Fintech and Digital Transformation of the Financial Industry

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Abstract. With the rapid development of science and technology, various financial products and applications were changing the operation mode of the industry soundlessly. These technologies, such as blockchain technology and cryptocurrency, are generally known as fintech. Their emergence has already greatly influenced people's traditional views on the functions and transactions of money. Meanwhile, the gradual maturity and application of artificial intelligence have also changed how data is integrated and consulting business in the stereotype of the investment industry. These cutting-edge technologies were invented to improve efficiency and provide people with fresh ideas for the traditional financial industry. Although these advanced technologies brought revolutionary progress, they also had certain risks and limitations, and surveillance and thorough laws and legislation were required. This paper aims to overview the change and impact of fintech on the business mode of the traditional financial industry, mainly focusing on Robo-Advice/Artificial intelligence, Blockchain, online payment, and P2P financing.

Keywords: Artificial intelligence; Blockchain; Online Payment; P2P Financing.

1. Introduction

During the pandemic of Covid-19, traditional industries have been forced to evolve into a quickening of the workplace's digital transformation. Based on Nagel's study, those who noticed this acceleration make it possible to envision a day when jobs would only be available through digital technology. The COVID-19 epidemic has also made digital labor more important while decreasing the necessity of traditional occupations as a steady source of income. Most employees believe that digital labor will play a bigger role in a reliable income stream in the future than traditional employment [1].

The COVID-19 epidemic in 2020 provided additional evidence for the need to comprehend how various technologies influenced behavioral shifts with regard to financial decisions and payment methods. Financial technology, known as "Fintech", refers to utilizing technology to deliver financial services and activities. The idea was first brought out in 1866 in order to solve the problem of the construction of transatlantic cable and, later, the establishment of Fedwire in the USA to allow the quick transfer of financial data across international borders [1]. All of these rely on antiquated technologies like the telegraph or messages in Morse code. With the growth of technology, fintech has been utilized in broader activities in business. It has solved some historical problems. For example, large investors and bankers have traditionally controlled the stock markets, and the fundamental reason for this was their easy access to information that enabled them to make well-informed decisions [2]. Stock market trading has long been equated to gambling, yet, managing volatility and risk are key components of capital market investing. With the application of fintech, retail investors can select algorithm-based services with more accurate market forecasts and plan decisions to maximize the return on investment. Moreover, fintech has improved the efficiency of trading. An investor can access the recommendations and tips while they are busy. Everything is integrated into a single straightforward interface under the new fintech-based strategy. This streamlined process allows Users to invest quicker, easier, and more economically.

In the following paper, fintech will present itself as following four financial activities: Robo-Advice/AI, Blockchain, online payment, and P2P financial activities. The four functions of Fintech are dealing with artificial intelligence, blockchain, cloud computing, and big data, respectively, in order to reveal the significance and the revolutionary impact on traditional activities.

2. Artificial Intelligence

The most direct visual impact of the revolution of artificial intelligence was the formation of robots. As it first appeared in the sight of humans, it only provided physical movement and basic logic knowledge. After years of development, AI became visualized and applied in multiple industries, at most time, it functioned as an integration of big databases and processing various parameters in order to give advice that met a specific need, but in real life, decision-making did not simply rely on the analysis of the numbers. According to the research made by Pintér et al. aiming to study the decision-making mode of the younger generation, the results indicated that the majority of today's youth believe that financial literacy and digital attitudes must be traded off, and very few believe that both must undergo constant improvement. Education and the emergence of a financial culture have played a significant role. They will continue to do so going forward, in addition to passing experience to the family and parents. Financial services innovation cannot benefit both banks and consumers without it [3]. In short, the younger generation had a positive attitude towards AI advice. Still, at the same time, personal preference and the willingness to take risks are a big part of how they react to financial decisions.

During the COVID-19 pandemic, a revolutionary AI came into sight and became the buzzword in 2022, which is ChatGPT. The extraordinary algorithm and the outstanding ability to learn make it destined to be an interruptive innovation. Many industries are changing as a result of it, including the finance industry. As a matter of fact, ChatGPT offers financial institutions a wide range of services, such as account administration, analysis of data, financial guidance, customer support, and legal and regulatory compliance. Its distinctive characteristics include conversational behavior, ongoing learning, customization, and interoperability. ChatGPT, like financial robo-advisers, may perform activities such as stock price prediction, investment management, and asset management [4].

However, the challenge will be on the table since many analysts believe that robo-advice represents a substantial threat to currently offered conventional financial consulting and portfolio management services, and it has the potential to significantly change how fiscal guidance is delivered [5]. There is no denying that integrating solutions based on computational intelligence, like those offered by ChatGPT, into various industry sectors has fundamentally changed how enterprises function in the modern day. These innovations provide major business benefits over traditional approaches, which may become obsolete in the near future. AI does this by giving them access to potent Software for automation, allowing faster processing times and higher levels of productivity across every division. The employment of this type of technology in day-to-day operations provides a number of potential financial and operational advantages, which makes it simple to understand why so many firms do so [6]. Even if the system struggles in challenging or unusual circumstances, it has made great progress in this area. Because the bot was largely trained on data up to 2021, further occurrences may still need to be spotted by the ChatGPT. It needs more contextual knowledge, making it unable to respond to straightforward inquiries like those about the date and time [6].

3. Blockchain

Another technology to be mentioned was blockchain technology. It was first invented as a distributed ledger or database shared by a computer network's nodes. This advanced technology was known for its success in the decentralized trading of cryptocurrency and its secure protocol for both sides of the transactions. Eliminating the third parties reduces the costs and risks they will make. Since the birth of Bitcoin in 2009, blockchain technology has affected the financial industry in decentralized finance applications (DeFi), non-fungible tokens (NFTs), and smart contracts. As a big component of fintech, blockchain changed the traditional mode of almost every financial activity. It gives the authorities access to the entire database and the complete history, thus every detail of the transaction is transparent. Secondly, every communication was directed towards each peer through a node, meaning no third party exists. Thirdly, every single transaction will be recorded in a database

and cannot be altered, meaning there was no fake resume or fabricated records. Last but not least, the inner logic can be set and ruled by algorithms that trigger the transactions between nodes.

Nevertheless, all blockchain's advantages are followed by limitations and challenges. A comprehensive cartography research was conducted with the aim to fully understand the scientific research on blockchain [7]. This mapping study examined blockchain technology's existing situation, issues, obstacles, and limitations in FinTech businesses. The Web of Science Core Collection database's 49 publications in all were analyzed. The findings indicate a keen attention on issues like Safety and Security, flexibility, compliance with regulations and laws, privacy, latency, cyber-risks, and technological developments are all important concerns. Despite the fact that these problems have been detected, the suggested fixes still need improvement. Apart from that, the appearance of blockchain technology greatly impacted the financial system's stability. The most significant threat was that Institutional investors were growing their portfolio-relative exposure to crypto-assets. If such exposures use significant leverage levels, including derivatives referencing crypto-assets, the risks could be enormous. Moreover, Losses in crypto-assets may magnify systemic risk resulting from wealth effects if they are accompanied by leverage, liquidity mismatch, and links to the traditional financial system [8]. Sales of stablecoins could result from a decline in confidence in them. The rapid expansion of DeFi poses a threat to fundamental regulatory and supervisory practices and doctrines relating to financial (stability) oversight in the absence of readily discernible intermediates or parties accountable for governance, and banks would pay great attention to and even evolve in the activities, which requires even more strict management and supervision.

In conclusion, blockchain technology has revolutionized traditional financial activities, but at the same time, huge risks will be carried out, and stricter laws, regulations, and supervision need to be completed.

4. Online Payment

With the gradual progress of science and technology, physical cash payment has gradually faded out of people's sight. This is attributed to the gradual maturity and wide application of various online payments. From the advent of PayPal in 2000 to the subsequent Alipay, they have made great contributions to the radical change of payment methods. This also meant that traditional large-scale financial activities were no longer binding and had certain timeliness and security traits, resulting in the financial industry's rapid development and gradual maturity.

PayPal, the first transaction platform for online payments, originated from the idea that Elon Musk wanted to solve the competition in the fast online money transfer business. It has now grown into a free transaction POS that enables customers can pay with credit cards or PayPal accounts by establishing connections with banks and credit unions and solved the problem of an expenditure for small businesses to build and sustain, which greatly increases the convenience for transaction, however, it was not the revolutionary product that was widely used and applied, it was the Alipay published by Chinese Alibaba. Instead of a single e-wallet, it contained various functions that enabled people to eliminate the service time, including paying for utilities and official taxes. Meanwhile, it provided lending and investment business in the first place, but the reason it became so popular was the scan of the QR code. It had saved the cost for expensive smartphones with fingerprint recognition for user authentication or NFC for near field communication. These matured online payment applications met the needs and fantasies of smartphone users. The advantages can be concluded in the following: First, it was convenient and provided customized payment services like a personal banking consultant, second, every transaction can be made anywhere at any time [9]. Also, compatibility, every type of smartphone and electronic device was able to access the application.

The most important was the security of every account and every deal. Due to the direct exposure of private information to internet services, malicious attackers might have the chance to manipulate the deals causing imponderable loss. In order to secure their users, most of the servers use the SSL mechanism, which is a protocol that is used to maintain client and server authentication, which is

basically a handshake protocol. As long as the clients trust the server, the protocol continues. It required the server to be trusted by the third party like the financial stability board or local government [10]. The first step is for the client to connect to the server with an instruction. The server then sends a message back to the customer acknowledging receipt of the message. Additionally, the server requests the client's certificate and sends it to the client. SSL still has several vulnerabilities, even though it can thwart certain popular attacks. The brute force attack against weak ciphers is one of SSL's flaws. This vulnerability was brought about by the US export for Netscape, which has repeatedly broken and is still one of the SSL protocol's most evident flaws.

5. P2P Lending

As its name suggested, peer-to-peer lending was the direct obtaining of loans from individual to individual, without any third party or financial institution as a middleman. Nowadays, an increasing number of websites and applications adopt the P2P leading as an alternative to financing and set the rates and terms that enable the transactions. Where both borrowers and investors can find a lower interest rate and a better return, this newborn digital transaction platform as a fintech has changed the traditional way of the entire loan process, including funding, contracts, and information procedures, which can be completed online. Online P2P lending has expanded quickly since 2005 in a number of industries and nations, including the US, Canada, the UK, Japan, Italy, and China, with varying degrees of growth.

Some online P2P lending platforms are for charitable purposes. In order to simplify the loan process for both borrowers and lenders, these funds aim at collecting and allocating money to people with low incomes while other proceeds will be used for commercial purposes. Once the idea of a P2P lending platform was brought into China, it caused a huge response and a large scale of development, thus as of March 2017, China had the most peer-to-peer lending platforms, with roughly 2,300 in operation and a loan totaling CNY 9,208 [11]. while China needed government support for the industry to survive. China's P2P lending platform had ethical risks, and it was easy for borrowers to falsify loan information. Numerous platforms provide credit needed to have the necessary assessment of risk tools or procedures. Several other banks serve as "shadow banks," offering high rates of return to personal investors alongside greater interest rates to companies and corporations. All of these items are bundled as investments and are available for purchase digitally [12]. These violations finally drew the notice of Chinese authorities, who began imposing increasingly stringent controls in 2016 and involving the selection of a regulatory institution, a full explanation of the usage of funds, and restrictions on the amount of money that can be issued to people, one million and five million respectively.

In Europe, especially in the United Kingdom, P2P lending has grown rapidly in recent decades. According to the report to S&P Global Market Intelligence, Cumulative origination abundance increased at a combined annual growth rate of 175% in the first quarter of 2005, and the first quarter of 2019. While the risks were still obvious, the funding was diverted that one of the country's largest platforms, Retail Money Market Ltd., which focuses on personal loans, operates as Ratesetter, continues to fund most of its loans with money from investors retail [13]. However, Industry trends indicate a greater overall involvement of inter-institutional equity. Zopa, which focuses on personal loans, and Funding Circle Holdings PLC, which focuses on SME loans, the country's two largest platforms, both receive about half of their funding from institutions. Secondly, there was some worrisome in the credit lending in the UK, causing the closure of the largest company, Lendy Ltd. real estate-focused, which went into administration in May after much of its loan book was found to be dormant. Thirdly, the concern from the governors to restrict retail investors, the Financial Conduct Authority published a regulation to restrict the amount in 2019, and another main concern was that the departure from the European Union might have a strong impact on the industry since there was a great fall in customer confidences when Brexit vote was claimed. Many p2p companies showed a revenue decline which greatly reduced the growth of the p2p platform.

6. Conclusion

The development of fintech greatly impacted the traditional financial industry, especially from Robo-Advice/Artificial intelligence to consulting and decision making, Blockchain to trading protocols and bitcoins, online payment and P2P financial to the online financial activities including payment and lending services. They had revolutionized financial activities in the traditional sense while providing convenient and more rational advice for people's financial lives and investments. While it seemed that all the fintech had a common problem which was the lack of stricter supervision and perfect legal constraints, and also had corresponding changes with the change of the financial environment, just like the global epidemic of 2023 seems to have a developmental effect on AI to some extent. This uncertainty can also be fatal for immature technologies, as peer-to-peer lending failed in the Chinese market. In short, no matter whether it is people's needs or the impetus of the financial environment, the maturity and stability of fintech itself in all aspects seem to be what the world expects in the future, and the improvement of various laws and regulations is also imminent.

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