

Challenges and Development of Fintech in the Era of Artificial Intelligence

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Abstract: This essay explores the challenges and developments of FinTech in the era of artificial intelligence (AI). It highlights the potential benefits of AI in automating processes, enhancing decision-making, and delivering personalized financial services. However, it also identifies corresponding risks associated with the use of AI tools, including the source of data, the reliability of financial decisions, and potential disruption to the financial industry. The essay proposes effective strategies to address these challenges and discusses the role of AI in shaping the future of FinTech.

Keywords: Artificial intelligence, FinTech, Automation, Decision-making.

1. Introduction

Background In November 2022, open AI launched ChatGPT, the newest AI language model, which uses extremely large data and enhanced learning algorithms to provide generated dialogue responses to questions. As a result of its powerful algorithms and data providing relatively reliable responses, the platform reached over a million users in its first week of public availability and was quickly dubbed "the next big disruptor in the industry"[1]. And in the months following the opening of ChatGPT, with news of internet companies developing their own AI language models and ChatGPT "evolving" to version 4.0, AI is flourishing and exploding. Due to the many recent applications of AI in the FinTech sector, another author managed to produce a fairly comprehensive guide to quantitative trading, almost entirely exported through ChatGPT. It proves the tremendous growth and potential of AI in fintech, financial analytics and social intelligence. Artificial Intelligence (AI) has become a key driver of FinTech innovation, providing new ways to automate processes, enhance decision-making and deliver personalised financial services. Despite the potential benefits of AI in FinTech, there are corresponding risks associated with the use of AI tools. These challenges include the source of data [2], the reliability of financial decisions, and disruption to the financial industry. In this context, it is crucial to understand the challenges and developments in FinTech in the era of AI and to propose effective strategies to address them.

Aim This essay explores AI and FinTech in four main areas. 1. How to rationalise the use of AI-advanced technological solutions to improve and deliver automated financial services in FinTech. 2. Further development of AI language models and how to make AI more reliable in performing tasks that typically require human intelligence, such as learning, problem solving and decision making. 3. Challenges for the financial industry: Exploring the challenges and opportunities for financial markets of the emerging smart financial tools for the financial markets in terms of challenges and opportunities. 4. Ethical Considerations: Moral and ethical implications of the use of AI in financial decision-making and service delivery.

Theoretical foundations There is a need to first explore the

framework of the underlying applications of AI, as well as to understand how AI is disrupting traditional financial services and creating new business models in the FinTech sector [3]. How AI is empowering more personalised, advanced, better, safer and newer financial mechanisms, products, models, services, systems and applications for the mainstream and alternative economy. Analysing ethical considerations, data privacy and fairness issues associated with AI-driven fintech solutions [2].

2. Research Aim

The aim of the essay is to delineate the possible challenges and development of Fintech in the era of artificial intelligence (AI). Artificial intelligence (AI) is becoming a major force behind Fintech innovation, offering fresh approaches to automate procedures, improve judgment, and provide individualised financial services. Despite the potential advantages of AI in Fintech, using AI tools comes with equal risks. These difficulties include the data's origin, the accuracy of financial judgments, and the disruption of the financial sector. In this context, it is essential to comprehend the problems and changes facing the fintech industry in the AI age and suggest workable solutions. The essay focuses on a specific fintech scenario, automated investment of Smart Banking in one of the major fintech firms of the United Kingdom, Revolut. However, some competitive fintech firms like Monzo in the UK have used machine learning in their system to provide effective smart banking to customers. The fintech scenario of the firms and the inclusion of Artificial intelligence are significant to understanding how fintech firms develop and encounter possible challenges in intelligent (smart) investment.

3. Research Objectives

The research objectives are to determine the main issues and possibilities related to the growth of fintech in the era of artificial intelligence. The study also focuses on the ethical challenges, data protection concerns, and legal compliance problems associated with AI-driven Fintech solutions. The research also aims to examine the effects of AI on the provision of services and financial decision-making in the Fintech sector. Finally, strategies and best practices are

proposed for the AI era to solve the difficulties and maximise the prospective of AI in the Fintech sector. Innovation in research is crucial to the effectiveness of the study and its managerial implications. Therefore, the research aims to integrate the advantages of quantitative and qualitative research methodologies as a mixed-methods approach will provide a thorough knowledge of the complicated difficulties related to AI-driven Fintech. This cutting-edge method will comprehensively assess the difficulties and potential in the Fintech sector and offer suggestions for debates in academia and business. Hence, this research will help policymakers, regulators, Fintech companies, and other stakeholders in the financial services sector navigate the complexities of AI-driven innovation and ensure the responsible and ethical deployment of AI in Fintech by examining the challenges and developments in Fintech in the age of AI.

4. Literature Review

Digital innovations like smart banking, mobile banking, peer-to-peer (P2P) lending, automated process-flow of investment, crypto assets, and robo-advice have brought a huge transformation in financial technology worldwide. Meanwhile, AI elements like machine learning are making big changes in the fintech industry, where the fintech firms also face challenges in adopting and implementing AI effectively [4]. The ability of AI to examine large datasets of multifaceted data has helped streamline decisions and unearth new prospects that were not possible earlier. However, challenges like data privacy, cyber security, and restricted regulations are witnessed as possible challenges related to using AI in the fintech sector[5]. To understand the role of AI in automated investment or smart banking scenarios of the fintech sector, the case of Revolut and Monzo can be considered for the discussion.

In the contemporary world, every customer anticipates controlling all transactions, easy and hassle-free access to banking resources, and compliantly preserving the freedom of selecting banking services[6]. Hence, data processing to smartly automate the investment or required services needs wide-ranging assistance from intelligent systems offered by fintech firms like Revolut and Monzo. The fintech firms have created a proposition by providing automated investment services based on customer preferences. For example, Monzo, a UK-based fintech firm, has implemented an automated saving feature in the smart banking app for its customers. According to this new feature, the transactions can be rounded up every time the customer deposits or spends the amount in a separate account. Further, this feature can transfer a pre-set fraction of customers' monthly paychecks to their savings accounts on payday [6]. Whilst these fintech scenarios are questionably usual in the online banking sector, the effectiveness of their application relies on how effectively the nudges are vigorously personalised.

5. Benefits of AI-driven Fintech Solutions

The research assumes that increased productivity and client satisfaction in the financial services industry are favourably

correlated with using AI-driven Fintech solutions. Fintech products powered by AI are overturning the banking sector. Artificial intelligence-driven fintech solutions can reduce possible risks and biases in financial decision-making by integrating ethical considerations, data privacy, and regulatory compliance[7]. However, according to Margaroli [8], if artificial intelligence creates a complicated model, there will be a number of parameters. Therefore, it is not possible to explain the reason for decision-making. Thus, AI poses an explainability challenge for smart banking in the fintech sector. It was also argued that regulators at a global level demand the reasoning for decisions. Such challenges constrain the huge utilisation of AI in some specific scenarios of fintech firms. argued that the real challenge for fintech firms like Revolut and Monzo is reinforcing the competitive advantage by grabbing a larger share of customers' wallets and producing material gains. The answer to this challenge is in entrenching AI data and capabilities across key aspects of operations of the fintech firms. For example, AI has helped Revolut implement automated investment in the U.S.A. as a robo-advisor launched by the firm to automate the customers' investment portfolios and eradicate the resistance to investing. The robo-advisor will entail the users making intelligent investments grounded on their risk tolerance [9]. Thus, using artificial intelligence-driven robo-advisor is competitive in providing investments' value propositions that are automated with well-managed portfolios in the fintech sector.

6. Challenges of AI-Driven Fintech Solutions

However, fintech firms face some regulatory challenges in implementing robo-advisor in the fintech scenario of automated investment or smart banking. Revolut faced a possible encounter between laws based on data privacy laws that limit the ways specific data can be collected, utilised, and revealed versus how artificial-intelligence-driven solutions depend on a significant portion of raw data to frame predictions [10]. Still, Revolut has effectively refined its strategy in order to become competitive and compete with the traditional banking systems and major payment technology firms by launching a robo-advisor for intelligent investment [11]. Since the fintech services generally rely on the data, even in the era of artificial intelligence, it is critical for fintech firms to point towards AI-driven technologies for making smart banking more effective. Further, according to Maiti and Ghosh, as distracting technology of the future, financial technology firms like Revolut, Monzo, and others should take into consideration three main aspects, like ubiquity, stern regulations, and safety to provide financial stability to the customers. Thus, it is not wrong to state that there should be appropriate data privacy regulations in the use of AI-driven fintech solutions in the scenario of intelligent investment, as improper management will result in the breach of confidentiality, financial loss, and identity theft.

To deal with the challenges, some potential ways and strategies are recommended to the practitioners and policy makers in the fintech industry to develop AI-driven fintech solutions effectively (as shown in Figure 1).

Six potential ways forward for artificial-intelligence (AI) practitioners and business and policy leaders to consider



Figure 1. Six Potential ways forward for artificial intelligence (AI) practitioners and business and policy leaders to consider[8]

The figure explicitly demonstrates that fintech practitioners need to be mindful of the areas where AI can be effective and where it can produce biases to provide ineffective results. Similarly, the fintech policy leaders and practitioners like Revolut and others must establish processes to examine and alleviate the biased produced by AI-driven solutions. It is required to ensure the effective alignment between humans and machines providing intelligent investment services. For example, Revolut needs to establish a system to ensure that the robo-advisor is aligned and works well with the human work system. Arslanian and Fischer [12] asserted that a strategic model incorporating the Internet of Things and artificial intelligence would revolutionise the automated investment scenario of fintech firms and practitioners in the future. In addition, AI-driven fintech solutions like robo-advisors and AI chatbots will replace traditional financial advisors.

7. ChatGPT and Fintech

Further, the newest AI language model, ChatGPT, which employs very vast data and improved learning algorithms to generate dialogue responses to questions, was released by open AI in November 2022. The platform reached over a million users in its first week of general availability due to its potent algorithms and data offering somewhat credible answers, earning it the moniker "the next big disruptor in the industry"[1]. Another author was able to create a reasonably thorough manual for quantitative trading that was nearly totally exported through ChatGPT because of the numerous current applications of AI in the Fintech industry. This demonstrates AI's phenomenal development and potential in the fields of fintech, financial analytics, and social intelligence. The use of ChatGPT is witnessed through the use of AI-driven chatbots in the fintech sector to increase customer service and change the way humans interact with technology [13]. However, compliance and regulatory practices are key issues in the greatly governed fintech sector. For example, Europe has become the first to implement an AI-based act regarding the application of Artificial-Intelligence driven solutions. This law also bans some particular practices to safeguard customers' rights whilst

enabling the technology to grow further [8]. As AI reaches a critical tipping point, the use of AI tools becomes more challenging ahead of the dizzying progress of technology.

In a current survey, about 78% of fintech firms stated that they consider the application of at least one AI tool in their systems in different scenarios[14]. However, they also mentioned the huge scope of ChatGPT's usage in their customer chatbot solution. The resulting factor discloses the challenges and opportunities associated with using AI tools in fintech solutions. Nearly 30 per cent of the surveyed financial technology firms claimed to have their annual revenues augmented by the use of AI by over 10 per cent, whilst more than 50 per cent witnessed cost reduction through AI implementation [14]. Thus, it can be stated that there are instant clear benefits to fintech firms in specific areas, like automating investment, automating customer service-related responsibilities and producing information for smart banks to make well-informed decisions whilst assisting to detect possible fraud. However, Mehrban et al. [15], argued that in the age of AI, fintech would critically face several challenges regarding policies dealing with data management and privacy of the users, laws of interaction for fintech firms, and categorised operation of virtual currency. This challenge needs to be managed by forming global-level productive techno-financial policies and frameworks.

8. Conclusion

According to the World Bank [16], authorities have collaborated globally to share their expertise and knowledge on experience with AI solutions in different fintech scenarios and related developments and challenges. It is more vital provided the cross-border streaming of data authority and anti-trust decisions and the prospective to improve the productivity of the service through standards' harmonisation in areas like data safety, interoperability, and deterrence of cybercrime. Conclusively, it is delineated that use of AI tools like robo-science for investment automation ChatGPT for Chatbots in smart banking comes with challenges and opportunities in the fintech sector. As with the advent of new technology, some key challenges like data privacy and regulatory challenges exist. However, AI provides a number

of probabilities to revolutionise the way fintech services are performed. The role of fintech firms in decision-making practices informed by artificial intelligence is crucial in identifying and managing biases formed into the data. The fintech firms needs to ensure the implementation of right processes to investigate the AI tools' application and their alignment to help customers with automated investment.

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