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The Application of Fintech (Financial Technology) and Risk Management

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Abstract: This paper provides a comprehensive overview of the impact and applications of financial technology (Fintech) across various sectors such as payment and clearing, lending, wealth management, insurance, and risk management. It highlights the transformative potential of Fintech in enhancing financial efficiency, inclusiveness, and risk management through the utilization of modern technologies like big data, artificial intelligence, and blockchain. The paper delves into specific examples such as online payment systems, peer-to-peer lending platforms, robo-advisory services, and blockchain technology. Furthermore, it discusses the challenges and risks associated with Fintech, including regulatory issues, security concerns, and the need for effective risk management practices. The abstract emphasizes the importance of responsible risk management in ensuring financial stability and preventing systemic risks in the Fintech sector. Overall, the abstract provides a comprehensive understanding of the role of Fintech in shaping the future of the financial industry and emphasizes the need for effective regulation, risk management, and technological innovation to harness its full potential while mitigating associated risks.

Keywords: Financial technology, Risk management, Technological Innovation, Regulation

1. Introduction

Fintech refers to a phenomenon that uses modern information technology and data analysis methods to provide innovative solutions for financial services, improve financial efficiency and inclusiveness, and reduce financial costs and risks. Kashif et al.'s study believes that financial technology has extensive applications in various fields of sustainable finance and has great potential to create long-term positive impacts in this regard [1]. Fintech can be further combined with other technologies to promote the diversified growth of sustainable finance. It innovates and optimizes products and services in the traditional financial industry by utilizing advanced technologies such as big data, cloud computing, artificial intelligence, and blockchain to improve efficiency and reduce operating costs. Fintech is widely used, and its applications are mainly reflected in the following aspects:

(1) The development of payment and clearing, lending and financing, wealth management, retail banking, insurance and transaction settlement is inseparable from financial technology. For example, financial services such as digital renminbi, Internet insurance, and quantitative transactions are provided through the Internet, mobile devices, and other channels. (2) Fintech can also be used for risk management. Using big data analytics and machine learning technologies, financial institutions can conduct more precise risk assessments and fraud detection, thereby improving credit quality and

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customer service levels. (3) People can use financial technology to carry out Robo-advisory and inclusive finance. Through mobile financial APP, open API and other technical means, it provides personalized investment advice and a wide range of financial services, especially for small and medium-sized enterprises, rural areas and low-income groups. (4) Supply chain finance and Internet of Things financial technology in financial technology are of great use. Utilize 5G, Narrowband Internet of Things (NB-IoT), Radio Frequency Identification (RFID) and other technologies to realize the intelligent interconnection of things and provide support for digital credit and digital risk control. (5) Regulatory technology in financial technology uses big data models and artificial intelligence algorithms to conduct in-depth data mining and intelligent analysis to improve regulatory efficiency and the security of the financial system.

It can be seen from the performance in various fields that financial technology, as a deep integration of technology and finance, has brought unprecedented innovation and change to the financial industry. However, with its rapid development, risk issues have become increasingly prominent. Fintech risk control has become the key to ensuring financial stability and preventing systemic risks. Alabdullah investigated the relationship between the adoption of financial technology, risk management practices and corporate profitability in Kuwait and found that the development of financial technology is positively related to asset returns, indicating that the implementation of innovative financial technology will help To improve the efficiency of banking institutions [2]. There is a strong positive relationship between the effectiveness of risk management and the profitability of commercial entities, which highlights the importance of responsible risk management practices in improving the profitability of banking institutions. Fintech risk control is the key to ensuring financial stability and preventing systemic risks. Based on the actual development of financial technology in China, this paper will systematically analyze the main means of financial technology risk control. These means include risk identification and assessment, risk monitoring and early warning, risk control and disposal, regulatory technology and compliance management, and risk education and training. These means are interrelated and mutually supportive, and together constitute a complete system of financial technology risk control.

The application of financial technology in various fields will be analyzed from the following six examples.

2. Online Payment

The rise of online payment on a global scale is the most intuitive manifestation of the widespread application of financial technology. Online payment refers to a business in which banks provide online fund settlement services when sellers and buyers conduct transactions through Internet e-commerce websites. It provides enterprises and individuals with a safe, fast and convenient e-commerce application environment and online fund settlement tool. Online payment not only helps enterprises to quickly collect sales funds and shorten the collection cycle, but also provides online consumption payment and settlement methods for personal online banking customers, allowing customers to truly shop online without leaving home. However, as an emerging payment method, online payment has its own unique advantages and is also inferior to traditional payment methods. It cannot let online payment completely replace traditional payment, because traditional payment methods have the following advantages and disadvantages compared with electronic payment.

2.1. Advantages

(1) High security: Traditional payment methods such as cash payment, bank transfer, etc. avoid possible security risks in online payment, such as account theft, credit card fraud, etc. If security measures for electronic payments are insufficient, users' personal information and funds may be

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compromised, resulting in financial losses and identity theft. (2) Simple and convenient: For people who are not familiar with network operations, traditional payment methods are simpler and easier to understand, and there is no need to learn to use electronic payment tools. (3) Intuition: Consumers can directly judge the value of goods through cash transactions, while electronic payments often need to be carried out through a virtual interface. (4) High credibility: Traditional payment methods are in line with consumer habits, especially in face-to-face transactions, which can increase the trust of transactions. (5) Privacy issues: Using online payment means that users' personal and transaction information may be stored and shared. If this information is misused or leaked, it could cause privacy issues and a crisis of trust.

2.2. Disadvantages

(1) Time and space limitations: Traditional payment methods, such as bank transfers, post office remittances, etc., need to be carried out at a bank or post office, which are limited by business hours, and it is inconvenient to carry cash during large transactions. (2) Low efficiency: Compared with electronic payment, the transaction process of traditional payment is more cumbersome, such as the need to queue up at the bank or post office, which affects the efficiency of the transaction. (3) Security risks: Carrying large amounts of cash involves the risk of being robbed, and you may encounter problems such as counterfeit currency during the transaction. (4) Cumbersome procedures: For merchants, the procedures of traditional payment methods are relatively cumbersome and not as efficient as electronic payment.

To sum up, traditional payment methods have advantages in security and intuitiveness, but have shortcomings in convenience, efficiency and security. As technology develops, the security of electronic payments is also constantly improving. Kim believes that the enhancement of convenience, security, reliability and responsiveness of electronic payment platforms can have a positive impact on users' attitudes towards use and user behavior [3]. At present, electronic payment has been widely used all over the world, especially in China, which brings convenience but also breeds online fraud and financial crimes. Establishing a safe and reliable electronic payment platform and protecting user data have become important factors for the development of financial technology and social stability.

2.3. Requirement

The supervision of financial technology is also an important means to prevent risks brought by financial technology. As financial technology develops, corresponding laws should continue to advance. Kharisma found that due to the lag in Indonesia's legislation on financial technology, a large number of illegal P2P lending, illegal investment companies and illegal businesses have appeared in Indonesia [4]. While the cumulative amount of online lending transactions continues to rise, the amount of bad debts continues to grow. This also warns us that if financial technology is not regulated, its inherent risks will harm the domestic economic order. China's "Regulations on the Supervision and Administration of Non-Bank Payment Institutions" will come into effect on May 1, 2024. Clarify the definition and establishment permission of non-bank payment institutions. Non-bank payment institutions are defined as companies other than banking financial institutions that transfer monetary funds based on electronic payment instructions submitted by users.

The establishment of a non-bank payment institution must be approved by the People's Bank of China and obtain a payment business license. The name of the non-bank payment institution shall indicate the word "payment". Clearly establish conditions and strictly control access.

Non-bank payment institutions shall aim to provide small-amount, convenient payment services. Without approval, they shall not engage in other businesses that require approval according to law,

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and shall not engage in clearing business or engage in disguised form. There is no rule without rules. Under the supervision of relevant laws and regulations, it can:

(1) Improve payment business rules

To adapt to the development needs of the payment business, the payment business is divided into two categories: stored value account operation and payment transaction processing, and the People's Bank of China is authorized to formulate specific rules. Clarify the payment business management requirements and stipulate that non-bank payment institutions should improve business management and other systems and have business systems, facilities and technologies that meet the requirements to ensure the continuity, safety and traceability of payment services. Clarify the management regulations on payment accounts, reserves, payment instructions, etc., requiring payment accounts to be opened in the user's real name. Non-bank payment institutions are not allowed to misappropriate, occupy, or borrow reserve funds, and are not allowed to forge or alter payment instructions to prevent the non-bank payment industry risk.

(2) Protect users' legitimate rights and interests

The "Regulations" stipulate that non-bank payment institutions sign payment service agreements with users, and their terms should be drawn up in accordance with the principle of fairness. Non-bank payment institutions shall ensure the security of user funds and information, and shall not entrust relevant core business and technical services to third parties; properly preserve user information and transaction records, establish an effective due diligence system, and strengthen risk management; and take effective measures to ensure payment Account security prevents payment accounts from being used for illegal fund-raising, telecommunications and network fraud, money laundering, gambling and other illegal and criminal activities.

(3) Clarify regulatory responsibilities and legal responsibilities

It is stipulated that the supervision and management of non-bank payment institutions should implement the party and the country's lines, policies, decisions and arrangements, focus on serving the real economy, coordinate development and safety, and maintain the order of fair competition. Clarify the supervisory responsibilities, supervisory measures and risk disposal measures of the People's Bank of China, and local people's governments will cooperate with the People's Bank of China in risk disposal. The Regulations also stipulate legal liability for illegal acts.

3. P2P Lending

P2P is the abbreviation of peer to peer lending (or peer-to-peer), which means individual to individual (partner to partner). Also known as peer-to-peer online lending, it is a private small-amount lending model that gathers small amounts of funds and lends them to people in need of funds. It is a type of Internet Finance (ITFIN) product. It is a private small-amount loan, an online credit platform and related financial activities and financial services that rely on the Internet and mobile Internet technology. It can understand more specifically by analyzing the advantages and disadvantages of P2P.

3.1. Advantages

(1) Lower the borrowing threshold: P2P online lending platform provides borrowers with a wider range of financing channels and lowers the borrowing threshold. Borrowers can borrow money directly from investors through the platform without going through cumbersome bank approval processes. (2) Improve the utilization rate of funds: Through the P2P online lending platform, investors can lend funds to people in need and improve the utilization rate of funds. At the same time, borrowers can also obtain lower borrowing costs and reduce financial pressure. (3) Optimize resource allocation: P2P online lending platforms optimize resource allocation through transparent information

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disclosure and competition mechanisms. Investors can choose appropriate investment projects based on the borrower's credit rating and project risk to achieve the best allocation of resources.

3.2. Disadvantages

(1) Legal risks: The legal risks involved in P2P online lending platforms mainly include illegal fund-raising, information security, etc. Illegal fund-raising refers to the act of raising funds from the public without approval. P2P platforms may bear legal liability if they violate relevant regulations. In addition, information security risks also deserve attention because the platform may leak the personal information of borrowers and investors. (2) Credit risk: The credit risk of a P2P online lending platform mainly includes the borrower’s default risk and the platform’s own credit risk. If the borrower defaults, investors may lose some or all of their investment. In addition, if the platform has credit problems, it may also affect the safety of investors' funds. (3) Regulatory risks: Changes in regulatory policies may have an impact on P2P online lending platforms. For example, regulatory agencies may put forward new requirements on the platform's operating model, fund custody, etc., which may have a certain impact on the platform's business.

In short, as a new financial service model, P2P online lending has the advantages of lowering the borrowing threshold, improving fund utilization, and optimizing resource allocation. However, there are also some disadvantages and legal risks that investors need to fully understand and evaluate when choosing a platform. At the same time, regulatory authorities should also strengthen supervision of platforms to protect the legitimate rights and interests of investors. Wijaya believes that financial structure supervision has a significant impact on the financial technology P2P lending ecosystem, and financial structure supervision plays a vital role in establishing a strong and stable financial technology P2P lending ecosystem [5]. Providing regulations, one of the core functions of the regulator, is used to guide and direct the future development of the industry.

According to the relevant laws of China, the departments that supervise and manage P2P online lending platforms are the banking regulatory agency of the State Council and its dispatched agencies. These departments are responsible for formulating corresponding supervision and management systems and implementing behavioral supervision. In addition, the provincial people's governments are responsible for the institutional supervision of online lending information intermediaries within their respective jurisdictions. The Ministry of Industry and Information Technology is responsible for supervising the telecommunications business involved in the business activities of online lending information intermediaries. The Ministry of Public Security is responsible for the supervision of online lending information intermediaries. The State Internet Information Office is responsible for the supervision of financial information services, Internet information content and other businesses. At the same time, the banking regulatory agency of the State Council and its dispatched agencies are responsible for formulating unified standardized development policies and supervision and management systems, guiding and cooperating with local people's governments in the institutional supervision and risk disposal of online lending information intermediaries, and establishing cross-departmental and cross-departmental Regional regulatory coordination mechanism.

4. Robo-Advice

4.1. Artificial Intelligence

Artificial Intelligence (AI for short) is one of the hot topics in the development of information technology in recent years. People's understanding of AI has evolved from the initial science fiction imagination and simple simulation to a comprehensive system of basic technologies such as machine learning, natural language processing, and computer vision. AI has been widely used in various fields, including speech recognition, machine translation, intelligent customer service, autonomous driving,

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medical care, finance, etc. I will review it from the perspective of core artificial intelligence technology.

Artificial intelligence includes traditional artificial intelligence and modern artificial intelligence. Machine learning, deep learning, genetic algorithms and reinforcement learning are the main branches of modern artificial intelligence. They mainly solve problems such as classification, regression, clustering, association and generation. Traditional artificial intelligence mainly solves three major problems: problem solving, gaming and predicate logic. However, from the perspective of core artificial intelligence technology, the development of artificial intelligence cannot only focus on modern artificial intelligence. The reason why traditional artificial intelligence is important is:

(1) Traditional artificial intelligence algorithms are relatively mature, reliable and effective. Many problems that can be solved with traditional AI should not be solved using complex and costly modern AI methods. For example, to find the shortest path between Shanghai and Beijing, the A* algorithm is much more efficient than the deep neural network;

(2) Traditional artificial intelligence is more basic. In many application scenarios, modern artificial intelligence methods must work on the basis of traditional artificial intelligence. For example, the basic part of AlphaGo, which defeated Go world champion Lee Sedol, is still a game algorithm, and the residual neuron network (one of the deep learning technologies) only plays a role in evaluating the quality of the chess game. As an algorithm engineer, if you only know deep learning but not game algorithms, it will be difficult to write an efficient Go program;

(3) Deep learning is based on black box reasoning and is often understood without knowing why. That is, it solves the problem, but the reason behind its solution remains unclear. The various algorithms of traditional artificial intelligence are generally based on white-box reasoning. Knowing what is happening will better understand why;

(4) More importantly, traditional artificial intelligence cannot be evaluated solely based on "whether it is useful or not". Just like some theories and methods in mathematics that seem "useless" at the time, it will be too late for you to study it when it is "useful".

4.2. ChatGPT

ChatGPT is a large-scale language model developed by the OpenAI team. It can accept user input and generate corresponding natural language responses. The model is generated by training using a large text corpus and can be used for various natural language processing tasks such as language understanding, text generation, machine translation, etc. ChatGPT is open and can be used by developers and researchers to build applications and tools in a variety of languages. The usefulness of ChatGPT can be specifically reflected in:

As an innovative technology, ChatGPT is expected to completely change the operating model of enterprises. By automating processes and improving efficiency, ChatGPT will become a turnaround tool for all types of enterprises. It also stands for “chatbot-guided process transformation,” which is a system with chatbots at its core designed to help companies automate processes. The system uses natural language processing and machine learning technology to understand customer needs and respond appropriately. It can be widely used to automate customer service, sales and marketing processes, as well as internal processes such as order fulfillment and inventory management.

During operation, ChatGPT can save enterprises time and money by automating daily tasks, allowing employees to focus on more difficult tasks. At the same time, the system can also provide valuable insights into customer behavior and preferences, allowing companies to better tailor services and products to meet customer needs. In addition, ChatGPT can also help enterprises improve work efficiency by streamlining processes and eliminating redundant steps. Reducing the time it takes to complete tasks allows businesses to conserve resources and increase customer satisfaction. It can be

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seen that ChatGPT has great potential to subvert the way enterprises operate. With process automation and efficiency improvements, ChatGPT will become a winning formula for enterprises of all sizes.

In summary, ChatGPT, as a conversational artificial intelligence technology, brings many opportunities to enterprises, including providing personalized and customized services, data-driven decision-making, and cross-domain applications. Akpur believes that ChatGPT cannot replace human creativity and wisdom in academic work [6]. However, it can be a useful tool for generating ideas and identifying data. Despite its limitations, ChatGPT offers unique advantages, especially in editing tasks related to academic writing. However, enterprises also need to pay attention to challenges such as customer privacy protection, technology updates and maintenance, and compliance with regulations and policies during the application process.

Looking forward to the future, enterprises should actively respond to challenges while seizing opportunities and give full play to the potential of ChatGPT. By continuously optimizing business intelligence systems, enterprises will achieve greater breakthroughs in improving customer satisfaction and optimizing business performance. Adapting to and leading industry development trends will help enterprises gain a firm foothold in the fierce market competition and move towards a brilliant future.

With the development of ChatGPT, ChatGPT has developed rapidly in all aspects, and people's supervision has also gradually begun. Søraa believes that AI is increasingly affecting many aspects of people's lives around the world, from relatively mundane technologies to more advanced digital systems that can make their own decisions [7]. While AI has enormous potential, it also presents enormous dangers, depending on how it is designed and used. At the same time, Reed believes that using artificial intelligence (AI) technology to replace human decision-making will inevitably create new risks and the consequences are unforeseen, which naturally leads to calls for regulation [8]. But it’s premature to try to build a universal AI regulatory system. Instead, it should work step by step within existing legal and regulatory systems that allocate responsibility and accountability to individuals. The European Union has gone further than the United States in regulating artificial intelligence. It proposed a draft Artificial Intelligence Act in April 2021 and plans to begin implementing mandatory supervision of artificial intelligence products in 2024. The draft AI bill sets a total of 5 policy options 1, 2, 3, 3+, and 4 (please refer to the introduction of the first four articles in this series), and formulates requirements for high-risk artificial intelligence products to pass compulsory certification by the EU Notified Body Conformity assessment process, and stipulates that developers and users of high-risk artificial intelligence products must be audited by a notified body. Penalties for non-compliance with the Act can be up to €30 million or 6% of global annual turnover (whichever is higher). In addition to the EU AI Act's supervision of horizontal topics, in specific fields, the EU also has various existing vertical regulations or directives, such as the Machinery Directive in the field of industrial automation and the Medical Equipment Directive in the medical field. etc. are currently being revised to add regulatory requirements for artificial intelligence products or functions involving security.

5. Blockchain

Blockchain is a shared, immutable ledger designed to facilitate transaction recording and asset tracking processes in business networks. Assets can be tangible (such as houses, cars, cash, land) or intangible (such as intellectual property, patents, copyrights, brands). Almost anything of value can be tracked and traded on a blockchain network, reducing risks and costs on all fronts.

Among them, virtual currency is very representative. It has the mathematical properties of currency (durability, portability, fungibility, scarcity, divisibility and easy identification) rather than relying on physical properties (such as gold and gold). silver) or trust in a central authority (such as fiat currencies). Simply put, virtual currencies are backed by mathematics. With these properties, all a

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form of currency needs to have value is trust and usage. In view of the depth of the background of the problem, it is necessary to stand higher from the starting point of the research. The currency issue is an issue in the category of modernity, while the issue of virtual currency is an issue in the category of post-modernity. They do not share the same underlying paradigm. It is the difference in paradigm, not the virtual phenomenon, that leads to the difference between the two.

For example, the fluctuation of Bitcoin price is a very strange phenomenon in the history of global currency in the past ten years. When Bitcoin first started trading in 2010, a programmer in the United States bought two pizzas with 10,000 Bitcoins. At that time, the two pizzas were worth $30. That is, at that time, 10,000 Bitcoins were only worth $30. . In the early days, the price of Bitcoin was almost worth mentioning. At its peak in 2017, the price of Bitcoin rose to almost 20,000 US dollars. The current price of Bitcoin

The price is over $6,000. Sharp increases in the price of Bitcoin and its level of volatility are rare. Therefore, the supervision of virtual currencies has a long way to go.

For example, in the United States, where virtual currencies are very widespread, the degree of regulation and legislative progress of virtual currencies vary from state to state, and in some states the field is still in a gray area. Corey believes that there are many cryptocurrencies with almost no legal regulations in the United States or globally [9]. This lack of regulation not only leads to countless practical problems, but also to the question of who will regulate a truly globalized market and how. For example, California is working hard to introduce relevant laws to regulate virtual currencies. In February 2015, there was a relevant legal bill10. Pennsylvania and New Hampshire also have relevant bills proposing to regulate virtual currencies and require license registration. Some states have introduced relatively complete legislation for regulation, such as New York State. For states that are in gray areas or do not yet have relevant regulatory provisions, the possibility of applying for registration of a "fund transmitter" license in accordance with the aforementioned FinCEN opinions cannot be ruled out. Motsi believes that while cryptocurrencies have legitimate uses and there is considerable interest in their potential for innovation in the financial sector and beyond, they are used to facilitate illegal activities, coupled with their impact on consumers and investors [10].

6. Conclusion

With the vigorous development of the digital economy, financial technology plays an increasingly important role in today's world. Fintech has emerged as a transformative force, leveraging advanced digital technologies like artificial intelligence, big data, and blockchain to revolutionize traditional financial services. This technological innovation has led to the emergence of numerous financial technology companies worldwide, offering a diverse range of financial products and services. From payment solutions to lending platforms and investment tools, Fintech has expanded its footprint across various sectors, profoundly influencing the way people conduct financial transactions and manage their finances. The advent of Fintech has not only improved the accessibility and efficiency of financial services but has also fostered innovation and change within the financial industry. By streamlining processes, reducing costs, and enhancing user experiences, Fintech has democratized access to financial services, empowering individuals and businesses alike. Moreover, Fintech has facilitated financial inclusion by reaching underserved populations and providing tailored solutions to meet their specific needs. As Fintech continues to evolve, it is poised to further reshape the landscape of the financial industry, driving greater efficiency, transparency, and accessibility. However, along with its tremendous potential, Fintech also presents challenges related to regulation, security, and privacy. Therefore, it is imperative for policymakers, industry stakeholders, and consumers to collaborate in navigating the complexities of the Fintech ecosystem and harnessing its full potential for the benefit of society.

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