



FUTURE OF BANKING WITH 5G TECHNOLOGY

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ABSTRACT

This study looks at how the banking industry and financial services are affected by advancements in communication technologies. Furthermore, it is anticipated that 5G technology will influence the financial sector going forward. According to the analysis, the banking industry saw a significant period of innovation and structural change before to 2000, which we refer to as the traditional banking age. This time included the introduction of 3G. The banking industry is anticipated to undergo a new and disruptive re-organization and service innovation as a result of the anticipated widespread use of 5G technology after 2022.

Keywords: Banking services, future of banking sector, 5G technology, financial innovations.

1. INTRODUCTION

The introduction of 5G technology has the potential to completely transform how we engage with the financial industry and open up previously unheard-of opportunities in the banking industry. The fifth generation of wireless technology, or 5G, promises ultra-low latency, lightning-fast internet speeds, and the ability to seamlessly connect billions of devices. This transformative leap in connectivity is expected to reshape banking operations, customer experiences, and financial services at large.

With 5G, banks can offer more personalized, real-time, and secure services, while embracing innovations such as AI-driven financial advice, augmented reality (AR) banking solutions, and advanced fraud detection systems. Moreover, the integration of 5G into banking infrastructure will enhance mobile banking, enable remote banking in underserved regions, and support the growing reliance on Internet of Things devices for financial transactions.

The advent of 5G technology signifies a paradigm change that will completely rethink banking as we know it, not only enhance current methods. Financial institutions need to innovate and adapt in this quickly changing environment in order to remain competitive and satisfy the needs of their increasingly tech-savvy clientele. This essay examines how 5G technology will impact banking in the future, the opportunities it presents, and the obstacles the sector must surmount to reach its full potential.

2. BACKGROUND

Following the shift from analog technologies, which were widely utilized in the 1980s, to digital technologies that connect to the world via wireless cellular technologies, technological advancements in mobile telecommunications have advanced significantly.

The first generation (1G) is the name of the first automated mobile network to be sold commercially. In 1979, it spread throughout Japan after being introduced for the first time in



Tokyo by the Nippon Telegraph and Telephone Company. Although this system was very costly, it had a lot of technological potential despite only being able to give poor sound quality (security issues, lack of connectivity between various operators, coverage constraints, etc.).

2G, also known as the Global System for Mobile Communication (GSM), first appeared in Finland in 1991 and is referred to as the second generation. Users now have greater access to it thanks to 2G, which increases bandwidth seven times and permits multi-media communication (SMS and image) in addition to voice transmission.

The NTT firm was the first to introduce 3G technology in 2001. 3G brought several important advancements. A system with 140 times more capacity, an internet connection, the ability to specify a single network protocol (switch between network providers), multi-media sharing, the ability to select distinct data packets, and worldwide roaming capabilities appeared.

With the advent of 3G, mobile phones could now function as tiny computers thanks to streaming, video conferencing (Skype), and location-based services. This led to a significant increase in the market for smartphones (iPhone, Blackberry).

In 2009, Sweden became the first country to use 4G Long Term Evolution (LTE). 4G enabled high-quality data transfer and enabled the use of smartphones as mobile computers by doubling the bandwidth by 200 times. (Place and others, 2014). Samsung put it into practice, and in the test setting, the speed record was shattered. Samsung and the China Mobile Research Institute (CMRI) successfully concluded a 5G prototype trial, the company said in November 2016. The internet-of-things (IoT) was made possible by the ability to transmit large amounts of data with minimal delay.

Although 5G serves as the framework for connecting these gadgets, significant advancements are anticipated in the domains of smart cities, smart agriculture, smart transit, smart homes, and driverless cars. As data transmission speeds grow, cloud technologies will be able to supply the processor capacity required for augmented and virtual reality applications, relieving mobile devices of this processing burden. In the coming years, it is anticipated that this service, which is currently being provided to clients in the USA, Switzerland, China, Japan, and South Korea, would expand to the entire world.

In an ecosystem of digital technology where every component depends on every other component, 5G is an essential component. With the help of massive processing power, the internet of things, blockchain, 5G networks, artificial intelligence, cloud computing, and big data, this digital ecosystem is predicted to influence and change every industry.

Particularly for industrial IoT, ultra-low latency rates (less than 10 milliseconds) with high reliability are essential (B. Bertyni, 2021).

Time-sensitive communication (TSC) and time-sensitive networking (TSN) enable high availability and dependability for simultaneous communication across several channels. Kang (2021)

In vertical industries where device-to-device communication and machine-to-machine learning are crucial (massive IoT), advances are made possible by enhanced and advanced machine learning (ML) and artificial intelligence (AI).



Higher authentication standards and neutral host models for completely isolated networks that allow authorized users to log on contribute to the increased reliability of private networks.

Compared to Wi-Fi systems, faster download speeds offer greater coverage and better internet service quality.

Improvements to devices improve battery life, provide wide connectivity across several devices, and improve user experience.

3. BANKING SECTOR DEVELOPMENTS

The banking industry's organizational and service structure has changed quickly as a result of the telecom industry's rapid changes. With the broad use of 3G technology after 2000 and 4G technology after 2010, the banking industry saw the most inventive of these advances. There will be significant changes in the banking industry as a result of the anticipated global rollout of 5G technology by 2022. The recent history of banking services is broken down into three subperiods in accordance with the study's objectives.

The first time frame, known as the "traditional banking era," spans the years prior to 2000. The latter spans the years 2000–2022, and is referred to as the 3G–4G banking era. For 2022 and beyond, the final time frame is referred to as the 5G banking era. Refer to Table 3. Prior to the year 2000, the banking industry would have been in the traditional banking era, when banks prioritized people, businesses relied on human resources for operations and sales, financial services had set hours, and transaction fees were high. These make banking operations expensive and out-of-reach for many people. The most important innovations in this era are credit cards and ATMs.

The 3G-4G period, on the other hand, can be defined as a period in which important structural transformations are experienced in the banking sector. While a significant part of banking transactions is carried out with digital systems instead of personnel, the servicing hours has started to be defined as 7X24, that is beyond the daily working hours. While cyber security came to the fore, the most innovative products in this period are digital accounts, IBAN, cryptocurrencies and mobile banking. As seen in Table 4, this era brought mobile banking, digital payments, more branches and availability enabling more customers to have access to banking system.

The necessity of carrying cash to make payments drastically declined as mobile banking usage rose. Particularly during the COVID-19 epidemic, when the use of mobile banking apps surged, mobile banking demonstrated its convenience, accessibility, and security (Schindler, 2021). Even if the banking industry is still getting ready for the 5G era, the following innovations are anticipated: wearables, voice-based banking transactions, digital wallets, remote VR branches, robot personnel services, and gait analysis based on biometric data.

4. 5G AND FUTURE OF BANKING

It is anticipated that 5G banking, which offers digital wallets, data protection, and video communication, would permanently alter the habits of banking consumers.

Customers of banks around the world have been using digital apps as their main source of financial services. The following are some anticipated consequences on banking and financial services as coverage and the use of 5G-enabled devices grow (Khrisna, 2017; Tian,



2019).The

Customers can use extended reality to alter and simulate what-if scenarios, visualize paper statements for easier comprehension, and comprehend banking activities.

High-quality video and interaction services are integrated into the app to facilitate regulated operations like secured lending and financial advice, which take the place of time-consuming in-person contacts.

Sensors in businesses, cars, and residences provide real-time, highly customized insurance products.

Connecting current in-branch equipment like ATMs, kiosks, and CCTV cameras is known as branch remodeling. In the near future, banks will have a far better grasp of foot traffic, services provided, space usage and design, and compliance with safety and security regulations.

The possible anticipated effects of 5G on financial services, as developed and supported by 5G technology and supplementary advancements in the digital ecosystem, might be summed up as follows:

- Rapid expansion of mobile commerce
- Purchasing during video playback, in-video shopping
- Shopping experiences enhanced by AR/VR, growth in commerce
- Improved and prompt geo-targeted promotions
- Extremely tailored consumer experiences, engagement in the digital space
- Banking applications that are sensitive to timing
- Strengthened fraud protection
- Advanced mobile point of sale transactions and usage

Broader financial inclusion within developing economies will be facilitated by 5G technology, which will bring about greater bandwidths and extremely low latency. This advancement will allow mobile commerce to conduct transactions more rapidly, providing users with uninterrupted video interactions that will enable customers to connect with their financial advisors from anywhere. Additionally, it will enhance the integration of augmented and virtual reality into financial transactions, including wireless check deposits, mobile commerce, and retail banking.

The banking and financial services industry is recognized as one of the top five sectors likely to experience significant changes due to 5G implementation, and it is expected to make a substantial contribution to GDP growth over the next five years. As reported by Statista, the contribution of this sector to the US GDP over the next decade through 5G might exceed 1.2 trillion USD.

5. CONCLUSION

The introduction of 3G and 4G brought significant transformations to the banking and finance sectors. With advancements in technology and wider internet accessibility, alternative and digital channels saw a notable rise in usage by customers. Features that once defined traditional banking, like low-interest rates, significant lending capacity, proximity, and capital



structure, became less important as new industry standards were established by regulatory agencies and innovations in technology led to the introduction of new value-added services.

The advent of 5G is anticipated to elevate the banking sector to new heights, where automation and inter-machine communication will become pivotal. Reduced latency will enhance the speed of processes related to recognition, identification, assessment, approvals or denials, and banking transactions. Enhanced digital security measures will reduce fraud risks and automate routine tasks such as loan assessments and credit monitoring.

Banking branches will likely undergo significant transformations concerning their formats, staffing, and organizational setups. Automation will see a rise in the use of robots within various departments. Traditional roles of tellers are expected to be supplanted by technology specialists. Operations will move toward a paperless environment, with transactions being recorded digitally, creating electronic traces.

The reliance on cash will decline while the adoption of digital tokens, credit cards, and cryptocurrencies will rise. New competitors will emerge as financial service providers align themselves with developments in FinTech.

Banking regulations will be adapted to include digital transactions and video interviews for loan qualification. Traditional bank roles are expected to be largely replaced by artificial intelligence and advanced machinery. In conclusion, 5G is projected to enhance connectivity, providing speed, security, and reliability like never before.

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