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A Study on Fostering Innovation Through Blockchain Technology and Fintech Highlighting Next Major Frontiers on Significant Challenges and Major Opportunities Related to Financial Services Industry and Digitalization Aspects

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Abstract:

In the recent decade, India's financial inclusion journey has been amazing, and the government of India has actively encouraged it through the Digital India Movement and the Pradhan Mantri Jan Dhan Yojana. Poverty reduction and tackling the issues of securing a stable income could be crucial in achieving an inclusive society. Information and communication technology is gradually gaining access to the unbanked people and assisting in their integration into the financial sector. Digital technologies are promoting adoption and improving the standard of living for citizens. In this research paper, discussion with respect to the progress that has been made in the field of financial inclusion so far, as well as what lies ahead and how we can use and benefit from digital technology to create a more inclusive society. As a result of digitalization, organizations are being compelled to continuously review and innovate their business models. Particularly in the area of digital innovation, the financial services industry is undergoing significant change. Fintechs (financial technology startups) are known as a driver of these shifts since they produce novel technology-based solutions with user-centered methods to fulfil rising client expectations. Experts also believe that blockchain technology, as an emergent disintermediating digital innovation, will have a significant impact on the financial services industry. Fintechs and blockchain present incumbent enterprises with not only dangers and sources of disruption, but also opportunities for collaboration and innovation. The various challenges that still stand in the way of creating an inclusive society are described in this article. The importance of cooperation and openness among all significant stakeholders is emphasized in our recommendations for addressing the pressing issues and creating an inclusive workplace.

Keywords: Digital India Movement, Digital technologies, Information and communication technology, blockchain technology, digital innovation

Introduction:

Digitalization and technology are bringing about fundamental changes in many aspects of society and inspiring previously unheard-of levels of creativity across a variety of industries. As organizations and their ecosystems become more digitalized, digital innovation is creating issues and forcing established businesses to adapt (Tilson et al. 2010; Yoo et al. 2012). In order to assess the potential and risks of emerging (digital) technologies, incumbents must constantly monitor their development (Bharadwaj et al. 2013). According to a report issued by the World Economic Forum in 2015, more than 10% of global GDP will be processed by blockchain by 2027. As a decentralised data structure, blockchain provides for the immutable, chronological, and transparent storage of transactions in dispersed networks (Lemieux 2016). Without a single central entity controlling the information technology (IT) system and data, the technology brings unique consensus and governance processes, allowing for the distribution of authority across network participants and consumers (Nakamoto 2008). As a result, some experts believe that blockchain will drastically alter or possibly completely eliminate the functions of financial intermediaries (Moritz and Block 2014). Fintechs are projected to play a crucial role in the financial services industry as an innovation driver and a collaboration partner (Christensen 2013; Dapp 2014; Holotiuk et al. 2018; Kröner 2017; Paddags 2017). Fintechs are also generating significant adjustments in the financial services industry's power balance (Barberis and Chishti 2016). The fintech Wirecard, which recently replaced Commerzbank in the coveted German blue-chip stock market index DAX, is a recent example of such a change (Storbeck 2018). The innovator's dilemma is a familiar phenomenon in different industries when formerly successful firms are under pressure from innovative new market entrants (Christensen 2013). However, the way incumbents deal with fintechs and blockchain technology in the financial services business is evolving (Economist Intelligence Unit 2015). Only a few years ago, incumbents saw fintechs and emerging technology as a threat to their businesses. Many incumbents now see these changes as openings for increased innovation and teamwork (Economist Intelligence Unit 2015; Guo and Liang 2016). Several businesses have made encouraging first steps toward leveraging the potential advantages of blockchain technology and fintech partnerships (Fridgen et al. 2018b). Nearly every established financial institution has started one or more of these partnerships globally (Hatami 2018; Juengerkes 2016; Marous 2018; Puschmann 2017). Additionally, in order to create novel solutions and enhance current services, financial institutions have started

blockchain pilot projects or are participants in blockchain consortiums like we. Trade (Lacity 2018). The financial services business has begun to study digitization, according to researchers. The findings back up incumbents' recent strategies (Niemand et al. 2017). Entrepreneurial approaches are critical for incumbents to address uncertainty and challenges (Niemand et al. 2017). According to the study, external knowledge and innovation sources are becoming more crucial for corporate success in an increasingly digital age.

Data analytics, privacy and transparency:

The gathering, processing, and transfer of information are all influenced by information technology. The capacity to apply advanced analytics in financial services has substantially risen as a result of digital technical advancements. While this advancement may lead to better-suited products and services, it also raises the question of whether individual profiling should be limited. This issue has special consequences for consumer protection and privacy in the context of targeted marketing, insurance pricing, and insurance market access. It also raises policy concerns about disadvantaged people's exclusion from loans and other financial services in general. The use of artificial intelligence (AI) in particular necessitates consideration of how such algorithms should be verified and controlled, as well as what influence applying AI-based investment models might have on market valuations and stability. The rising availability and usage of consumer data raises questions about who owns and uses such data, as well as the ramifications for customer privacy. It also raises questions about how much data should be shared in order to improve regulatory and consumer protections. It will be necessary to strike a compromise between the two goals of preserving consumers' privacy and guaranteeing transaction openness.

Structural implications of Fintech innovations:

Developments linked to new digital technologies are affecting several major aspects of the production and distribution of financial products and services. But there are some basic demands that haven't changed beneath these advances, and it's critical to have a clear sense of the "big picture" while attempting to analyse the possible ramifications of Fintech innovations. Financial service providers can undoubtedly design new products and enlist the help of their sales and marketing teams to persuade clients that they 'need' them, but the majority of successful products address an existing demand. Retail customers still need a current account, loans to finance sizeable purchases and investments, financial counseling, and the ability to remit and transfer money in this environment. Corporate clients continue to require stock, debt, mergers and acquisitions, guidance, cash management, and foreign currency transactions, among other services. These fundamental requirements have remained mostly unchanged. What is changing from the viewpoint of end users is how needs are met. In essence, the traditional relationship between customers and financial service providers is changing as a result of new digital technology and related services. Money transfers from financial sources to users' accounts take place through evolving channels. The different components of the financial system — institutions, markets, and infrastructures – combine to guarantee that finite savings are allocated efficiently among competing investment opportunities, so supporting long-term economic growth. Credit allocation, pricing discovery, and payment facilitation are some of the functions that help achieve this goal. These financial intermediation functions enable to connect fund providers and users, allowing for smoother consumption decisions across time and across geographic location.

Block chain Technology:

A distributed ledger known as block chain stores transactions as blocks (groups of transactions that take place at the same time) on networked computers. This includes transactions involving digital currencies or securities. As the chain of blocks gets longer, the ledger gets bigger. A new block of transactions must first pass network validation before being added to the chain. All network transactions are fully known to every computer connected to the network as a result. Bit coin is currently one of the most well-known applications of Block chain technology. This virtual currency's transactions are largely anonymous. Financial institutions interacting with users of this currency face ethical problems because they can't (completely) verify their identities. Such developments may occur in the Indian securities market in the near future, necessitating an understanding of the benefits, dangers, and challenges that such developments may entail.

Crowd funding:

Crowd fundraising is a method of raising debt or equity from a group of investors through an online platform. The Securities and Exchange Board of India (SEBI) published a report that defines crowd funding as "the solicitation of funds (small amounts) from many investors via a web-based platform or social networking site for a specific project, business venture, or social cause." Despite the fact that SEBI published a draught regulation on the matter, the final instructions have yet to be released.

Market provisioning services:

The market is being able to access information and services more quickly and for less money thanks to advancements in computing power. Here are a few of these innovations discussed:

Smart contracts:

Computer protocols known as smart contracts enable contracts to self-execute, enforce, verify, and constrain their performance. Particularly for more specialized contracts, smart contracts in financial services may significantly alter the structure of trade finance or derivatives trading. They may also be connected to robo-advice wealth management services. The establishment of distributed ledger technology could help smart contracts become more widely adopted in financial services.

E-Aggregators:

E-Aggregators allow retail customers to compare the pricing and features of a variety of financial (and non-financial) products, such as standardised insurance, mortgages, and deposit account products, using the internet. They can also be companies that offer services that allow consumers to collect and analyse payment data from several accounts and goods (example-Yodlee). E-aggregators also make switching between providers simple, and they have the potential to become a major distributor of a range of financial products. The Reserve Bank of India has issued guidelines for account aggregators that state that only companies are permitted to conduct account aggregator business, that no company may begin or conduct account aggregator business without first obtaining a certificate of registration from the RBI, and that any company wishing to register as a Non-Banking Financial Company - Account Aggregator must have a net owned fund of at least Rs.

Cloud computing:

Cloud-based IT services can provide remote access to a common pool of computing resources that can be implemented fast and inexpensively. Cloud-based services include infrastructure, platform, service, and mobile backend as a service. The utilisation of these services is a critical enabler for new entrants to the financial services industry to get up and running quickly and at a low cost, with easy expansion options as the company grows. Depending on the sort of cloud service used, it may present a number of issues, including the ability of jurisdictional enforcement authorities to properly ensure data security.

Big data:

New sources of information are becoming available as more company activity is digitized. Combining various data sources with improved processing power results in faster, more cost-effective and more thorough analysis for better decision-making. Wider use of increasingly huge datasets, for example, could result in significant advances in credit risk assessments. Financial firms may want to sell aggregated data or bundle it with other products and services to make money.

Artificial Intelligence (AI) & Robotics:

Companies seeking a competitive advantage through AI must consider the consequences of computers that can learn, conduct human interactions, and perform other high-level tasks at an unrivalled scale and speed. They must determine what machines can perform better than humans and vice versa, define complementary roles and responsibilities for each, and modify procedures as needed. AI, for example, frequently necessitates a novel structure with both centralized and decentralised activities, which might be difficult to implement. Finally, businesses must adopt the adaptive and agile ways of working and strategizing that are prevalent among startups and AI pioneers. This strategy may assist all businesses, but it is required for AI-enabled processes, which are constantly learning and adapting for both humans and machines.

Robo advice:

"Robo-advice" refers to the provision of financial advice via automated money management providers, which eliminates the need for human financial advisors while also lowering expenses.

It can provide more options for investors, particularly for low and middle-income clients who may not have access to the bank's wealth management units. Robo Advisors are believed to be in charge of $20 billion in assets under management, and their business is fast expanding. They develop automated portfolio allocation and investment recommendations based on client information and algorithms that are designed to be personalized (to a greater or lesser extent) to the specific client. In the United States, Robo advisers are regulated in the same way as independent advisors who set up offices and meet with customers on a regular basis are. They usually register with the Securities and Exchange Commission in the United States and are termed "fiduciaries," meaning they must put their clients' interests ahead of their own.

E-Trading:

Electronic trading, particularly in fixed income markets, has become an increasingly crucial element of the market landscape. It has allowed automated trading to gain traction in the most liquid market areas. New market participants have evolved as a result of the proliferation of innovative trading venues and protocols, which has been aided by changes in the nature of intermediation. This has had ramifications for the price discovery process as

well as market liquidity. It could also lead to the evolution of market structures from over-the-counter to a framework that allows for all-to-all transactions. The advancement of e-trading platforms aids in the improvement of market order efficiency and the reduction of average trading expenses.

FinTech and its impact on global financial services:

As a result of innovation and technology, traditional financial services have undergone a significant transformation. More than 12,000 startups were established in 2015, with a total of USD 19 billion invested in the FinTech industry. The global market for FinTech software and services is anticipated to reach USD 48 billion by 2023, with a compound annual growth rate of 7.1 percent, according to NASSCOM. Banks are being forced to change their business structures and revenue models as a result of technological advancements. Banks currently engage in a variety of market segments, including payment services, deposit raising, lending, and investment, among others. These are the markets where technical advancements will lead to more high-quality products at reduced rates. If banks do not adopt them quickly enough, competitors' business models may be put under threat. Banks' capacity to benefit from the cross-selling market may be harmed as a result of the loss of customer interaction and fragmentation of the value chain. Apple, Google, and Facebook are examples of global technology firms that efficiently adapt advances and carry technological innovation and new services through financial value chains. By utilising their scale and inventive capabilities, these enterprises supplant existing financial institutions. Technological advancements bring both benefits and dangers. FinTech can improve efficiency and variety in the financial sector by increasing competition. This effect will diminish market concentration and may result in improved services for consumers, especially because new technical procedures are often more user-friendly. This is very important for the Indian banking industry. Furthermore, innovative newcomers encourage older financial institutions to improve their competitiveness and focus more on their consumers. By enhancing the variability between market players' risk profiles, a more diverse financial sector minimizes systemic risk. FinTech not only creates new opportunities for the financial sector, but it also poses possible threats. These include threats to existing market players' profitability as well as cyber-attack threats. IT risk events could evolve into a full-blown systemic crisis as the rise of FinTech leads to more and more IT interdependencies between market players (banks, FinTech, and others) and market infrastructures. The introduction of new FinTech companies has increased the system's complexity while also increasing IT risks for these players, who often lack expertise and experience in managing IT risks.

FinTech innovations, products and technology:

India's FinTech industry may be young, but it is rapidly growing as a result of favorable government policies, a sizable market, and a creative startup ecosystem. The effects of this most recent change in the banking and financial services sector are extensive. FinTech offers the potential to solve challenges that traditional financial institutions confront in India, such as low penetration, limited credit history, and a cash-based transaction economy. If all stakeholders, including regulators, market actors, and investors, work together, the Indian banking and financial services sector might be transformed drastically. FinTech service providers are currently altering how businesses and consumers conduct daily transactions.

Peer-to-Peer (P2P) Lending Services:

These organisations leverage alternative credit models and data sources to provide consumers and businesses with faster and simpler access to cash, as well as online services that connect lenders with borrowers, who might be individuals or enterprises. Lendbox, Faircent, i2iFunding, Chillr, Shiksha Financial, Gyan Dhan, and Market Finance are among examples.

Personal Finance or Retail Investment Services:

Fintech companies are also expanding in response to the need to provide consumers with tailored financial information and services, such as how to save, manage, and invest their personal funds based on their unique requirements. FundsIndia.com, Scripbox, Policy Bazaar, and Bank Bazaar are some examples.

Miscellaneous Software Services:

To increase access to financial products and, consequently, efficiency in daily operations, businesses are offering a range of cloud computing and technology solutions. From online accounting software to specialized digital platforms that link buyers and sellers in specific industries, Fintechs reach is quickly growing at both the macro and micro levels. Several examples include Profit books (online accounting software for non-accountants), Airtime Up (which enables village retailers to perform mobile top-ups), ftcash (which enables SMEs to offer payments and promotions to customers via a mobile-based platform), Store Key, and Humming Bill.

Developments in Block chain Technology in India:

Block chain, an apparently modest data format and a suite of related protocols, has recently piqued the interest of a number of domestic companies and sparked their efforts. IDRBT has taken the lead in investigating the application of BCT to the Indian Banking and Financial Industry by releasing a White Paper that details the technology, concerns, global experiences, and potential areas of adoption in India's financial industry. The Institute has also attempted a Proof-of-Concept (PoC) on the applicability of BCT to a trade finance application with active participation of NPCI, banks, and solution

providers, the details of which are presented in the White Paper, in order to gain first-hand experience with the implementation. The PoC's findings were promising, providing comfort and confidence in BCT's potential to be implemented in the Indian banking industry.

Emerging Regulatory and Supervisory issues in India:

Though the phrase 'FinTech' has been around for a while in the western world, it has only recently become a buzzword in India. Despite this, FinTech has been gaining traction in the country for quite some time. Currently, however, FinTech risks are mostly considered in terms of what is linked with traditional IT systems, such as cyber-security threats. While IT-related risks are undoubtedly multiplied in FinTech, the entire spectrum of issues under the FinTech umbrella, particularly those of regulatory significance, must be addressed as soon as possible. As a result, it is vital to investigate these challenges and sketch out the contours of a suitable regulatory plan. FinTech, on the other hand, crosses multiple activities that are within the purview of various financial sector regulators.

Monitoring framework for new technologies / innovations:

The RBI, as a payment system regulator and supervisor, has served as a catalyst and facilitator for payment system innovation. The Strategic Initiatives - Responsive Regulation and Effective Oversight in the Payment and Settlement System Vision - 2018 also appropriately address this issue. To ensure that laws keep up with technological advancements affecting the payment industry, distributed ledgers, blockchain, and other global technological developments will be monitored and, where necessary, a legal framework will be put in place. Furthermore, the payments eco-system is constantly changing as a result of breakthroughs and innovations, particularly in the field of FinTechs. The Reserve Bank has launched an innovation challenge through the Institute for Development and Research in Banking Technology to give a forum for innovators to demonstrate their models to the industry, particularly in the areas of interest to payment systems and services (IDRBT).

Customer Data Protection (CDP):

FinTech companies rely largely on technology to deliver each and every product to their customers. These companies may gather a variety of personal and sensitive information about customers and then become the owners/custodians of that information. As a result, these entities bear the responsibility for data preservation, confidentiality, integrity, and availability, regardless of whether the data is stored/in transit within them, with customers, or with third-party vendors; the confidentiality of such custodial information should not be compromised under any circumstances, and to this end, appropriate systems and processes across the data/information lifecycle must be put in place by the Fiduciary. Section 43A of the Information Technology Act of 2000 allows a body corporate to be compensated if it fails to follow appropriate security standards and procedures when managing sensitive personal data or information, resulting in wrongful loss to a person. As a result, it may be necessary to underline the need for comprehensive stand-alone data protection legislation in India, taking into account FinTech advances and the risk of personal data falling into the hands of these entrepreneurs.

Incident Response & Management Framework (IRMF):

Clear protocols for responding to cyber problems and a system for dynamically recovering from cyber-attacks are required for FinTech companies. Technical advancement encourages innovation, but it also introduces new threats. At the same time, the regulator's principal responsibility is to protect financial service users and the financial system's stability. In this section, we look at two topics that the regulator should be concerned about: the potential of cyber-attacks and the risks of outsourcing certain traditional bank functions. Companies in the banking and financial industries are obvious targets for cyber-attacks, and the rise of online services that are supposed to be simple and interactive only adds to the risk. In the worst-case scenario, a wave of coordinated strikes might cause a liquidity crunch in the markets, jeopardizing the solvency of sector participants. Regulators, on the other hand, face a challenge in determining how to assess these new risks. There are no historical precedents from which to build realistic scenarios. All regulators can do is adopt a practical approach, outlining credible attack scenarios and verifying the defence systems implemented by digital businesses. The fact that continual financial innovation is constantly offering up new attack opportunities makes this work even more challenging. Regulators may only expect to effectively fulfil their function if they develop in-depth understanding in this field. The outsourcing of certain tasks in the financial transaction processing chain is the second source of risk. Prior to the technology revolution, it was common for banks to do all jobs in the value chain internally, ensuring that all of these tasks were overseen. This is becoming increasingly rare these days, for both established businesses and new market entrants. Cost considerations, for example, have compelled traditional banks to delegate some tasks to unregulated firms.

Conclusion:

Technological advancements aid in the efficiency of the financial system, particularly if they result in increased competition. User-friendliness is frequently improved as a result of new technical procedures. More competition leads to a wider range of providers and products at lower prices, especially when each section of the value chain is competitive. Established financial institutions are compelled to become more competitive and focused on their customers as a result of innovative new entrants, while also providing added value to consumers. Furthermore, competition can benefit the industry's integrity by allowing customers to demand more openness and integrity as a result of having more options. It's worth noting, though, that any discussion of the state of financial innovation can only be a snapshot because the financial services landscape is always changing. This places a greater responsibility on regulators around the world, as they must continually assess the trade-off between efficiency and inclusion on the one hand,

and stability on the other. Such difficulties are best addressed by a dynamic regulatory framework. Because of digital technologies and their applications, interaction costs are substantially reduced, and geographical closeness is less important. For many sorts of financial transactions (e.g. payments), the role of physical sites for providing these tasks, such as bank branches, has decreased significantly, as has their importance as key sources of consumer information (especially at the retail level). This shift in information and some fundamental financial services strikes at the heart of traditional intermediation and, at the very least, jeopardizes incumbent service providers' income from supplying these largely uniform products and services. The economic feasibility of established business models associated to these services becomes highly doubtful in some hypothetical future situations.

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