Emergence of Fourth Industrial Revolution (4IR) and Fintech: Future of Banking in the Era of Digital Transformation

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Abstract

The Fourth Industrial Revolution (4IR) has been knocking at the door. Industry, trade, education, medicine, transportation etc. are changing rapidly with the innovation and adaptation of advanced digital technology. The banking sector is also going to be transformed digitally to satisfy the customers and fulfill their expectations. The bank has started its digital journey by introducing ATM, core banking software, internet banking, and mobile banking. Banks are going to start branchless banking with the help of artificial intelligence, robotics, machine learning, internet of thoughts, automation, virtual reality, and augmented reality. The competition for technological excellence has started among the banks. At the same time, tech giants like Google, Apple, Facebook, and Amazon are going to start similar activities like these banks. Conventional banks are facing challenges due to continuous changing and evolving of financial technologies over time. Developed countries are reducing their branches gradually and introducing digital banking with state –of- the-art software, different apps, digital wallet, and artificial intelligence. Now the question is which strategies will be followed by developing countries' banking sectors like Bangladesh and do they transform digitally or remain conventional? Therefore, this article is to illustrate the outline of future banking in the technological transformation that is going to take place due to the Fourth Industrial Revolution (4IR) and financial technology.

Keywords: 4IR, Fintech, Digital Technology, Branchless Banking, Digital banking, Digital Transformation

1.0 INTRODUCTION:

The advancement of human civilization began with the discovery of fire. After that, beyond the Iron Age, Copper Age, Bronze Age, the great advancement of human civilization was achieved through the invention of wheel and agriculture. James Watt's steam engine, Thomas Edison's invention of electricity, the invention of computer and information technology brought human civilization a unique speed.

At present, postmodern civilization thrives with the digital revolution which is well known as Fourth Industrial Revolution with special elements of Artificial Intelligence, Robotics, Machine Learning, Internet of Things, Biotechnology, Automation Technology, Virtual Reality, and Augmented Reality. Beyond all the

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innovation, Mark Zuckerberg's Metaverse will give human beings a dream state of imaginative feeling of reality. At the same time, banking services are also getting experienced with digital technology and evolving in the way of digital transformation.

Thanks to technology, banking services are reaching the doorsteps of the people. No matter where you are, the bank is always with you 24/7. Starting from the branch based financial transactions that started in a town of Lombardy (modern banking birthplace) of Italy and now enjoying the internet and mobile based digital banking thrive with artificial intelligence. A rational question may arise: what is the next feature of banking services? What will be the future of banking technology and what will be the structure of future banking? The purpose of this article is to find the answers to all the relevant questions.

2.0 RATIONALE OF THE STUDY:

As a nation, Bangladesh has set up its development goals that is to be LDC graduate by 2026, middle income country by 2031 and to be a developed country by 2041. To achieve these goals transformation is crucially needed in all the sectors of the country. It is the fact that 4IR is at our doorstep and developed countries are taking the advantage of 4IR, particularly harnessing the technologies which emerged by the digital revolution. However, banking sectors are considered the most important sector in any country as it is like the heart of the economy. So, to achieve development goals by time frame, digital transformation of financial institutions is very important. One of the influences of the 4.0 era is the financial industry, referred to as financial innovation. Financial innovation is quite typical compared to innovations in other sectors.

Industry 4.0 which is mainly impacting on the distribution channel of banking services, introducing digital channels, leveraging big data and cloud computing technologies. One hand, this facilitates the existing banks reducing the branches and the related costs, but the reconfiguration of the digital channel required investments, new digital competences, regulatory adaptation, and the need to correctly manage the surplus of excess workforce. The advantages introduced by Industry 4.0, impact the second driver of change: the global competition. Currently, the banking sector sees the rapid diffusion of the Digital Native Banks, platforms that through the digital channel make the business scalable across an international level, requiring a reaction from traditional banks, which must adapt their structure to the new opportunities and threats of the market.

As a result, banks must reconsider their business models entirely. This study has been investigating the importance of digital technology in financial institutions, major challenges and drawbacks and future banking landscape.

3.0: Limitation of the Study: This paper is all about digital transformation of financial institutions and the study has been carried out by secondary data particularly from research articles, scholarly books, banking journals, annual reports, research institute's publications and websites of different national and international banks. It would be pragmatic if it is done by primary data. But primary data of IT infrastructure is always not available and collecting such data is costly and time consuming. So, to avoid such constraints and considering the budget, we had to depend on the secondary data.

4.0: Research Objectives: The banking sector is very crucial for the national economy of any country. Any change in the banking sector has a direct impact on the economy. However, everything is changing rapidly due to digital technology of the Fourth Industrial Revolution. The banking sectors have also undergone a speedy change owing to digital transformation. The new journey of branchless banking has been started. Therefore, the main objective of this study is to know what effect the technological invention as a result of the Fourth Industrial Revolution will have on the banking sectors and what the future banking structure will look like due to digital transformation. The specific objectives of this research paper are as follows.

1. To analyze the trend of banking sectors in terms of using and adaptation of technology.

2. To identify the contemporary technology used in the banking sector in the era of Fourth Industrial Revolution.

3. To evaluate the effectiveness of fintech in banking sectors as a tool of digital transformation.

4. To illustrate the shape of future banking after digital transformation.

5. To demonstrate the survival strategy of conventional banks in the era of Fourth Industrial Revolution.

5.0: Literature Review:

Today's industries are entering their fourth phase, or better known as the Fourth Industrial Revolution (IR 4.0). The breakthrough speed of the fourth industrial revolution is now increasingly being felt and has a wide impact on all sectors (Ohene-Afoakwa and Nyanhongo 2017).

The term fourth industrial revolution (IR 4.0) refers to a concept characterized by technological advances that will have penetrated all sectors: manufacturing, industries, financial services and commerce, transportation, as well as communication. The digital integration between means and tools adept of transmitting and processing huge amounts of data and automation intensely drives the advancement of IR. The widespread use of the internet and smart phone, together

with the prominence of technologies such as the Internet of Things (IoT), artificial intelligence (AI), big data (BD), block-chain, biometrics, and so on, has shifted organizational focus to the development of pre-designed, custom-made, more personalized goods and services. Firstly, introduced in 2013, the IR 4.0 marks "the transition from the time when people work with computers to computers work without people". Therefore, the advancement of IT together with the prevalent use of computers, smart phones, and the internet have altered the financial sector as well as other sectors, resulting in the rise of new companies, new products, and new financial instruments (Machkour and Abriane 2020).

The banking industry, in particular, is facing a proper revolution because not only the services offered are changing, but also the characteristics of the banks them-selves. This industry is being affected by a threefold transformation based on three drivers of change: Industry 4.0, global competition and regulatory change. Each of these drivers of change has a double impact. From one side they impact on the existing banks with positive and negative effects, from the other side they impact on the emerging ones with more positive implications. First of all, the enabling factor named Industry 4.0 (Kagermann et al., 2013a, Kagermann et al. 2013b) or Fourth Industrial Revolution changes what we do and how we work (Schwab, 2016) with the implementation of more than 1200 enabling technologies (Chiarello et al., 2018) grouped into nine pillars (Gerbert et al., 2015).

In recent years, competition from the banking sector has increased exponentially with the emergence of players from the digital world, Fin-Tech (Arner et al., 2015). Fin-Tech is the abbreviation of "financial technology", that comes from "financial services" and "information technology" (Oxford English Dictionary). The term Fintech was first used in the early 1990s for a project by Citigroup predecessor to foster technological collaboration (Hochstein 2015). Since 2014, it has gained attention in contexts such as innovative business models. The evolution of Fin-Tech is described as an ongoing process "during which finance and technology have evolved together" (Arner et al., 2015). Today, Fin-Tech start-ups cover many consumer-facing elements of the financial value chain. In particular, Fin-tech are based on specific segments of the value chain such as foreign exchange, payments, loans, trade, asset management or insurance, unbundling or disaggregating the services previously originated and sold by the banking sector. From an industry perspective, Fin-Tech start-ups are typically non-financial businesses such as technology-driven companies and online businesses (Dapp 2014, 2015; Gulamhuseinwala et al. 2015; Kim et al. 2016).

Though they follow a customer-centric strategy, long-term success rates are not yet available and earnings remain uncertain. However, they are attractive to traditional financial institutions, which have already invested in Fin-Tech partnerships,

acquisitions, and internal incubators to expand their service portfolios to reach new customer segments and enrich customer experience (Dany et al. 2016). The competition inside the banking industry increased further not only for the emerging technological organization of Fin-Tech, but also for the rise of organizations coming from other industries such as digital companies - Google, Apple, Facebook and Amazon, GAFA. In order to survive in this context, banks are changing their own structure and configuration with broader implications than before.

Branchless banking literally contains a simple meaning, namely a bank without branches. While conceptually branchless banking can be interpreted as banking services carried out outside the branch office through intermediaries in cooperation with other parties who are not included in the bank category by utilizing technology (Kurila, Lazuras, &Ketikidis, 2016; Kustina, Dewi, Prena, &Suryasa, 2019; Palaon, Wiryono, &Faturohman, 2020). So, branchless banking can be interpreted as one of the financial services for the community without having to go to a physical office with guaranteed security, convenience and efficiency, where this service can be carried out at parties other than banks, for example retail agents, operator networks, shops and others at a low cost, by using technology or what can be called third party services, financial services can be accessed to serve the market unbanked and underbanked (Chipeta &Muthinja, 2018; Malinda, Masyita, Nidar, & Anwar, 2018; Mohan & Viswanathan, 2018; Rizliyanto, Erlina, Hasyim, &Rujiman, 2017; Stapleton, 2013).

Branchless banking (or agent banking) is one of the cutting-edge financial innovations in this new millennium (Chowdhury 2018; Khan and Woodard 2016; Siddiquie 2014). This type of banking has been introduced mostly because there are a large number of rural people who are outside formal banking services (Ahmed and Ahmed 2018; Hinson 2011). The Central Bank in Bangladesh (Bangladesh Bank) has issued formal broad guidelines on branch less banking on December 9, 2013 (Bangladesh Bank 2013). However, branchless banking was started for the first time by commercial banks in 2016 (Chowdhury 2018; Islam 2018). In reality, branchless banking is regarded as an alternative banking service like other types of online banking permitted by the Government of Bangladesh to integrate more unbanked rural people in its financial surface (Nisha et al. 2020; Khan and Woodard 2016).

In Bangladesh, branchless banking has witnessed a quite consistent growth pattern before and after the outbreak of Corona Pandemic. The latest report of Bangladesh Bank (2020) shows that there are 7.6 million accounts associated with branchless banking representing an annual growth of 114 percent in both urban and rural areas. However, this growth is substantially taking place in rural areas accounting for 113 percent from July 2019 to July 2020 compared to only 60 percent in the urban areas (Bangladesh Bank 2020). According to Bangladesh Bank (2020), a total of 28 banks

have branchless banking licenses, but only 23 banks are in operation.

Although the growth of the number of branchless banking during the last financial year is positive, still it is not growing at a larger pace. It is also interesting to observe that this growth rate is steadily rising over the Corona Pandemic period as well. However, empirical research in this domain of branchless banking participation behavior in both rural and urban areas is crucially scarce. This fact necessitates examining the factors that affect the participation of people in branchless banking in Bangladesh.

6.0: Technology Used for Digital Transformation in Financial Institution:

Block chain: A block chain is a distributed database that is shared among computers through nods. Because it is a kind of database, it stores data in an electrical form. As a result, it facilitates faster and more efficient business transactions. It is already speeding up the process of FIs to carry out transactions abroad. One of the well-known foreign banks in our country successfully completed the first block chain transaction in our country by granting a letter of credit.

Artificial Intelligence: Artificial Intelligence (AI) is a revolutionary technology that enables machines to perform tasks which typically require human intelligence. These tasks include speech recognition, visual perception, decision-making, and language translation. AI has significantly transformed the information technology industry and is a sub-discipline of computer science dedicated to the development of intelligent systems and software that emulate human behavior.

API: API, which stands for Application Programming Interface, allows banks and financial institutions to streamline their services digitally and integrate with other digital service providers.

Cloud Computing: In a nutshell, cloud computing is the provision of computer services—such as networking, servers, storage, databases, software, analytics, and intelligence—through the Internet, or "the cloud," in order to provide economies of scale, flexible resource availability, and quicker innovation. Pay-as-you-go pricing models for cloud computing allow financial organizations to lower their data storage expenses without having to pay hefty upfront fees for large-scale on-premise system deployment and maintenance.

Fintech: Fintech is currently the most discussed topic in the financial sector. Especially in the aftermath of the 2008 USA financial crisis, the Fintech concept gained widespread popularity. So, first we would like to see what is meant by fintech? The term Fintech is basically a combination of the two words Financial and Technology. This means that the term Fintech is a combination of Fin and Tech.

Image-1: Features of Fintech, Source: FromFinancial Development and Financial Inclusion Course Materials, Developed by IMF Training Institute.

In other words, FinTech is an acronym for Financial Technology. Through the use of technology, Fintech has brought banking services to the doorsteps of the people at low cost, in a short time, in a convenient way. Prime objective of Fintech is to use technology in providing financial services. It is true that the technological advancement achieved through the Fourth Industrial Revolution has incredibly changed the perception of banking services. At present, the new concept or phenomenon of investing in the financial and banking sector has been possible only with the help of Fintech. The suffixes we have seen today, such as Venture Capital, Angel Investor, P2P (Peer to Peer Lending), Virtual Market Place, Factoring Finance, are all contributed by Fintech.

7.0: Research Methodology: The research is a basic one. It aims to broaden the horizon of knowledge on financial technology invented due to the Fourth Industrial Revolution and future of banking in the era of digital transformation. Here, the non-experimental research design has been devised. The study is carried out using exploratory research design. Since the present study aims to respond to the research questions of qualitative and quantitative nature, data collection and analysis techniques from both methodologies are implemented. Thus, a mixed-method approach has been chosen as the methodology of this research. This research work mainly has been done on the basis of secondary data. Secondary data has been collected using content analysis methods. Data has been elicited from different scholarly books, research articles, banking reports, periodic journals which are relevant to the banking and use of digital technology. Internet contents have been used also. Although surveys of all the literature have been conducted to find out the useful information, a graphical instrument is used to demonstrate the information.

8.0: Findings and Discussions:

The Fourth Industrial Revolution is just imagination or a solid reality? The song of the Fourth Industrial Revolution is being heard exactly 50 years after the Third Industrial Revolution. Klaus Schwab, founder and chief executive of the World Economic Forum, first used the term "fourth industry" in his book "The Fourth

Industrial Revolution" in 2016. Whether we like it or not, our way of life, our work, our way of thinking has changed for so long, Klaus Schwab wrote in his article.

"Now we are going through a technological change" (Shoaib, 2017). The Fourth Industrial Revolution is very different from the previous revolutions. The main difference between the Fourth Industrial Revolution and other revolutions is that the first, second and third industrial revolutions replaced only the physical labor of man; but the Fourth Industrial Revolution will replace not only physical, but also mental labor.

It is true that the world is on the brink of a completely different technological revolution, with the possibility of a fundamental change in the way people live, economically, politically, and culturally. We do not yet know for sure how this revolution will be organized, but one thing is clear that an overall transformation will take place through it. Whether this transformation will bring any risk or potential to the banking sectors depends entirely on how we embrace this technological transformation. The Fourth Industrial Revolution is basically a technological revolution that will take the present human civilization a hundred years ahead.

This article briefly discusses how technologies of this digital revolution will play an important role in the banking sectors. Before learning about this digital revolution, it is necessary to have some idea about its previous three industrial revolutions.

8.1: The Industrial Revolution: The First Industrial Revolution (1st Industrial Revolution/Industry 1.0): The invention of the steam engine by James Watt in 1784 marked the beginning of the first industrial revolution in human civilization. The steam engine gave speed to the people. The journey of modern industrialization started through mechanization, increasing the use of coal mines and steel. From the labor-based production system we became acquainted with the production system through machinery.

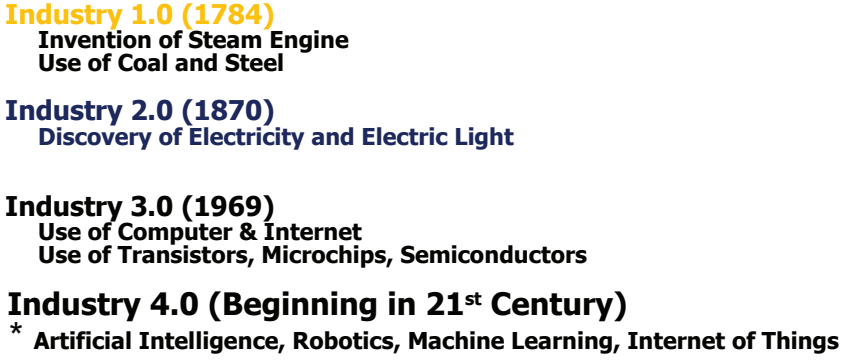

Image-2: Different industrial revolution, Source: Image Collected from internet

Second Industrial Revolution (2nd Industrial Revolution / Industry 2.o): The Second Industrial Revolution began in 1870 with the discovery of electricity by Thomas Alva Edison and Tesla. Electric light gave people a new enlightened world. The concept of production line has been changed enormously and production increased manifold.

Third Industrial Revolution (3rd Industrial Revolution /Industry 3.0): The Third Industrial Revolution began in 1969 with the invention of the Internet. The use of transistors, microchips, semiconductors, and the use of automated systems have brought uninterrupted speed to technology. Discovered Internet brings the world into the hands of human beings.

The emergence of the programmable logic controller (PLC) system is one of the important features of the 3rd industrial revolution.

4th Industrial Revolution (4th Industrial Revolution/Industry 4.0): At this time in the 21st century, the 4th Industrial Revolution has started with the mixing of artificial intelligence, robotics, machine learning, Internet of Things, biotechnology, and automation technology.

8.2: Features of the Fourth Industrial Revolution: Most important and unique features of the Fourth Industrial Revolution are artificial intelligence, robotics, machine learning, Internet of Things, biotechnology, automation technology, virtual reality, augmented reality, block chain, block chain. Basically, artificial intelligence, machine learning, the Internet of Things, virtual reality, augmented reality technologies are working as alternatives to human. One of the inventions of the Third Industrial Revolution was the personal computer, which had to be operated by a human being. But the feature of the fourth industrial revolution is that computers will be operated automatically. This means that technology will be able to think and act like humans.

8.3: Technological Transformation and Banking Revolution:

Banking Revolution

Bank 1.0

Bank 2.0

Bank 3.0

Bank 4.0

Image-3: Banking Revolution, Source: Bank 4.0: Banking everywhere, never at a bank by Brett King

It has been almost two hundred years since the four industrial revolutions took place. In contrast, four revolutions have taken place in the banking sectors in just fifty years.

Bank 1.0 or the first banking revolution: The first banking revolution refers to the conventional banking system where banking services were provided at certain times on specified days through dedicated branches.

Bank 2.0 or the Second Banking Revolution: The Second Banking Revolution began with the use of computers and information technology in banking services. In this case banking services did not stop only in the specified branches. Customers get access to 24/7 banking services through ATM machines and card readers. Financial services gained momentum mainly through the Second Banking Revolution.

Bank 3.0 or the Third Banking Revolution: Mobile banking or mobile financial services revolutionized banking services. Branchless banking started especially when banking transactions took place through various mobile phone apps and e-wallets. Mobile financial services have become very popular irrespective of the economic status of the country and flourish in the countries of various developed and developing economies.

Bank 4.0 or the Fourth Banking Revolution: By the use of Artificial Intelligence, Robotics, Machine Learning, Internet of Things, Automation Technology, Virtual Reality, augmented reality, block chain technology, and access to crypto currency, cloud computing banking service reached at the new height which is known as the fourth banking revolution or Bank 4.0. The prime goal of the fourth banking revolution is technology based branchless digital banking.

8.4: The Fourth Industrial Revolution and the Banking Sector: The Guardian has published news that Lloyds Banking Group, one of the largest banks in the United Kingdom, was going to close about 150 (one hundred and fifty) branches. Looking at the headline of the news, it seems that the bank may have faced losses due to Covid-19. And so, they decided to close the branch as a business strategy to prevent losses. But after reading the whole article and realized that our assumption was completely wrong. The bank has not made any loss; rather it has been on profit of around 2 billion pounds in the third quarter of 2021. The question remains in mind, why the bank authority has taken such a hard decision to close their branch? The bank has argued in favor of closing the branch, saying that over the past year and a half, the bank's customers have become accustomed to availing banking services through digital platforms due to the COVID-19 pandemic. They no longer want to come to the branch in person. As most of the customers are interested in taking digital banking services, as a result bank authority has decided to close its branch. Apart from developed economies, developing countries are also using Fintech to

provide financial services. However, the uses of digital technology in the banking sectors have increased at agility.

New form of banking has emerged in these sectors due to the use of financial technology such as Shadow Banking, Neo Banking and so on. The vision of this bank is "Digital Bank without Physical Presence". Atom Bank in the United Kingdom and Go Bank in the United States are the first branchless banks in the concerned countries. Also, South Africa's Tyme Bank, Discovery Bank and Bank Zero are three digital mobile banks that have introduced branchless banking. There, banking functions are performed through mobile apps, ATM machines and employed agents.

The use of technology in lending has also opened new doors. In particular, Jack Ma's "Ali Baba", a well-known Chinese entrepreneur, is providing loans by analyzing all the information of the applicant in just three minutes, whereas conventional banks will take more than a month. Micro loan system has been introduced for bKash customers in a joint venture of Citibank Limited and bKash of Bangladesh. A bKash customer is getting a loan within a short period of application.

8.5: Fourth Industrial Revolution and Risks of the Banking Sector: As a result of the Fourth Industrial Revolution, the banking sector of developing countries like Bangladesh may face some risks. We will try to exemplify these risks in the light of Michael Porter's Five Forces Model, a renowned business school Professor at Harvard University as well as renowned academician, economist, and business strategist. Although Michael Porter's concept of the Five Forces Model was published in the Harvard Business School Review in 1989, the model is still significant. Even the risks that the banking sector will face as a result of the Fourth Industrial Revolution can be explained in the light of this model.

The five strengths that Michael Porter speaks of in determining business strategy are Threat of New Entrants, Threats of Substitutes, Bargaining Power of Customers, Bargaining Power of Suppliers, and Competitive Rivalry.

If we first look at the threat of new entrants, we can see that there are a total of 61 commercial banks in Bangladesh including 9 (nine) foreign banks providing banking service through about 10,700 (Ten thousand seven hundred) branches across the country. So, there is fierce competition among banks in the country. On the other hand, Mexico, a North American country, has 6 times more GDP than Bangladesh, but only 48 financial institutions are operating in Mexico. Among the figures, 20 institutions look like leasing companies in Bangladesh. In that case, only 28 full-fledged commercial banks exist in Mexico. Apart from this, several other institutions have applied to Bangladesh Bank for getting licenses to start banking business. According to economists, Bangladesh has more banks than it needs. Many

banks have got licensed for political consideration only other than necessity of the economy.

If more banks are approved in the future, the entire banking sector could be at jeopardy and its negative impact on the national economy would be vivid. During the Fourth Industrial Revolution, it would be difficult for the existing banks to survive in a market of intense competition without increasing the financial capacity and sustainability of the existing banks.

The second force is the emergence of alternative products or services (Threats of Substitutes). There was a time when banks were earning huge amounts of revenue from commissions on telephone transfers, mail transfers and demand draft issues. But after the emergence of mobile financial companies (bKash, Nagad, Rocket, UKash, MCash, etc.), the non-funded income of the banks has almost stopped. As a result of the Fourth Industrial Revolution, the emergence of new technologies, Mobile Financial Company (MFS) could emerge as an important competitor to the bank. According to the newspaper, the reputed bank of Japan "My Bank" has bought 25% shares of bKash. A dialogue has been done of bKash with Alibaba, a well-known tech giant in China, on how to launch a microfinance loan through a mobile financial service. It is to be noted that in November 2021, the daily economic transactions through MFS exceeded Tk. 2,100 (two thousand one hundred) crore. If this growth trend continues, by the middle of next year, transactions on this channel may cross Tk. 3,000 crore per day.

8.6: Competitive Rivalry: Existing banks will be in fierce competition based on technological advancement because of the Fourth Industrial Revolution. Non-banking technology-based companies may have emerged as the biggest risk factor for the traditional banks. In Kenya, for example, the mobile financial service like "M-Pesa" has become very popular. Because M-Pesa services are cost-effective and readily available. As a result, many bank customers are transacting through mobile banking, excluding traditional banking services. According to one estimate, about 16 million bank accounts have been closed in Kenya since the launch of M-Pesa. Even in large economies like Brazil, China and India, mobile financial services are gaining popularity. Therefore, if concern authority provides approval for banking services through smart phones, apps, e-wallets and is handed over to non-banking institutions, then the existing commercial banks will be severely at business risk.

8.7: The Fourth Industrial Revolution and the Emerging Challenge of the Banking Sector: Non-bank financial institutions may emerge as competitors to the banking sector due to technological advancement and changing patterns of customer

economic transactions through the Fourth Industrial Revolution. And mainly because of Google, Amazon, Facebook, Apple which is collectively called GAFA. If all these tech giant companies start deposit, saving and lending activities, the conventional banks will fall into business risk. In the meantime, these tech giants GAFA have started digital banking activities in some countries by signing contracts with local banks.

Since these multinationals and tech giant companies have work experience in different countries of the world; they may be able to provide financial services to the customers as per their desire and expectation. But it may not be possible for many existing conventional and traditional banks to provide financial services in that way. Moreover, as these multinational companies have advanced technology, they will be able to verify the information of the respective borrowers as soon as possible, which may not be possible for conventional banks. As a result, conventional banks may lose their current market share or business to these tech giants.

8.8: Cyber Security or IT Fraud: Conventional or Traditional Banks will try to break away from the conventional banking trend and seek digital transformation in order to survive in the current highly competitive market. But if there is a shortage of skilled manpower with the required IT knowledge and skill, conventional banks will suffer which will ultimately increase counterfeiting and digital fraud. As a result, the concerned banks may face financial loss and reputation.

8.9: Lack of Coordination of Technical knowledge between Managers and Officers: It is true that almost all the new officers now belong to Generation Y (born between1981-1995). They are technically called the Transforming Generation. On the other hand, most of the executives and managers who are working in various branches and controlling offices belong to Generation X (born between1965-1980). Research data has shown that many of them in this generation have technological fear and lack of interest in digital technology and transformation. In such a scenario, failure to enhance IT skills among executives could jeopardize bank interests in the future, including disrupting banking monitoring and supervision. Therefore, it is very important for financial institutions to take necessary steps to motivate and provide necessary training for enhancing IT knowledge among executives and officials. That will be the probable survival strategy for the conventional or traditional bank in the era of digital transformation.

8.10: Fear of losing a job: In the future, a lot of bank activities may be done through machines or state-of-the-art software. Service automation will be ensured through the use of robots, chatbots, and artificial intelligence. In that case, the officers who have a lack of IT knowledge and skills may lose their jobs. Moreover, the services of the bank through digital technology will not be limited to the specified geographical area. As a result of intense competition may emerge among financial institutions. In

that case, some financial institutions can take the approach of cost reduction as a survival strategy.

8.11: Leadership in Banking Sector: Who will lead the banking sectors in the coming days, is it the financial analysts or IT experts? Financial experts have been leading the banking sector for decades.

But in the Fourth Industrial Revolution or the Digital Revolution, their leadership and skills will be challenged in an era of technological excellence. On the other hand, even if IT experts are technically proficient, their leadership will be called into question due to lack of knowledge on financial terms, such as bank investment, returns and strategic business planning. As a result, policy makers and concerned authorities now have to think about who will lead the banks in the transitional period of digital transformation which evolved due to the Fourth Industrial Revolution.

8.12: Customers' Technical knowledge: Most of the bank customers are not proficient in using technology and lack awareness of the technological advancement that has been achieved in the banking sector as a result of the Fourth Industrial Revolution. Moreover, a large portion of bank customers in developing countries like Bangladesh have a lack of financial literacy. Therefore, it is not sufficient to just add digital technology to the banking service, rather to inform the customer about its use and benefits of such technology. Therefore, before transformation of full phase digital or branchless banking, both digital and conventional (dual or twin banking system) banking systems should be maintained for a specified period of time.

8.13: The Fourth Banking Revolution and the Death of the Banks: As mentioned earlier, the Fourth Banking Revolution has started and we are living in the era of 4IR and Bank 4.0. Digital transformation has occurred by use of Artificial Intelligence, Robotics, Machine Learning, Internet of Things, Biotechnology, Automation Technology, Virtual Reality, and Augmented Reality. Advancement in digital technology and increased access to the internet and artificial intelligence had led to many changes in banking and banking habits. Particularly, use of digital technology has brought a revolution which is called banking revolution and ultimately led to branchless banking. As per the research work conducted by Self Finance Inc. USA, bank branches will be extinct by 2034 in the USA. It is true that the USA is in the leading position in terms of advancement of financial technology and the rest of the world follows their business policy as well as business strategy. So, branchless banking will be the ultimate goal in the future due to the digital revolution.

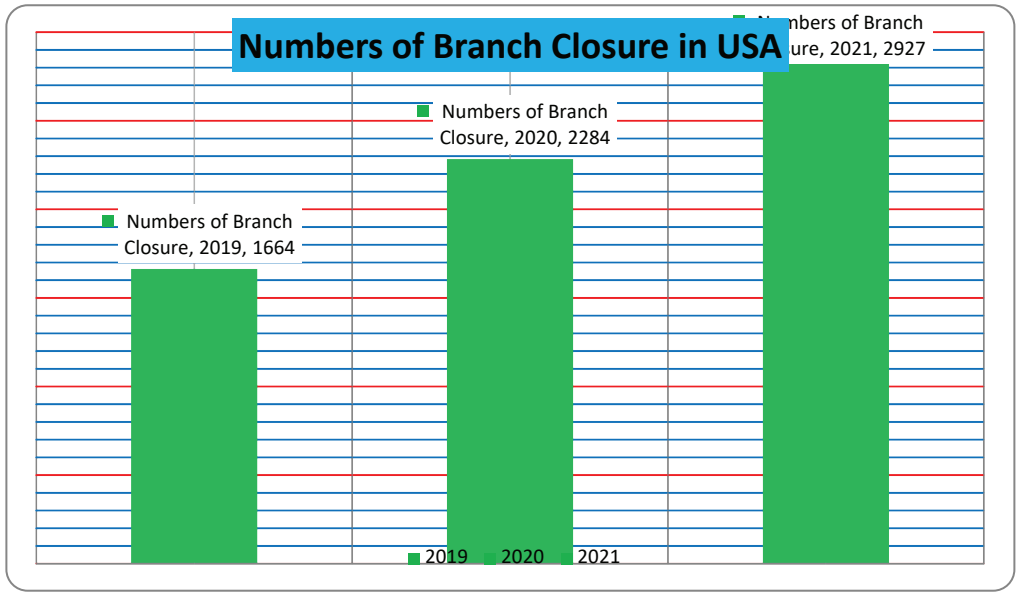

Chart-1: Bank Branches Closure in the USA, Data Source: https://www.self.inc/info/the-death-of-the-banks/

The bar chart shows the number of branches in USA has been reduced since 2012. Number of branches has decreased at 0.81% since 2012 to 2015, but the reduction rate was almost double during 2015 to 2018 and that was 1.6%. As the chart shows net numbers of branch closure in 2019, 2020 and 2021. There is no scope to say that bank's branches have been closed due to COVID-19 pandemic.

As per statistics branch closure has started since 2012, but it is also true that branch closer has got a new momentum due to the pandemic and it has reached to 2927 in 2021.

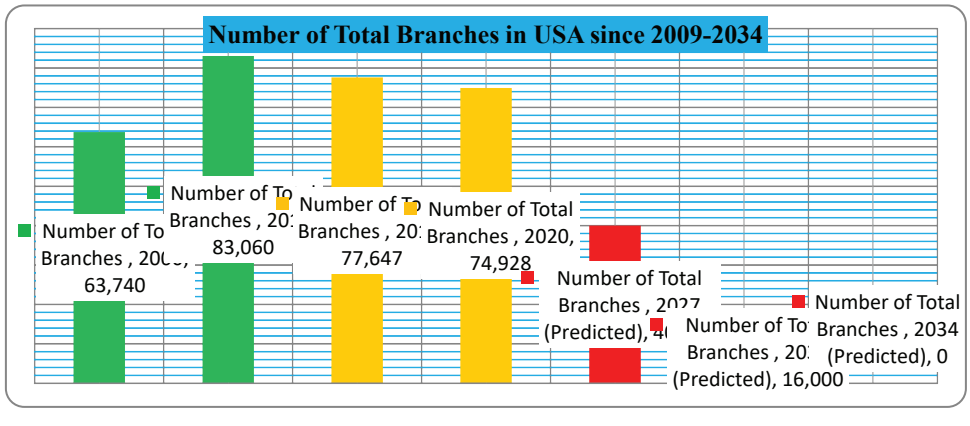

Chart-2: Number of Branch Closure in USA, Data Source: https://www.self.inc/info/the-death-of-the-banks

The graph shows that the number of bank's branches has increased in the USA from 2000 to 2012 at the rate of 30%. But since 2012 the number of branches has decreased gradually due to the digital transformation of the bank. Bank branch numbers in the US have fallen by 6.5% since 2012. As per projection and based on current trends the number of physical banks (bricks and mortar) could fall to fewer than 16,000 by 2030, a number not seen since even in 1965. As per survey of Self Finance Inc. and using inferential statistics, if the current trends are going on, all bank branches could be closed by 2034. That is why it is said that bank branches will be extinct by 2034 in the USA.

Closure of bank branches in the UK: From 1986 to present, a significant decline in the number of bank branches in operation has been observed in the United Kingdom. This trend was revealed through data provided by the British Banking Association (BBA) from 1986 to 2012 and the Office for National Statistics (ONS) from 2012 to 2023. According to the data, the total number of bank branches decreased from 14,689 in 1986 to 5,745 in 2023. Additionally, during this same time period, there was a decrease in the number of building society branches as well, dropping from 6,954 in 1986 to just 1,925 in 2023.The following chart details the total number of bank branches and building societies in the UK since 1986.

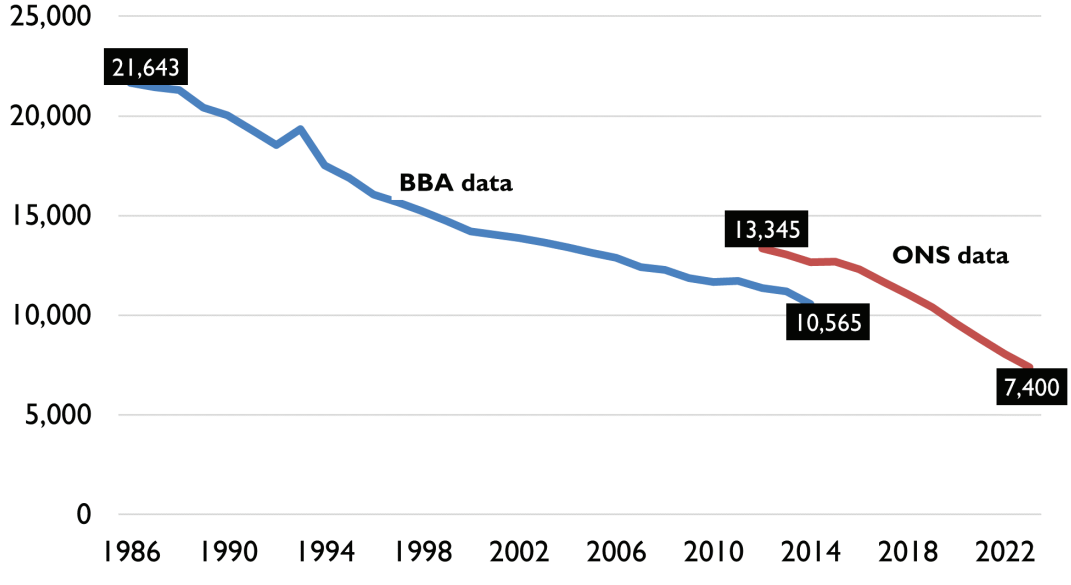

Chart-3: Number of Bank Branches Closure in UK, Source: https://lordslibrary.parliament.uk

8.14: Fourth Industrial Revolution and Prospects for the Banking Sector: Intervention of the Fourth Industrial Revolution, there may be no branch banking in

the future. Then branchless banking will take on a new form of financial services which is called 'New Normal'. As a result, manpower of banks and operating expenses for renting bank buildings will be greatly reduced. It means that financial institutions will be able to implement a cost reduction policy which ultimately instigates their profitability. The use of new digital technology will be able to quickly provide the desired or expected service to customers.

The use of various digital devices and technologies will create opportunities to expand banking services worldwide. However, due to the backwardness of education in developing countries like some African and Asian countries, these digital transformations may be a bit slower than in developed economies.

8.15: Future Customers of Financial Institutions and Leadership: It is important to know who will be the future customers in financial institutions and who will lead them in the financial sectors. It is very important to determine the business strategy and to deal with the risks which emerge due to the Fourth Industrial Revolution. For any business organization, understanding its customer psychology is considered a significant parameter in determining business strategy. Therefore, in the era of the Fourth Industrial Revolution, the present and future customers of the bank have to be carefully considered and strategies have to be decided accordingly. It is true that the fourth industrial revolution is the revolution of technological excellence or the digital revolution. Here foundations of the bank-customer relationship will be laid through the use of technology.

It should be noted that financial institutions and companies in developed countries divide their customers into different groups and segments on the basis of age and generation and offer different products or services for each generation based on their age group. It is important to know the characteristics of the generations because each generation acquires different education, technology, beliefs, values, experiences, expectations, habits and cultural uniqueness.

Accordingly, the generation is divided into several parts on the basis of birth year or age. These are following-A. The Greatest Generation (born 1901-1927), B. The Silent Generation (born 1928-1945), C. Baby Boomers (born 1946-1964), D. Generation X (born between 1965-1980), E. Millennial or Y (born between 1981-1995), F. Generation Z (born between 1996-2010),G. Generation Alpha (born between 2011-2025).

Generation X, Millennial or Y and Generation Z are the current customers of the bank. The characteristic of Generation X is that they are not very accustomed to using technology. Their lack of enthusiasm and skepticism about the use of advanced technology discovered as a result of the Fourth Industrial Revolution. This means that they are more interested in getting the services of Bank 1.0 rather than Bank 4.0.

On the other hand, the majority of the bank's customers are Millennial or Y Generation. They are technically called the Transforming Generation. This generation was initially accustomed to manual work and later on they have transformed themselves to technology after the development of computer and information technology.

Generation Z (born between1996 to 2010) will be the main customer class in the future of the Fourth Banking Revolution. This generation is characterized by the use of modern technology from an early age. They are interested in performing any financial transaction including banking through the use of technology (mobile, apps, e-wallet, e-services, and other digital platforms). Generation Z along with Generation Alpha (born between 2011 -2025) will be an important part of the future banking customer base in near future. The characteristic of Generation Alpha is that they are completely the digital generation.

This means that as a result of technological advancement and emergence of the Fourth Industrial Revolution, financial institutions have to provide the complete digital products or services of Generation Z and Generation Alpha. And that service will be low cost, short time and high quality.

In addition, without human intervention, only through the use of machines and technology, the customers will get the desired service faster. Financial Institutions that are able to provide these services may survive in the fierce competitive market place, whereas the financial institutions those are unable to provide digital services accordingly will have their business' success and existence under threat.

8.16: The Future of the Banking Sectors: A study was conducted in 2000 on five hundred institutions that were founded in the fifteenth century and lasted for five hundred years till 2000. It has been observed that only thirty-three out of five hundred institutions established in the fifteenth century up to 2000 have survived five hundred years. Of these thirty-three institutions, 29 (twenty-nine) are religious institutions, two (two) universities (Oxford and Cambridge) and two (two) financial institutions.

In light of the findings of this study, it can be said that three types of institutions may survive after any kind of evolution. No matter how much customer psychology, needs and attitudes change due to changes in time, technology, political background, ideology, surroundings, and atmosphere.

These institutions are religious institutions, educational institutions and financial institutions. But the structure of financial institutions and the services provided were not always the same. As a result of the passage of time, the dimensions of human needs, desires, expectations, and requirements have changed. The structure and type of service of the bank started in Lombardy, Italy is not the same as the structure and

type of service of the current fourth generation bank.

However, it is true that in the last century, hundreds of financial institutions and banks around the world have collapsed and thousands of new banks have been established. Many financial institutions have gone from national to international level i.e. multinational banks and many banks have disappeared and taken their place in the dustbin of history. It is an inescapable fact that time, technology, the world of thought; ideology, politics, economics, consumer psychology and demand are always evolving. In view of these changes or transformation, more than a hundred successful banks around the world, such as Standard Chartered, Citibank NA, JP Morgan Chase, and Bank of New York, have survived for about two hundred years or more. In the end, only those banks that can adapt to time and technology, understand customer tastes and psychology, provide quality services in a short time and at low cost, and meet the financial needs of the customer will only survive for centuries. Otherwise, if they fail to do that, they will take place in the history as a back chapter.

9.0: Recommendations & Conclusion:

Robert J. Shiller a Professor at Yale University in the United States who won the Nobel Prize in Economics in 2013, said about the use of technology in financial institutions ``Of course, you will not wait for taking fire insurance policy until your house in burn due to fire". Similarly, it would not be wise to make the decision that the digital technology that emerged as a result of the Fourth Industrial Revolution will be adopted by all financial organizations and later on you will start using the digital technology. By then, your organization may be on the brink of failure". The Fourth Industrial Revolution is the current reality. Banks have no chance to refrain from using this technology. Although most banks in Bangladesh still rely on the technology of the Third Banking Revolution. It is true that the use of technology in the fourth banking revolution is also slowly beginning in the banking sector. However, future banking will be completely technology-based, where banks will run with small numbers of tech-savvy employees. But most of the employees in the banking sector in Bangladesh are from non-IT backgrounds. There is a possibility to lay off workers due to the use of state-of-the art technology that emerges from 4IR. So, employees should have developed their required IT skills now to face the upcoming challenge of 4IR. It is a fact that state-owned commercial banks in Bangladesh are comparatively behind using digital technology, which emerged with the fourth industrial revolution. So, they must ensure sufficient investment in IT infrastructure to survive a highly competitive financial market and to develop IT skills in existing manpower to ensure sustainability.

Branchless digital banking will be a future reality, and there is no scope to avoid it. In response to echo, the central bank of Bangladesh has given approval for

branchless digital banks in the last year, along with the existing branch-led banking system. As a consequence, conventional banks must prepare for the digital transformation from branch-led banking to branchless banking. On the other hand, it is predicted from previous data that the number of cybercrime-related incidents will increase in financial institutions after the adaptation of digital technology. Consequently, financial institutions must ensure cyber security experts to protect the interests of clients as well as those of organizations.

Other than that, it may emerge as a source of financial and reputational risk for the organization. Apart from that, the central bank must be efficient enough to use sophisticated regulatory technology to prevent fraud and forgery in scheduled banks, though the central bank of Bangladesh has had bitter experience in this regard in the past. However, banks have to invest more in IT infrastructure for digital transformation. But this technology is very costly and rapidly changing. So, banks should deploy IT-skilled manpower to develop different software, apps, and e-wallets to reduce operating costs and survive in the competitive financial market.

A large portion of the country's bank customers lack knowledge of financial literacy and banking technology. Therefore, besides adopting technology, banks also need to make customers proficient in using technology; otherwise, they may be victims of fraud by cybercriminals. The use of digital technology in the banking sector as a result of the Fourth Industrial Revolution, ensuring impeccable cyber security to protect the interests of banks and customers and gradually rendering branchless digital technology-based banking will be the reality of the future.

However, it is not yet the time to introduce a complete branchless banking system in Bangladesh, especially, considering the IT skills of the bank employees and the lack of technical knowledge of the customers. So, the digital and traditional "dual banking" system has to continue for a certain period of time. When the education rate reaches 90 to 95 percent, branchless digital banking may be introduced. In fact, the use of digitalization or technology in the banking sector of Bangladesh has opened the door of immense possibilities for banks and customers. At the same time, digitization has brought some risks for the banks which the banks have to take very seriously. In particular; cyber risk has multiplied the risk of operating risk, financial loss, reputation and theft of important customer information.

Lastly, we would like to say that this is the time for the Fourth Industrial Revolution as well as the banking revolution going on accordingly. We are living in an era of digital transformation and this transformation has been changing all spheres of life. There is no scope for the banking sectors of Bangladesh other than digital transformation and they must adapt it for their survival strategies because global banking sectors have been moving towards this transformation. So, ‘Branchless digital technology-based banking will be the reality of the future and will emerge as

a new normal'. However, it is noteworthy that cyber security is the most widely discussed issue for digitalization of banking. But we have covered the issue partially without in-depth analysis in this article. So, we would like to recommend further research on cyber crime particularly to evaluate the risks and challenges that emerge in financial institutions in the process of digital transformation

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