

Disruptions on India's FinTech landscape: The 5G wave

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Abstract. The emergence of FinTech companies disrupts the banking and financial service industry through its technology-driven services. But with 5G, the 5th generation mobile network, the entire FinTech outlook is disrupted. The 5G technology is expected to create a new FinTech ecosystem in India. The 5G features like enhanced mobile broadband (eMBB), Lower latency and robust security aspects are certain to bring transformation in banking and FinTech industries. 5G's application in different domains offers a 'blue ocean' of new prospects to FinTech companies. 5G technology offers necessary features to enable FinTech companies to bring a massive change in the banking and finance field. As 5G is on the brink of being a next-generation mobile network in India, it is necessary to examine its influence on the FinTech landscape. In this study, the authors have analyzed the effect of 5G on evolving bank technologies, with special focus on FinTech. This study also projects the authors' view on the impact of 5G on FinTech firms' future challenges and prospects.

Keywords: 5G, FinTech, disruption, Banking, Financial services, digitalization.

1 Introduction

5G technology enables the new industrial revolution, *industry 4.0*. A huge ongoing automation is in progress across different sectors. Innovative and life-enhancing business models are emerging and creates disruption in the way business functions. The arrival of 5th generation (5G) telecommunication technology is expected to create new ecosystems of Fintech and digital banking by offering new features and tools. 5G technology is creating new business models in the financial industry and expected to change financial landscape, especially in FinTech. There is a growing attention from the international tech firms to make a way into financial industry. 5G features and its potential applications include: (i). Enhanced Mobile Broadband (eMBB) for virtual reality and improve video conferencing with extreme network speed and processing capability. (ii). Highly reliable and low latency in processing a very large volume of data. (iii) Massive Machine to Machine Communication enabling Internet of Things (IoT) etc., and (iv). Robust security aspects leading to high reliability. Innovation is the need of any business which is all about novel thoughts that produce great value. We are living in the age of digitalization and we are constantly moving in that direction by adopting pioneering technology to ensure more effective and prolific way of life. In the area of Finance too, we are consistently upgrading the products, services, methodology and system with new technology.

The financial sector is one of the largest users of digital technologies. Such innovation and upgradation in Finance through technology is

known as FinTech (Financial Technology). FinTech as a concept developed only in the 21st century. FinTech is the combination of 'Financial Service' and 'Technology'. The adoption of technology in the field of financial services viz., Banking, Share market, Insurance sector, Mortgage loans etc. with database management, analytical tools, and innovative approach. The prominent operators of FinTech are; Banking and Insurance sector, Financial Institutions, Small and Medium Enterprises (SMEs), Start-ups, and individuals. Since 2016, India is actively engaged with FinTech after the demonetization of high denominated currency notes. From then, Unified Payments Interface (UPI) payment technique is highly engrossed by the Government of India. Many start-ups started using innovative technology to make easy and cashless payments. FinTech will play an important role in achieving the cashless economy. [1] stated that the scope of FinTech is huge, as there were 1,400 FinTech firms existed in 2015 with investment of more than \$33 billion.

Digitalization not only minimizes the time and cost but also increases efficiency. The fintech industry has progressed enormously from challenging and team up with traditional banks and has today entered a new era at the front of digital revolution prioritizing technology. The digital revolution has shaped several innovative technologies but none of them had a massive widespread influence than internet and mobile communication technology. These technical revolutions independently have transformed the way we communicate with others, but collectively, they have transformed the entire world. 5G's application

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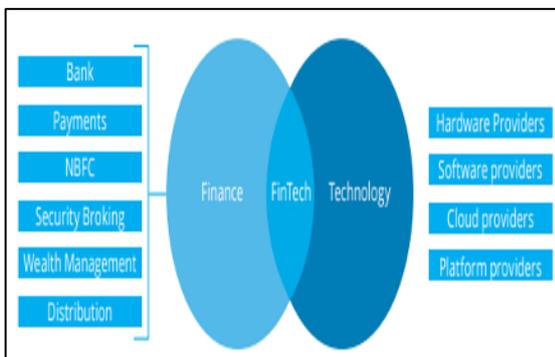
in different domains offers a ‘blue ocean’ of new prospects. [2] referred blue ocean as a rise of an entirely new industry or developments in the prevailing industries that amends the boundaries of competition. The most apparent opportunities from a bank and financial service institution’s viewpoint is the sustained progress of digital banking solutions aimed at each distinct customer. These digital devices and Fintech firms endlessly collect data on each customer [3]. 5G being the next-generation technology is expected to change the role of mobile in society. 5G alone is forecasted to add \$2.2 trillion to the world economy². Improved connectivity, facilitated by 5G technology, shall be a catalyst for economic growth in the Industry 4.0 with a projected economic value of \$13.2 trillion by 2035³.

The mobile-oriented business restructuring is undergoing in banks and financial service firms by functioning meticulously with Fintech providers for providing better services, retaining their current customers, and attracting new or potential ones. As 5G is on the brink of being a next-generation mobile network in India, it is necessary to analyse its effect on the FinTech landscape. In this study, the authors have analysed the effect of 5G on evolving bank technologies, with special focus on FinTech. This study also projects the authors’ views on future challenges and opportunities.

2 Fintech Industry – An Overview

As the name ‘FinTech’ proposes, it is the blend of financial service and technology. FinTech comprises many tools and technological advancements that are way different from traditional banking. In recent years, a vast number of FinTech firms are coming into the market by offering a variety of new financial solutions and services that are in great demand.

Fig.1. Fin Tech



Source: Deloitte International Analysis

FinTech is an application of technology to offer novel and better financial services. Technology has been a crucial facilitator in the digital economy’s expansion. Over the time period, banks and financial institutions in India have gradually and carefully

adopted technology to expand the reach, service and working efficiency with growing market and advancements in technology.

In today’s world, financial institutions have higher significance; and even a minor change makes an enormous impact on the global economy. Although finance as a domain met numerous demanding revolutionary waves over the period, it has succeeded to adopt and endure from those changes. At present, financial institutions and the industry as a whole are witnessing massive change because of FinTech. The consequences of this change are yet to be fully explored and they may bring a huge challenge for different stakeholders viz., policymakers, academicians, service providers, intermediaries, economists and the general public. [4] specified that information technology will inspire the specialized firms which are generating niche markets with superior customized product in order to cater to consumer preferences. Peer-to-Peer (P2P) lending, cryptocurrencies and many other innovations of all segments of an emerging technology-supported personalized financial services. FinTech has come a long way since its evolution and is expected to reach much greater heights in the days to come.

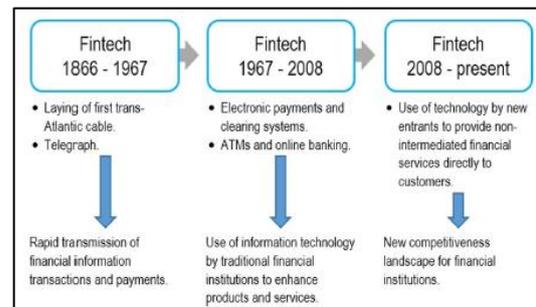


Fig. 2. Phases in Fintech Evolution

Source: Consumers International, 2017

Technology has constantly affected the finance industry with developments thereby altering the way the finance industry functions. For example, the emergence of Automatic Teller Machines (ATM) or Online transactions of money were some of the key innovations in Financial service. It is interesting to know that what makes the current FinTech revolution so special than earlier innovations? First and foremost, the speed at which new innovative financial know-how and technologies are tested is much quicker than earlier. Secondly, the most crucial thing about FinTech revolution is; it is unique, as the change happening is from the external environment (i.e.) new start-up firms and large recognized technology companies are endeavouring to intrude the financial services by presenting

² GSMA report 2018 ‘Study on Socio-Economic Benefits of 5G Services Provided in mmWave Bands’

³ The impact of 5G: Creating new value across industries and society, World Economic Forum report.

innovative products and technologies thereby offering a significant competition in an innovative manner.

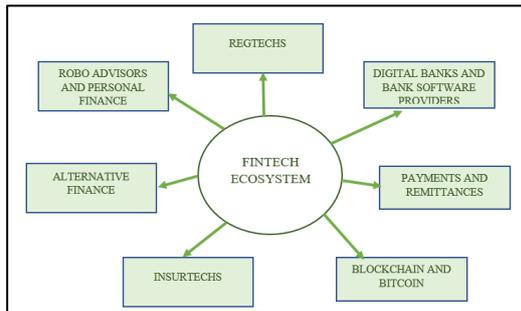


Fig. 3. Fintech Ecosystem

FinTech firms' ecosystem includes various stakeholders, partnering institutions, technology platforms and regulatory compliances. [5] in their book discussed the FinTech revolution to highlight the persistent disruption and to create methods for analyzing flash crashes, hostile high-frequency trading, and other specific facets of the market. According to the IMF, among the low- and middle-income countries, India has grown phenomenally in the number of registered mobile money accounts between 2015 and 2019. India had witnessed 17-fold jump during that period⁴. [6] observed that big strides happened in different fields such as mathematics, big data, computing technology, statistics, econometrics and cryptography have integrated well to make an explosion of FinTech.

3 5G Technology in FinTech

Change in any form is not easy to deal with, particularly when it happens in banking and financial services, as the process involved and the number of stakeholders is very high. In a digital era, the speed and ability of data transfer along with compatibility of data are vital for FinTech to prosper. The 5G technology just offers those features to enable FinTech companies to bring a massive change in the banking industry. Rapid internet speed has become imperative for improved financial transactions. 5G also has an edge at handling heavy load compared to the previous technologies. 5G will certainly help the FinTech players to bridge the gap between the existing reality and customer expectation by offering safer and faster service to end-users. 5G mobile technology services also support FinTech companies to provide affordable loans by refining the lenders' assessment of borrowers based on financial soundness. 5G is expected to disturb information security, machine learning, IoT, data management system etc. which

are used extensively by FinTech companies. In the Banking and Financial Services industry (BFSI), 5G will be mainly useful in making communications more secured, processing real-time information and improving customer experience. 5G services have the potential to connect numerous devices, minimize power consumption, reduce latency, offer higher security, and better support for augmented/virtual reality experience. It enables to manage millions of IOT devices. 5G mobile technology will empower the extensive implementation of blockchain, artificial intelligence, machine learning and quantum computing. The Organization for Economic Cooperation and Development (OCED) predicts an upsurge in world GDP, higher employment and digitalization with quick 5G penetration.

Being new and technology-driven company doesn't assure a new player an easy journey especially when it comes to legal compliance. 5G along with RegTech will help the financial institutions to better adhere to the legal compliances, and this is more important for the banks and institutions operating at the global level as they have to comply with numerous legal aspects and norms. India is having a good 4G connectivity which leads to the highest mobile data consumption in the world, offers a great potential for 5G technology implementation. According to Ericsson, India has the world's highest data usage per smartphone at an average of 9.8GB per month and this is expected to double to 18GB by 2024. As the financial institutions seemingly leverage the value of data, the method in which the data is gathered, warehoused and deployed are sprouting to maintain pace with ever-growing customer expectation and legal requirements. The benefits of 5G in banking include; enriched ATM facility with features like virtual reality in order to directly interact with the bank, enables richer customer experience with lower cost, Risk prevention, complying with regulatory norms. 5G technology along with blockchain and other revolutions will affect different areas in finance like capital markets, cross-border payments, automated payments, mobile banking etc. 5G provides an extensive platform for Fintech firms to innovate. Australian telecommunication providers have realized speeds up to 1200 Mbps (1.2 Gbps) in 5G testing⁵ which is significantly higher than 20 Mbps to 50mbps in 4G technology. No doubt, if implemented, 5G will immensely improve the user experience and real-time delivery of services. Startups in Finance are providing computerized automatic guidance, touchless payments, and many other services that brings many social and economic benefits which includes lesser prices and better

⁴ Mobile money a/cs: IMF says 17-fold jump in 4 years in India, Financial express dated 11.11.2020 – retrieved on 06.12.2020.

⁵ The Future of Digital banking, KPMG, 2019.

access to credit. Purely from the perspective of product categorization, fintech's role can be split into those providing credit, payments process, delivering advice, asset management and legal compliance. Fintech being a relatively new category of companies, the business models are based on digital products. In spite of intensive competition from large technology firms, the chief driving force of fintech innovation has come from numerous technology-based startups attracting investments in billions of dollars each year. India is doing fairly well in adopting FinTech compared to most other nations.

The destructive impact of the global financial crisis in 2008 has created every reason to suspect the purpose and working ethics of financial services firms across the globe. Even big financial institutions all across the world suffered the worst from both economic as well as from public trust perspectives. The failure of big firms to meet the expectations of different stakeholders has opened the doors for a small-scale innovative technology-based financial institution. The substitute to existing banks and financial institutions emerged with small, controllable, and transparent features. Therefore, it is judicious to express that the global economic and financial crisis in 2008 signified the landmark to trigger fintech 3.0 phase. As Fintech firms move towards 5G service, the likelihoods of forming truly universal financial services turn out to be a greater reality. International firms view 5G as a disruptive technology of this era. The leading global airplane manufacturing firm, Boeing has already created a tech-based ecosystem for its commercial planes [7]. Many international banks like JPMorgan Chase, Bank of America, Citigroup and leading FinTech companies like, Ant Financial, Paypal, Qudian, etc. are actively penetrating 5G technology in their ecosystem to reap the benefit out of it.

Table 1. FinTech Country Ranking

Global Fintech Rank	Change from Startup Rank	Country	Total Score
1	▶ ±0	United States	31.789
2	▶ ±0	United Kingdom	23.262
3	▲ +18	Singapore	19.176
4	▲ +14	Lithuania	17.343
5	▲ +3	Switzerland	16.018
6	▶ ±0	The Netherlands	14.464
7	▶ ±0	Sweden	14.272
8	▼ -3	Australia	13.555
9	▼ -6	Canada	13.322
10	▲ +3	Estonia	13.303
11	▼ -2	Germany	12.787
12	▼ -8	Israel	12.771
13	▼ -3	Spain	12.372
14	▼ -2	Finland	12.110
15	▲ +2	India	12.024

Source: www.findexable.com

FinTech firms such as GoCardless, Transferwire, Currency cloud etc are started disrupting the Forex market by competing aggressively with the bigger banks having larger market shares. [8] suggested that the digital footprints may be used to assess individual default

risk. FinTech companies across the globe are attracting huge investments from a different set of investors like investment banks, venture capital firms etc. Fig. 5 will depict the quantum of investments happening in FinTech companies worldwide.

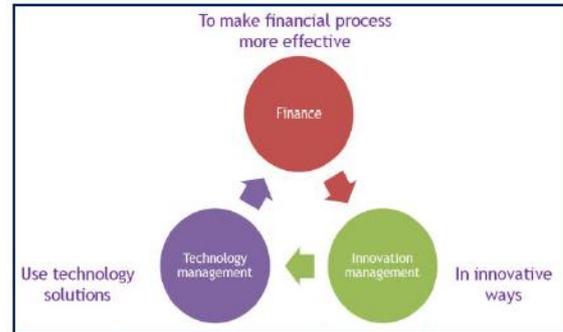


Fig. 4. FinTech – Cross Disciplinary nature

4 India and 5G Services in FinTech

5G primarily functions in three bands – low, mid and high-frequency spectrum – each having their own advantages and limitations mainly on account of speed and coverage. In 2018, India had intended to start 5G technology at the earliest possible. The major telephone players in India have urged the Department of Telecommunication (DoT) to roll out a detailed future plan on 5G frequency bands and spectrum allocation. However, Reliance Jio planned to unveil its own 5G network. The major challenges of 5G in India are; inadequacy of spectrum and TRAI's higher reserve price for spectrum auction. 5G has the ability to augment the day-to-day use of banking products and services. The financial institutions that embrace 5G technology are effectively poised far ahead of its rivals as they enjoy offering data-backed personal services for the customers of Gen Z. Moreover, 5G can overcome the major shortcoming of earlier technologies - inefficient handling of increased financial transactions.

5G potential in Indian banking and FinTech domain is boundless as the arrival of 5G coincides with a boom in Internet of Things (IoT) inventions, including smartphones and wearables. This will help banks and fintech firms to make seamless financial transactions, innovate and to provide secure services to their customers. 5G could also enable high-frequency trading and effective diversification of the bank's portfolio. 5G services may be effective in capturing how sentiment analysis can be used to gain more customer understandings. No doubt, 5G will bring innovative and better services apart from bringing more digital-savvy users for the banking industry.

5 Indian FinTech Scenario

It is well-known that the Financial sector across the world, more specifically in India, is undergoing a digital revolution. As per Fintech Global, Indian FinTech firms have raised over \$13 billion through more than 460 deals since 2014. Many researchers have studied the emergence, evolution and effect of FinTech and Technology in Financial services [9 – 12]. The FinTech business has phenomenally grown and no more made up of only new start-up companies, the FinTech industry has many seasoned firms that provide a wide range of financial services and functions at an international level. In Emerging markets, FinTech adoption is much higher than the global average. India and China were leading the FinTech adoption index in 2019.

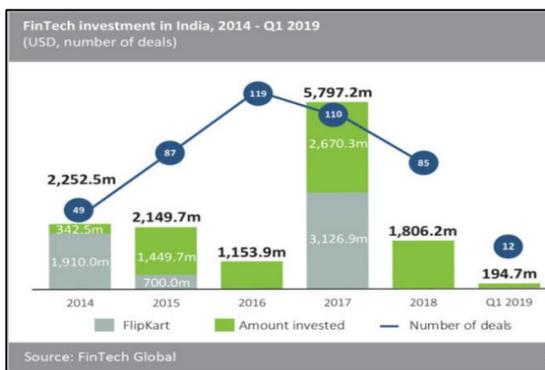


Fig. 5. Investments in World-wide Fintech Companies (in billion US\$)

Some of the challenges faced by Indian FinTech firms are; (i). Small and inexperienced management teams who lack the capability, (ii). Fewer financial and economic resources that avert appropriate scaling, (iii). Inadequate credit facilities and lack of startup exposure, (iv.) Non-availability of established business models, (v). Failure to attract talents in analytics domain and skillful personnel, (vi) Lack of full compliance knowledge and (vii). Absence of more reliable, transparent, secured and speedily information processing and customer service.

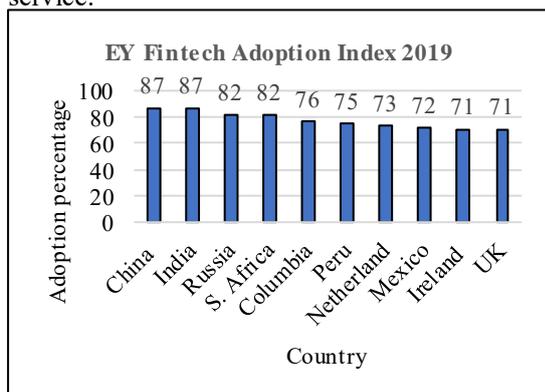


Fig. 6. Fintech Adoption Index by Country
 Source: EY Fintech Adoption Index 2019

5G technology will certainly address the challenge of transparent, secured speedily process of data. The higher penetration of smartphone consumers and persistent build-up of the digital infrastructure will enable quicker adoption of 5G in the FinTech industry. India's FinTech sector is thriving and changing the financial services landscape to achieve a secure and comprehensive financial environment. FinTech offers chances to expand financial services to all members of the society, particularly the deprived and financially excluded, through better access to information and lending.

6 5G and FinTech effects on Banking and Financial Sector

Post Financial Crisis, FinTech firms progressed rapidly which enables to raise the question of whether or not FinTech companies are heading to replace traditional banks and financial institutions. However, many believe that banks and financial institutions are going to adopt fintech developments into their core businesses and successfully overcome this transition phase. Similarly, the ongoing 5G implementation along with FinTech revolution, is expected to have a massive change in the way banks are functioning. There is also a view that banking and financial institutions cannot embrace 5G service and enhanced financial technology instantly because of strict regulations. Though regulating guidelines are not a hindrance to innovation and change, the strict guidelines will keep the banks under the pressure of preventive actions to attempt innovative process and actions. Most used FinTech services are for Transfers & Payments, Insurance, Savings and Investments, Borrowing and Financial Planning. Advantages of 5G technology along with FinTech innovations are; More accessible financial markets for ordinary consumers and Easy distribution of financial services.

The challenge in banking and financial services sector is to ensure perfect competition and greater transparency. As the competition increases, there will be a wide range of quality and assortment of banking products. Higher transparency in banking services helps the customers to understand the offerings much better. Fintech businesses with the adoption of 5G technology are predicted to expand the services presently being provided by the traditional banks and technology-driven financial firms. As FinTech firms are entering into a new period of growth, regulating authorities are having a constant eye on them to protect consumers and look for objectionable practices. FinTech firms have mainly created disruption for big banks and age-old financial service firms. One of the common examples of such disruption can be witnessed in a quantum of mobile applications (apps) that provide

share trading without levying charges per trade from users. Despite all the efforts, the speed of technology adoption has not as expected compared to its potential and hence there are gaps in the penetration of financial services. Although FinTech is creating the banking experience more instinctive, tailored and empowering, the convergence of growing technologies and financial services holds the key to make a robust digital Indian economy. Equipped with better data management, analytics competencies and nearly zero process cost, FinTech firms are supplementing and in certain areas competing the existing banking and financial institutions worldwide. Be it exploring new financial segments or making an inroad into foreign markets, Indian FinTech start-up firms are chasing several ambitions. As per NASSCOM, India's FinTech software market is predicted to reach US\$ 2.4 billion by the end of 2020.

India's age-old cash transaction-based economy has responded superbly to the FinTech prospect which is mainly because of e-commerce boom and smartphone usage growth. The domains that Fintech affects in banking and financial services are: (a) lending, deposit, investment and financing services; (b) remittances, clearing and settlement, and payment services, (c) Trading advisory and investment management, and (d) insurance. The reality is very few banks in India are having a robust financial forte to achieve global competency. FinTech is an ideal path to emerge as a robust institution in digital payments and transactions. According to the Payments Council of India, the digital payments industry has a higher growth rate than before the demonetization period. Many FinTech companies combine automated analysis of retail customers with user-friendly interfaces to offer financial services that are more appropriate at a lesser fee. One suitable example is that 'marketplace lending' platforms have become a new lending forum that entices borrowers because of its easy and simple loan application method. Traditional banks and financial service firms have seen technology as a support system to business propositions, rather than creating new business propositions themselves. But, FinTech firms are changing that function by taking advantage of digital technologies in order to make innovative business propositions and target new market segments. The effect of new technologies on banks and financial firms due to innovative frameworks like blockchains and cryptocurrencies are already disrupted the way industry functions and yet to witness the full impact. However, the likely benefits of these technologies are adequate to induce significant attention from technology-savvy people, entities and governments.

India's financial intermediation cost is high at 3.15 percent compared to 2 percent in advanced nations (Payments Council of India report, 2017).

Application of 5G services in FinTech companies may help to reduce this existing high intermediation cost which will benefit the consumers ultimately. The convergence of information technology, financial services and regulatory guidelines will play a significant part in creating a robust Indian digital economy (Digital Money Conference, 2017). Some of the leading fintech companies are effectively conducting their operations in India are Policy Bazar, lending kart, Pay Sense, Mobikwik. Capital Float, Bank Bazar, Paytm, PhonePe, PayU etc. These companies are looking forward to using 5G services to enhance their business and improve end-user satisfaction.

Table. 2. Electronic clearing and Card Payments

Item	Volume (Million)		Value (Rs. Billion)	
	2017-18	2018-19	2017-18	2018-19
Total Retail Electronic Clearing	6,382	12,467	193,113	267,515
Total Card Payments	8,208	10,781	10,607	14,097

Source: RBI Annual Report, 2019

7 5G and FinTech – Conclusion and a Way Forward

The disruptions created by these new digital revolutions has the possibility to reduce the role and significance of the existing banks. The banks started acknowledging that they require to come out of institutional complacency. In the coming days, banking and financial services will be like a layer on which the whole system is built on. It is no more monopoly or oligopoly market in the finance and banking industry. To sustain and grow in the industry and to become more competing, banks have to implement 5G technology and collaborate with FinTech companies. Numerous startup companies are looking forward to speeding up their progress by means of a faster, affordable and wider distribution of services contrary to the old generation financial institutions which are costlier and lagging in service quality. In the forthcoming years, banks are expected to either outsource or start the job of technology management with external firms which allows them to focus on the core business and risk management aspects. All physical operating venues of banks may be closed as most of them are now on the path to get their process digital, and this becomes more possible with 5G technology. The social and economic transformation potential through FinTech is very high. Many view 5G and FinTech as 4th industrial revolution. The emergence of 5G mobile technology along with FinTech firms is just the new innovative trend to disturb the banking sector, it is

expected that a lot of innovations are in the pipeline for banking and financial service sector. Despite all the merits, one of the main challenges for FinTech companies is to collaborate with banks is the cultural differences. However, in the recent past, many big banks are transforming into a shared service model in various areas like due-diligence and technology, this is where the FinTech firms can capitalize on the collaborative benefits. As Fintech signs the new era of banking and financial services, it is indeed not the solution for all open problems. It is equally an improving drive and a disruptive force; it requires to be affected thoughtfully.

According to an information services firm Markit's 5G economic impact study, "5G mobile value chain alone can generate revenue up to \$3.5 trillion by 2035 and support up to 22 million jobs". A report on The guide to capturing the 5G industry digitalization business potential, suggests operators could grow revenues between 12-36% (revenue of \$204-\$619 Billion) to their current forecast service revenue of \$1.7 Trillion in 2026. This would mean a 13.6% annual growth against current operator service revenue growth targeted at 1.5%. Technology is not just a change enabler, but, a driver of innovation as we already seeing the emergence of high impact technologies in banking and financial services industry, especially in FinTech. [13] analyzed the likely impact of 5G on the Society. Along with 5G, technologies such as Artificial intelligence, IoT, Cloud computing, Quantum computing and Blockchain are expected to change the nature of services and how the way the financial services are offered to the customers. Overall, these technologies will combine to redefine the bank-customer relationship forever. Despite getting huge customers in recent time, FinTech and neo banks are still facing a lack of trust among many people, most of them even suspect the existence of these institutions after a year or two. The government's strong signal to support and nurture these institutions will go a long way in creating trust. There is also a possible gender split, with FinTech adoptability by females may be very meagre. Even among the users, many do not use FinTech and digital banks as a primary account. By implementing a robust legal and regulatory framework. The technologies like 5G, AI and blockchain would be highly beneficial in various fields for the world to adapt to. It will certainly improve efficiency and remove the biases that sneak into the financial system. [14] found that the normal cost of intermediation is held firm at about 2% of the transaction value. 5G technology can benefit to minimize operational and administrative overheads,

potentially to the advantage of both FinTech companies and their customers.

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