Fintech Applications in Banking and Financial Services Industry in India..

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1.0 Introduction

Fintech is an acronym or one word for financial technologies and describes the synergistic combination of finance and technology. It is used particularly by Banks and Financial services organizations to conduct their business operations more efficiently and provide better financial services to their customers. It may take the shape of software or an App that enables businesses to provide technologically sophisticated and contactless services to their customers by disrupting established financial transaction processes. Fintechs, by easing complicated financial decision-making have dramatically altered the banking and financial services industry.

Financial Technologies have transformed banking and financial services operations worldwide over the last decade. It has simplified the customer's and banking authorities' lives significantly. When we discuss technology, we are referring to online transactions, internet banking, banking applications, and online stock trading, among other things. No matter how much data there is, you can't possibly overstate the impact it has in today's economy. There is enough of data at our disposal — anything from our mobile phone activity, social media usage, internet browsing, e-commerce transactions, and more. Although big data and data science have been used to bring about change in the banking, big data applications, and financial services sectors, these businesses have had particularly positive results in implementing these changes.

Fintech is being used for a variety of important financial functions such as digital payments, investing, and wealth management, as well as lending and loan repayment, trading, and personal banking..Personalization, integration, authentication, and data tracking and analysis are the functional elements of fintech apps.

Over the past five years, India's Banking and Financial Services Industry (BFSI) has seen a fintech revolution. Banks and financial services organizations in India have been growing in recent years as a result of the adoption of new financial technologies (fintech), which have increased the transparency and efficiency of business operations while also increasing the risks associated with these new technologies.

2.0 Objectives of the study

The study has the following objectives:
a)To review briefly the most used financial technologies in BFSI and its business applications.
b) To study the impact, opportunities and challenges of financial technologies for BFSI.
c) To study the experiences of leading Indian Banks and Financial Services organizations in respect of adoption of financial technologies.

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3. Financial Technologies and its applications in BFSI

A brief description of some of the most used financial technologies and their applications in BFSI is presented below:

3.1 Machine Learning (ML)and Artificial Intelligence (AI)

Machine learning (ML) and Artificial intelligence (AI) are complementary branches of computer science. These two technologies are the most popular for developing intelligent systems.

AI creates a computer system capable of simulating human intelligence, which is defined as "a thinking power created by humans." Hence, the "Artificial intelligence system does not require to be pre-programmed and use such algorithms which can work with their own intelligence. It involves machine learning algorithms such as Reinforcement learning algorithm and deep learning neural networks". AI empowers banks to automate processes for individualized and contactless customer experiences, AI software capabilities include – Credit scoring,Payment Exceptions, Fraud Detection, Collections Optimization, Customer Engagement & Cross Selling, Robo-Advisor for wealth management, Help Desk and Regulatory compliance.

Machine Learning (ML) is the process of deriving knowledge from data. It is a subset of artificial intelligence; machine learning is concerned with creating systems that can access pools of data and change their settings automatically to enhance user experiences. Machine learning is more accurate at extracting insights and producing predictions when large quantities of data are fed into the system.

Asset management, risk assessment, credit scoring, loan approvals, and fraud detection, as well as automating stock trading operations and offering financial advice services to investors, all use machine learning. The most critical use of machine learning in banking is KNOW YOUR CUSTOMER [KYC]. Banks are using machine learning to do market research and improve loan approval procedures. Additionally, they are using machine learning to optimize contact center operations.

3.2 Blockchain

Blockchain technology is quickly gaining traction in the financial industry, owing to its ability to securely store transaction records and other sensitive data. When Blockchain technology is utilized, each transaction is encrypted, and the chances of a successful hack are slim. Additionally, Blockchain technology serves as the foundation for a number of crypto currencies.

Because Blockchain technology does not allow for the modification or deletion of any transaction after it has been verified, any errors must be rectified via another operation.

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Blockchain technology is used by stock trading applications to monitor the entire lifetime of a financial transaction. They provide cost-effective safe financial products and services that are both functionally and technologically advanced and secure. India's largest banks are using this technology to finance foreign commerce. Banks are using blockchain technology for a variety of purposes, including customer identification, anti-money laundering, cross-border remittance, digital currency (BITCOIN), and trade finance.

3,3. Data Analytics and Big Data

Banks and financial services companies place a premium on data from consumers and markets. Large datasets are used to extract information about consumers' preferences, spending habits, and investment behavior. These findings are then applied to the development of predictive analytics, a process that involves using data and a mathematical algorithm to make predictions about how consumers will behave in the future. Additionally, the gathered data aids in the development of marketing tactics and fraud detection systems.

3.4 Algorithmic trading

Algorithmic trading is a term that refers to the practice of using algorithms to make more informed trading choices. Typically, traders use mathematical models that continuously monitor company news and trading activity for any variables that may cause share prices to increase or decrease. The model comes pre-programmed with instructions on different aspects – such as time, price, quantity, and other variables – for automatically making trades without the trader's active participation.

In comparison to human traders, algorithmic trading can evaluate huge amounts of data concurrently and therefore execute thousands of transactions each day. Machine learning enables traders to make quick choices, giving them an edge over the market average.

3.5 Fraud detection and prevention

Fraud is a significant issue for banks and financial services companies, accounting for billions of dollars in annual losses. Financial institutions tend to store an abundance of information on the internet, which increases the risk of a security breach. Fraud in the financial industry is increasingly regarded as a threat to vital data because of the advancements in technology.

Prior to fraud detection systems, a set of criteria were designed that criminal were able to easily avoid. Machines are widely used in companies nowadays because the vast majority utilize machine learning to identify and thwart illicit financial activity. Machine learning takes place when large databases are scoured for any anomalies, and the results are sent to security professionals so that additional investigations may be conducted.

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3.6 Portfolio management (Robo-advisors)

Robo-advisors are internet-based applications that use machine learning. Robo-advisers are investment management companies that employ algorithms to help their customers maximize the returns on their investments by shifting the right percentage of their assets to different assets. They make it easier for all age groups to access low-cost investment opportunities with very little effort on their side.

3.7 Loan underwriting

Companies in the banking and insurance industries have access to millions of customer records, which may be used to train machine learning models to automate the underwriting process. Machine learning algorithms can make fast underwriting and credit scoring judgments, saving businesses both time and financial resources that would otherwise be spent on people.

3.8 Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is a term that refers to the practice of delegating manual, repetitive activities to robots rather than people in order to simplify financial institution processes. The most widely used RPA applications in finance are as follows:

- Data gathering and statistics
- Communication and marketing through e-mails and chatbots
- Transaction management
- Management of regulatory compliance

3.9 Mobile Payments

Mobile payment applications and gateways are a popular use of fintech. Using these applications, consumers may do financial transactions without physically visiting a bank. For instance, Indian businesses such as Paytm, GooglePay, and PhonePe enable consumers to send and receive money through mobile devices with cheap transaction costs.

3.10 Insuretech

Insuretech is a term that describes the use of technology to insurance concepts, which gives companies the ability to provide tailored insurance services and data security. Insuretech offers an online method of filing claims and a policy management procedure that helps to simplify the insurance process.

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3.11. Regtech

Regtech is focused on automating financial institutions' compliance processes, which are often known as the institutions' regulations. By administering vast quantities of data, such as transaction records and compliance papers, such as corporate tax filings, in a timely and cost-effective manner, it enables the administration of enormous quantities of data, like transaction records and compliance papers, without sacrificing timeliness or cost.

4.0 Fintech: Impact, Opportunities and Challenges for BFSI

The rising prominence of Fintech (or financial technology) applications has a dramatic effect on the banking and finance sectors in many ways. The categories of fintech applications are: Digital payments, creating long-term financial plans and managing wealth, Lending/Loan, Trading, Retirement banking for individual investors and InsureTech. The advancements in Fintech have the potential to transform the character of businesses, allowing them to interact with customers and solve the problem of financial inclusion. You should be embracing Fintech culture, as it will be the full-fledged future of the Banking and Financial Industry and the face of modernity.

The revolution it set in motion has had a profound impact on traditional banking and financial services sectors in terms of operations. Originally used for backend services, it is currently applied in many additional applications such as online payments, mobile payments, fund management, and stock trading. We can say that in a nutshell, it has changed the financial ecosystem and transformed the basic process of payment methods via the use of digital technology.

The demand for digital currency-based payments has been surpassed by the demand for multi-currency digital payments. Furthermore, it is the norm for peer-to-peer financing rather than through the application process at a bank. Finally, insurance claims can be completed in a matter of minutes from one's home.

In order to compete and retain customers, financial institutions are using digital data digitalization, crypto currency, and artificial intelligence. Thanks to the incorporation of Fintech apps, all of this has become a reality.

4.1 Financial applications of fintech: Types:

• Electronic Payments

Nowadays, consumers rely on mobile wallets rather than credit cards. Individuals may use digital banking to transfer money without utilizing conventional banks and to process payments more efficiently.

• Wealth Management and Investment

In addition to consolidating assets into one place, investment solutions allow users to do portfolio administration from any location through a central management window.

Data analysis tools may improve automation, especially in asset rebalancing. Systems with built-in bots to assist clients on asset management and investment are implemented as cloud-based platforms with accompanying bots.

• Lending/Loan

Individuals worldwide may now apply for loans using their mobile phones. Credits are being expanded to non-affordable groups as a result of new data points and improved risk models.

Additionally, consumers may get credit reports several times each year without disclosing their credit score. This significantly increases the transparency of the loan industry's backend.

With the advent of online trading apps, anybody with an internet connection may now trade in the market and evaluate risk in real time. This level of accessibility has afforded more individuals than ever the opportunity to trade in the markets.

• Personal Banking

Today's customers may now manage their money on the cloud. Numerous online wallets and profiles to handle services are now being developed in this neighborhood, which will lead to a more comfortable and faster user experience, which aids in the global digitization..

Additionally, insurance firms are using digital technologies to enhance the client experience. Users may now purchase additional services and submit claims straight from the app, bypassing the previously laborious procedure..

4.2 Fintech Applications Functional Aspects:

• Personalization

Financial apps may now better understand their customers' needs and aspirations via the use of artificial intelligence and machine learning. Finding a method to customize a user's desire for financial services makes transactions more pleasant.

• Integration

When referring to Fintech apps, it is possible to integrate or synchronize with several systems or across multiple platforms.

Crowd sourcing, mobile payment processing, and financial resource management are important for everyone, no matter their industry.

Sharing a same setup across several platforms provides a more consistent user experience.

• Authentication

Because money is such a sensitive subject, we need apps that are both trustworthy and secure. When consumers see something new that has strong security features, they'll hesitate to utilize it. The most secure way of securing digital accounts is via two-factor authentication.

Two-factor authentication is frequently used for these types of applications. In order to offer verifiable identity verification, third-party services such as Google Authenticator, Digi Pass, and others may send an SMS message to the user's cellphone or install a unique application on the user's smartphone. They are in total control of the account's access using this method.

• Monitoring and analysis of data

While they may use several Fintech apps, users want to be able to keep an eye on and analyze their financial activity and transaction history, regardless of which one they use. No longer do people have to track every transaction they do, since there are software solutions that do that for them.

Information gathered on one dashboard with graphics allows users to understand changes in their financial habits, as trustworthy insights are provided.

4.3 Fintech Applications Challenges

Despite the growth of Fintech companies, there are many complicated problems that these organizations should be aware of.

• Protection of Personal Information

Every financial institution is trying to keep their data safe when they make it available online since many financial technology companies use Blockchain technology to aid companies with data protection.

More and more new companies are arising every day, and that requires Blockchain technology to search for the most effective solutions:

- Increasing Customer Base
  Fintech firms are very effective at raising capital. They continue to have difficulties acquiring new clients as each new bank develops its own Fintech app to streamline

operations and reduce reliance on others. To attract new clients, financial institutions must use Fintech technology such as a mobile application.

- Inadequate knowledge

The global community tends to believe that on the basis of Fintech companies and not prime time television shows, people rely on one other. With fintech disruption, financial businesses are at risk of destabilization.

Until more customers learn about Fintech, errors will hinder the full potential of Fintech businesses.

- Blockchain technology adoption

It is essential to ensure data security and fight cybercrime using blockchain technology. Additionally, when it comes to data from the financial industry, security is just one of the many functions which preserves Blockchain and also provides customers with a wide variety of investment options with complete trust. Industry-wide adoption of the Blockchain is considered to be challenging.

4.3 Challenges banks may have while adopting financial technologies:

While this technology has many advantages, it may also contribute to the perpetuation of harmful prejudices. Real-world instances of this kind of prejudice infiltrating society and wreaking havoc on women and minorities have already happened on a large scale.

India is the world's second-largest nation by population. The country's economy is primarily dependent on a strong financial infrastructure that contributes to the development of each industry. Indian banks are aggressively capitalizing on new technology, owing to the financial industry's strict regulation. It's unsurprising that artificial intelligence is paving the way for the country's financial institutions, identifying normal human behavior, lowering operating expenses, and increasing efficiency. Artificial intelligence is already having a significant effect on human existence, changing almost every aspect of how we live and work.

With rising consumer expectations and a commitment to perform on a consistent basis, financial services companies are integrating artificial intelligence technologies into their banking operations. Artificial intelligence has the potential to detect frauds, mitigate uncertain risks, and help manage regulatory compliance.

The following are likely the challenges banks could come across while expanding their services in the fintech industry:

1. It is very difficult to alter merchants' and users' conservative attitudes about daily cash transactions. At this age, the majority of elderly people have been doing these transactions in

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cash for a long period of time, and it will take time to break their old habits and expose them to new channels.

2. One of the possible risks associated with technology use is the occurrence of various scams resulting in the loss of money during online transactions. As a result, businesses must work diligently to enhance infrastructure and become more consumer-friendly.

3. As is the case with any business, earning investors' confidence in the Fintech sector is very tough these days. Obtaining the necessary seed money and other investments on time is becoming more challenging, which will have a detrimental impact on operations and functioning.

4. Access to FinTech services is unequal. Despite having the world's second biggest Internet user base, access to the Internet remains skewed toward urban, male, and wealthy sectors of the population. The internet marketplace lacks trust, and it takes an average user three to four months to complete their first online purchase. While the majority of consumers do product research online, they prefer to make subsequent offline purchases.

5.0 The Fintech Experiences of BFSI in India

The new wave of advanced financial technologies is transforming the Indian banking and financial services system to a cashless society and banking an unbanked nation by creating powerful solutions

Tech-startups into financial services known as 'Fintechs' in particular is disrupting the entire landscape by venturing into banking mainly venturing into widely different segments like payments, loans, insurance, remittances, etc. Indian fintech companies like Paytm, Zerodha, GooglePay, PhonePe etc. are a few examples of successful fintech companies leading the incumbents towards the path of the digital revolution with collaborations along with them.

India has one of the largest unbanked populations in the world. The Fintech industry in India has been striving to develop innovative technologies and help unbanked people to gain financial literacy and improve the penetration of financial services in India.

The Government of India along with its regulatory body Reserve Bank of India and its subsidiaries like IDBRT introduced initiatives like NPCI, Jan DhanYojana, JAM Trinity, Aadhar, etc. with the objective of providing infrastructure to the whole Indian banking system for physical and electronic payment and settlement systems. These initiatives further acted as catalysts in the emergence of fintechs which have also helped the unbanked population to initiate digital payments and various transactions only within a few minutes. Also, the data explosion in India which was led by cheap data and mobile adoption further created scope for new technological models to establish themselves in the convenience of people.

The current Indian Retail banking industry has adapted the following advanced financial technologies:

The Indian banks are shifting their focus to Blockchain and AI technologies. In fact, these two technologies are driving the Indian fintech revolution in the BFSI sector.

- *Improved service: A conventional bank primarily secures a customer's loyalty by providing a variety of services that raise switching costs. Specialist fintech companies, which need confidence from customers and the introduction of clients via referrals, may exist without this luxury. Many fintech companies note the importance of improving customer service in their businesses' success.*
- *Improved Branding: The fintech industry is renewing the legacy services' branding by including people with nontraditional banking backgrounds. Boring tasks such as budgeting have been made more enjoyable using modern marketing methods such as gamification.*
- *Lower prices: In addition to not being regulated as a deposit-taking institution, operating under freedom from government regulation, and getting venture capital financing, fintech firms may be able to draw in customers by offering lower pricing.*

Fintech's function as a back-end participant in retail banking has mostly been to acquire customers, verify products, gather feedback, and gain time to improve the back-end of financial transactions. While banks have adopted tech-savvy processes, their exposure to fintech risks remains considerable.

ICICI Bank is one of India's major private banks, offering a range of financial products and services to retail, SME, and corporate clients.

Technologies adopted by ICICI Bank:

1. Blockchain: ICICI Bank has completed a pilot project in cross-border transfers with Dubai's biggest bank, Emirates NBD. The time needed to settle cross-border remittances has been lowered from two days to a few minutes via the use of blockchain technology.

2. Money Coach: ICICI Bank's sophisticated Robo adviser is the country's first automated and robotics-based financial advice solution for clients. It is a financial management tool for individuals that assists them in aiding and reaching financial objectives.

3. ipal:- It is a multi-channel chatbot that can be accessed through online banking, smartphone, and so on. It is an artificial intelligence-powered virtual financial assistant that is accessible to customers at any time and from any location through Amazon's Alexa and Google Assistant devices. Additionally, the intelligent bot provides services through the mobile app and website.

4. Big data: ICICI Bank offers real-time credit evaluation of clients using a new Big Data-based algorithm. The algorithm employs an intelligent mix of the customer's financial and digital activity, including credit bureau checks, purchase patterns, and frequency of purchase, to determine the customer's creditworthiness in a matter of seconds.

5. **Machine learning (ML):** ICICI Bank is developing new machine learning (ML) algorithms that use satellite images to determine a farmer's creditworthiness, allowing the bank to provide the necessary services**.**

HDFC Bank

The Housing Development Finance Corporation Limited (HDFC) specializes in offering products like credit cards, finance and insurance, investment banking, etc. The mission of HDFC is to provide world class infrastructure which includes digitalized services and products.

Technologies adopted by HDFC bank:

1. **APIs**: APIs provide the smooth and safe interchange of data between the Bank's systems and those of third parties, enabling us to meet the full range of our clients' financial requirements, including pay, save, borrow, invest, insure, and shop.
2. At HDFC Bank, big data analytics and machine learning help the bank improve its client acquisition, service, and retention. We're using these technologies to improve the intelligence and efficiency of our digital efforts.

   i. WhatsApp Banking: HDFC Bank's official WhatsApp account for customer service, banking, acquisition, and communication; 64 lakh requests processed and ten lakh active users.
   ii. Smart slips: Enable clients to complete cash deposit, withdrawal, and cheque deposit slips through Net Banking and complete the transaction at a banking outlet.

State Bank of India (SBI):

State Bank of India (SBI) is a public sector bank ranked 43rd in the world.

Technologies adopted by SBI bank:

State Bank of India (SBI), the country's biggest bank, leverages artificial intelligence to provide active financial services. Additionally, it hosted a "Code for Bank" hackathon to encourage developers to create solutions for the banking industry that use future technology such as artificial intelligence and blockchain. Private banks such as HDFC Bank and ICICI Bank have already used chatbots to assist clients. Some have even gone so far as to install robots to handle customer care.

SBI has also launched an innovative initiative called the SBI Fintech Innovation Incubation Program (FIIP), which aims to foster creative start-up companies in their quest of becoming scalable and sustainable organizations in the FINTECH space. The overall goal of this initiative is to foster an entrepreneurial spirit and a culture of FINTECH innovation in India.

Cloud computing has historically been critical in addressing these SBI surges. As a result, the bank utilizes both public and private clouds.

Segments in which SBI Bank has ventured with the adoption of financial technologies:

SBI Intelligent Assistant (SIA), an AI-powered intelligent chat assistant, quickly responds to client inquiries and assists them with daily banking activities in the same way as a person would. It is being developed by Payjo, an artificial intelligence-powered banking platform.

SBI's most recent invention is YONO (You Only Need One). A year ago, SBI developed a smartphone app called YONO (You Only Need One) that combines banking services with "lifestyle" purchasing elements, with ambitions to expand it beyond individual consumers to the agricultural and business sectors.

Conclusion

The development and use of financial technologies reshaped the Banking and Financial Services industries in many ways. The variety and breadth of fintech applications accessible today enables individuals to create a culture of banking and investing, as well as a cashless society through digital payments. Fintech has the potential to revolutionize the finance industry by using technology and fostering stronger relationships between merchants and consumers, as well as addressing the issue of financial inclusion. Blockchain, Big Data, AI, machine learning, and a slew of other cutting-edge technology would benefit emerging economies like India.

Bibliography:

https://www.toptal.com/finance/investment-banking-freelancer/fintech-and-banks

https://www.business-standard.com/article/companies/icici-bank-to-buy-stakes-in-two-fintech-companies-for-rs-6-03-crore-121021601344_1.html

https://www.icicibank.com/blogs/banking-innovation.page

https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=19899

https://www.thehansindia.com/technology/tech-news/icici-bank-launches-imobile-pay-app-enters-fintech-space-660604