle through digital innovation techniques. Today, this executable strategy includes mobile-based phone banking and the rural business correspondent model to accomplish the desired financial inclusion targets.

2.10. Regulatory Environment and Compliance

The Reserve Bank of India (RBI) is becoming increasingly supportive rather than restrictive in order to boost FinTech. At the 5th Annual Day event of the Foreign Exchange Dealers' Association of India, the Deputy Governor of the Reserve Bank of India announced that the Reserve Bank would examine and take advantage of new FinTech opportunities to stimulate the economy. The Deputy Governor made several insightful points in his speech, several of which tended to support FinTech (Gomber et al., 2018). The regulatory environment for FinTech is controlled by the RBI. The Department of Supervision is involved in the licensing and regulation of UCBs and the formulation of a safe, robust, and smooth technology-based Financial Inclusion Strategy for UCBs in collaboration with IIIT-B for market development and regulation.

Incompatibility occurs when a law or regulation conflicts with a technological capability offered by a FinTech product. Regulation and technology should both inform policy decisions in a way that ensures the production of the right amount of innovation that provides the greatest good to those most affected in the financial sector (Arner, Barberis & Buckey, 2016; Voegtlin & Scherer, 2017). Moreover, no entity should be allowed to perform under-asked tasks or be burdened with regulatory requirements that are not locally consistent. Products that are considered FinTech typically have three core non-technological components: a banking operation, regulators, and FinTech product users.

India has been moving at a constant pace to introduce regulations for more effective control and supervision of the emerging FinTech industry (Gahlot & Ghosh, 2023). The Reserve Bank of India (RBI) has been a proactive player, encouraging digital finance quite early through relaxed branch-banking regulations and the introduction of the concept of banking in the form of business correspondents. Soon after some setbacks with legal policy issues, the RBI recycled the resolution through regulations. In 2017, the Indian Parliament focused on data privacy with the passage of the Data Privacy Bill 2017. This was followed by the Payments and Settlements Bill 2017, a unique bill regulating all payments and settlements-related data flow and exchange. Again in 2018, the RBI mandated the Southern Districts lead to the Copper Pillar and the implementation of ATMs as white label ATMs only in customer-starved areas.

2.11. Challenges in Regulating FinTech

Regulatory frameworks, paradigms, and governance models may not be in sync, according to some fundamental issues that have emerged in scholars' critical work, as well as current conversations and debates by international institutions and national-level public and commercial entities. International standard-setting organizations are working to address the different regulatory issues that FinTech has brought about. (Jones & Knaack, 2019; Papantoniou, 2022). Among them are issues such as financial stability, data protection, consumer protection, anti-money laundering, and combating the financing of terrorism, cybersecurity and operational risks, the financial system's integrity, and challenges in maintaining infrastructural capacity, as well as the broader risks related to regulatory oversight and adequate capacity to adapt to fast-paced regulatory change. Encouragingly, these global regulatory bodies also acknowledge that measures must be taken to foster an enabling environment for FinTech.

At the national level, the authorities have begun to take action as well. Both horizontal and functional approaches are being undertaken simultaneously to formulate both enabling and regulatory frameworks. The authorities realize and appreciate that dialogue, cooperation and information exchange on international level, as well as global standard and guideline implementation, are fundamental for protecting consumers, ensuring financial stability, and fostering innovation within the wider financial ecosystem. Such enabling approaches also appreciate the absence of a specific outcome or solution and the necessity for continual and agile regulatory dialogue with industry actors, to keep pace with the evolution and growth of FinTech. (Zalan & Toufailey, 2017).

2.12. Future Scope

The enhanced FinTech companies will be the spearheads for the evolution of finance trends. However, like in the past, many of these will be quite ephemeral. Indeed, fully automated banks might be able to recapture quite a bit of territory. The integration of FinTech to disrupt, innovate and craft unparalleled value, bring transformation in financial services for the benefit of the customers and help in bridging the intangible divide between the two disjointed financial worlds each operating in a separate track the physical domain with strong public monopolies aimed at increasing liquidity and the growing controlled and regulated channels where the value is sheer marginal, calls for an integrated strategy and policy for the finding the inclusive regulatory approach to the bare complex of the integration financial system.

For regulated institutions, the potent technology that FinTech companies have access to provide possible asymmetric risks (Li et al., 2020). To fully realize the potential of FinTech companies and consumers, however, may require important on-ramps to a generally more regulated financial system that promotes stability, innovation, and growth. Additionally, regulated banks have the ability to personalize their credit and commerce journeys, guarantee deeper connection with Millennial clients, and maintain their loyalty. Additionally, they can make significant progress in customer service, claims processing, sophisticated pricing algorithms, operational efficiency, and machine learning to enhance customer selection, hedging, and allocations to provide loans to a wide variety of clients with various credit profiles. This also means promoting personal recommendation systems for investments, mortgages, and other goods.

Digital disruption has brought about both opportunity and threat in the traditional banking landscape, with an increasing number of banking activities that can be better executed by either intermediaries or not by banks at all (Hemamalini & Nedumaran, 2025). It is then crucial to identify those areas uplifted by digital technologies in banking. Presently, India is the fourth largest economy in the world and is blessed with two-thirds of its population below the age of 35 and increasing digital capabilities. Although the region's banking sector has achieved significant success in recent years through nationalization, digitization, and privatization, the penetration of banking facilities to the Eastern Indian population has not gained similar attention. The penetration and adoption of FinTech in the banking system can ensure equal or fair access to facilities at both the customer level and the business level. It also helps in including the excluded formal banking system in India (Anand & Mantrala, 2019).

The 1995 phase of browser-based data exchange using the internet has facilitated many customer services in banking. Periodic innovation and data interchange within financial institutions by using mobile devices and internet platforms were regarded as the first phase of financial technology back in 1999 (George & Anil, 2025). The second diffusion phase, financial intermediation and online transaction execution, witnessed FinTech as the initiator of financial products and services. Customer interfaces as innovations in the banking industry have gained momentum. Finally, from 2011 to 2024, constant innovation in trading and alternative business models, FinTech brought a more significant impact. Furthermore, the exponential growth of investment and the entry of non-financial start-ups have raised both internal and external questions in the banking sector (Bonini & Capizzi, 2019). Startup innovation and FinTech-enabled applications in banking can help the scope of Core Banking Facilities and the breadth of its responsibilities, such as designing, applying, maintaining, and procuring new software and services (Murinde, Rizopoulos & Zachariadis, 2019; Kalai & Toukabri, 2024). Additionally, they provide continuous support to Banking Correspondents based local business unions within one frame of service infrastructure.

3. Discussion and Conclusion

The present paper attempts to look into the FinTech services being adopted increasingly in the banking sector of Eastern India, a highly populated and economically laggard part of the country. The first stage process mainly resulted in identification of banks using FinTech in their operations. The next stage attempted to look further into customer satisfaction with respect to the services they experienced. In the last stage, efforts were made to understand the perception of the managerial level operated with respect to the services and the satisfaction levels of the customers together with how they are tackling the challenges associated with their real-time market competition operating in the remote areas. The study has implications for strategy formulation of any bank within the geographical limitations. While firms might use a market positioning at the regional level, at times, they should also be able to adapt their strategies to capture emergent opportunities and succeed in their business expansion. Therefore, it is paramount for banks to pursue continuous innovation that is tailored to consumer choice. There is a need for banks to invest in human resource to better understand FinTech technologies.

Banks of the future will maintain the balance between digital customer service channels and physical bank branches. The banking industry in the Eastern region of India is possibly the most investigated industry that has contributed largely towards controlling the economy of such areas. It is a common assumption that as metro cities are witnessing advanced banking facilities with exclusive digital transactions being facilitated for the customers, banks will gradually adopt these facilities. Industry pressure, customer regulations, or competitive pressures are expected to drive banks to adopt such sophisticated services within a few years. It is well accepted that the market for banking services in a loosely governed environment adopts new technology very slowly, considerably later than in the advanced manufacturing and service industries. However, a good balance between maintaining existing services and providing FinTech offered by banks might be more able to support growth in the long run. The current analysis is devoted to bridging this gap in understanding by identifying and analyzing bank motives for the adoption of FinTech in the highly differentiated banking market and assessing customer and managerial reactions, before using the analysis to draw conclusions about how the business model of the future resilient bank should adapt to trends in bank service.

The findings are aligned with DOI theory in the banking sector. Previous research studies on DOI have not observed the stages and nature of rejection explicitly in the banking sector, also in the finance context in Eastern India. Thus, this study contributes to the literature on DOI and Fintech adoption in India in the banking sector by identifying the possible different stages of adoption and rejection in the early adopting context. Among the study contributions, a new insight is added about the limiting curves of DOI. Practically, the adoption curve indicates a gradually declining adoption with the loss of signifiers and with decreasing frequency of use and observable benefits. The limiting curve helps the bankers to see whether customer rejection will be steep or gradual, and accordingly strategize for the near future. Acknowledging this is a pivotal contribution that follows the DOI theory and develops the same through intention and adoption.

3.1. Discussion

The level of technology readiness among banking practitioners and users in Eastern India varies significantly, largely due to regional disparities. Urban practitioners and users generally exhibit higher familiarity and comfort with FinTech solutions, driven by better access to digital infrastructure and exposure to advanced technologies. Conversely, rural practitioners face challenges stemming from limited access to reliable internet services, inadequate training, and lower digital literacy. Similarly, users in rural areas are often hesitant to adopt FinTech due to a lack of awareness and trust in digital solutions. This disparity highlights the critical need for targeted initiatives to bridge the digital divide and enhance readiness across all regions.

Most traditional banks in eastern part of India face young challenges in the enhancement of perceived ease of use (PEOU) and perceived usefulness (PU) U of the FinTech solutions. Legacy systems have very little interoperability with the new instalments of FinTech making it challenging to incorporate them within regular operations of the organization. It is common for many users but most especially low users of such digital devices' applications, to find the application very complex in design hence ineffective and appealing. Further, the health of the practitioners and the users who intend to these solutions is compromised by safety and privacy issues of information concerning the users. To overcome these obstacles, strong marketing forces should be channeled into reassuring ergonomic designs of the interface and adopting strong measures against the cause of the issues altogether.

Adoption of FinTech however is not solely determined by a technological product. Trust in technology, perceived benefits, and ownership of devices that access digital tools also influence user attitude and acceptance. People in the rural and semi urban society have negative impressions towards the mobile technology and its application because of fear of the unknown. The fear is bought about by limited knowledge regarding some of the dominating factors presented by FinTech that includes ease of use, speed of transactions and low rates of commission. Conversely, good things about technology also seem to work and can assist in improving other areas such as filling in details effortlessly when enrolling into advantageous FinTech solutions.

Enhancing the intention of both customers and employees towards FinTech adoption requires a multifaceted approach. For customers, financial incentives like reduced transaction fees for digital payments can encourage initial adoption. Gamification techniques, such as rewards for completing specific digital transactions, can make the process engaging and enjoyable. For employees, comprehensive training programs focusing on the operational benefits and practical applications of FinTech can help reduce resistance and increase confidence in using new tools. Additionally, banks can partner with FinTech startups to offer innovative, user-friendly solutions that cater to tech-savvy customers. Such strategies can significantly boost adoption rates and ensure a smoother transition to digital banking.

3.1. Implications for Policy and Practice

The obstacles to FinTech adoption for existing banking organizations have been the least studied aspect in the Indian context. Addressing some of these issues would require policy interventions. For instance, there need to be changes in policy to familiarize rural populations with these technologies. The use of these technologies is not the barrier; creating familiarity is the barrier. It is argued that policy should serve the public, but it must be shaped through informed debate that takes into account the particular circumstances of FinTech adoption, and our data and approach can support a better understanding of this process in India. We have found that disagreement influences decisions. Thus, through policies, inserting token financial welfare in exchange for data disruption is not beneficial, creates harm, and falsely serves the financial growth target.

Equitable distribution of FinTech services necessitates the construction of supporting digital infrastructure. To close the digital gap, expansion of internet connectivity highways into the remote regions is vital. In addition, digital inclusion may be accelerated by government-sponsored campaigns that foster user-friendly FinTech tools. Balanced Indirect intervention is necessary for FinTech proliferation. Well defined rules on data compliance, privacy, cybersecurity, and user control foster innovation and trust, encouraging banks to innovate. FinTech policymakers should craft designs for their frameworks that foster seamless integrations into the core of banking operations. Innovation and user-oriented service improved Innovation and user-oriented service improved by policy-makers collaborative designer frameworks with tax reduction and grants, tax reduction and grants designed for collaborative projects. This enhances the innovation partnership between institutions and emergent FinTech policymakers.

3.2. Recommendations for Future Research

While this study has attempted to decipher the complexities of the adoption of financial technology by banks in eastern India, there are still a plethora of factors that could be influencing organizational and customer adoption of FinTech tools in ways that are yet unknown and unexplored. In this regard, the researchers list a few of the limitations of the paper and offer thoughts on future research. It should be underscored that some limitations of any study offer more opportunities for the expansion of our understanding of the issues raised in the study. The study can be seen as the starting point of an engaging discussion. The research paves the way for advancements in the innovative concepts of the combination of technology and finance within the Indian financial landscape. As a result, the present work consists of novelty in terms of the development of a model-based estimation of predictions in the context of the emerging field of FinTech developments in a geographical zone such as the eastern Indian states, with a special focus on public sector banks.

FinTech adoption by traditional banks has been a prominent occurrence in Eastern India, and we have briefly summarized the status and likely future of FinTech in this region. Although there has been significant technological disruption, changing customer behavior suggests that recent technological developments have brought with them significant potential to overcome or minimize the associated difficulties. However, the bulk of the respondents in this study are from the private sector, with the public sector still getting a grip on the situation. Customer needs have not evolved as rapidly as in the private sector. Most respondents come from older firms with a stronger grounding, and it is much easier for those in a stronger financial situation to adapt situations to suit their own needs. The findings of the study further explain that a robust illustration of FinTech's influence reveals a transformation of its services across the different banking divisions and the financial inclusion of individual customers.

FinTech is creating positive change in Eastern India's banking sector. Adaptable financial services, operational efficiency, and accessibility improvements are positive changes FinTech can provide. On the other hand, obstacles such as technologically unprepared users, resistance, and systemic barriers must all be surmounted. The widespread changes FinTech can provide, Digital literacy initiatives, infrastructure improvements, and trust-building strategies, as well as other tailored strategies, must be implemented. Innovative and inclusive approaches must be supported in collaborative efforts between policymakers and banking institutions. Eastern India can fully capture the benefits of having a FinTech future by implementing user-centered models, collaborating with FinTech start-ups, advocating for loosened regulations, and further researching and planning strategically to address obstacles. Eastern India requires additional strategy and research to be digitally transformed and to benefit from the positive changes FinTech can provide.

Financial inclusivity can be fostered through digital innovation in the sector. There is also the promising potential of engaging non-banking firms as small finance and payments banks to serve the unbanked. In a partnership, banks can use FinTech to solve the scaling problem in value chain functions, while also providing the end user a seamless, flexible, and agile customer experience. Small payments banks can further enhance and develop their functional know-how with the technology that willing banks can tag on. There is a pressing need in India to integrate the expertise and capabilities of smaller banks, FinTech, partner companies, and seamless technology with traditional banking for regulation alignment.

3.3. Conclusion

The adoption of FinTech in Eastern India's banking sector presents immense opportunities for revolutionizing financial services, improving accessibility, and enhancing operational efficiency. However, significant challenges, such as uneven technological readiness, user resistance, and systemic barriers, must be addressed. Tailored interventions, including digital literacy campaigns, infrastructure development, and trust-building measures, are

essential for driving widespread FinTech adoption. Policymakers and banking institutions must collaborate to create an enabling environment that supports innovation and inclusivity. By leveraging user-centric strategies, fostering partnerships with FinTech startups, and encouraging regulatory clarity, Eastern India can lead the way in embracing a FinTech-driven future. Further research and strategic policymaking will ensure that the region maximizes the benefits of this digital transformation while addressing its inherent challenges.

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Declarations

Data Availability Statement

The data is confidential, but upon request can be disclosed.

Ethics Approval Statement

Not applicable

Patient Consent Statement

Not applicable

Permission to reproduce material from other sources

Not applicable

Clinical trial registration

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Declaration of Conflicting Interest

The authors declare no potential conflict of interest in the research work, authorship or further publishing of the article is concerned.

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