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The Rise of Digital Finance and Systemic Risk: Implications, Challenges, and Coping Strategies

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Abstract: With the continuous development of Internet technology, digital finance has become increasingly popular. The digital transformation of finance has brought huge shocks to the traditional financial industry. This paper aims to examine the interrelationship between digital finance and systemic risk and explore in depth its implications for the global financial system's stability. This paper examines key areas such as digital payments, P2P lending, and virtual currencies. Due to the rapid development of digital finance, while bringing great efficiency improvements, new systemic risks also follow. This study attempts to suggest a range of regulatory and risk management strategies. These strategies are designed to deal with the systemic risks brought about by digital finance so as to ensure the stability and sustainable development of the financial system. This study is expected to provide strong references and recommendations for the financial industry and policymakers to realize the potential value and impact of digital finance while protecting financial stability.

Keywords: digital finance, systemic risk, coping strategies

1. Introduction

Against the background of the rapid development of information technology, digital finance has widely entered our daily life and significantly changed the global financial service system. Digital finance includes various forms of financial activities conducted through digital platforms, such as online banking, digital payments, peer-to-peer (P2P) lending, and virtual currencies, among others [1]. This paradigm shift brings many benefits, including increased convenience, accessibility, and efficiency. However, along with these advances, digital finance also brings new challenges and risks, especially those related to systemic risk.

Systemic risk refers to events at the firm level that could trigger significant instability or collapse of an entire industry or economy. For example, the failure of an important financial institution may cause a chain reaction throughout the financial system. The global financial crisis in 2008 highlighted the serious consequences of systemic risk. The failure of a few major financial institutions triggered a chain reaction throughout the financial system, leading to a global economic downturn since 2019. The widespread dissemination of COVID-19 has had a significant effect on the economy and the financial system of the entire world [2]. As a result of the lockdown and restrictions imposed as a direct result of the pandemic, many different industries have been severely impacted. This has resulted in the closing of businesses, the mass layoff of employees, and wild swings in the financial

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markets. It reflects the global and complex nature of systemic risk, as well as the proximity of the financial system to the rest of the world.

With the advancement of financial innovation and globalization, the form of systemic risk is constantly changing. Under the influence of digital finance, the complexity, and connectivity of the financial system is growing at an alarming rate, which also brings new challenges to the assessment and management of systemic risks [1]. Digital payments have seen significant growth in recent years, with the popularity of mobile payment platforms and digital wallets. This shift to digital payment methods has greatly simplified transactions, and the community of users is expanding. However, it also raises risks to privacy, data security, and cyber-attacks that could destabilize the financial system. Likewise, P2P lending has also experienced very rapid growth, providing many sources of financing for individuals and small businesses. However, its emergence and popularity have also brought some new concerns about liquidity risk and credit risk. The emergence and popularity of virtual currency is also an important part of digital finance. However, its decentralization and lack of supervision by relevant agencies have also raised concerns about its involvement in money laundering and economic crimes. The huge volatility of virtual currencies also poses a huge challenge to the stability of financial markets.

In order to deal with these potential risks and maintain the stability and sustainable development of the financial system in the context of digital finance, it is necessary to propose effective regulatory and risk management policies. People should formulate a corresponding and comprehensive regulatory system based on the special attributes of digital finance to minimize the systemic risks brought about by digital finance and maximize the benefits of digital finance. The purpose of this paper is to explore the interrelationship between digital finance and systemic risk and explore its potential impact on systemic risk by studying the key areas involved in digital finance, such as digital payments, P2P lending, and virtual currency. At the same time, it proposes corresponding supervision and risk management strategies to deal with systemic risks in the development of digital finance and ensure the stability and sustainable development of the financial system.

2. Digital Finance

Digital finance refers to a new generation of financial services that combine traditional financial services with Internet and information technology. Digital finance includes various forms, such as mobile payment, online banking, Internet payment, cryptocurrency, P2P lending, and so on [1].

With the continuous iteration of mobile phones in the 21st century and the rise of various mobile payment software, mobile payments are becoming more and more popular and have gradually become one of the most commonly used payment methods, especially in developing countries [3]. According to statistics, by 2021, there will be more than 2 billion mobile payment users worldwide. And more and more people in the young generation will choose to use mobile payment instead of traditional payment methods such as cash. WeChat Pay, PayPal, Google Pay, Alipay, Apple Pay, Samsung Pay, and so on are now the most popular mobile payment software. As COVID-19 hit in 2019, many activities and jobs were restricted. Online live streaming and online shopping are becoming more and more popular, while mobile payment is an indispensable part of online live streaming and shopping. The transaction volume and users have also experienced a substantial increase. According to statistics, the application transaction volume of mobile payments increased from 0.96 trillion in 2018 to 1.77 trillion in 2021. Users grew from 1 billion in 2018 to 2.1 billion in 2021 [4].

P2P lending, also known as peer-to-peer lending, eliminates the need for a financial institution to act as a middleman by enabling individuals to obtain loans directly from one another. P2P lending is considered a form of unsecured financial services. As of 2021, the global peer-to-peer lending market size has reached 83.79 billion US dollars. The increasing financial and loan needs in today's society

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make P2P lending continue to develop and grow. Many small businesses and individuals may have difficulty obtaining loans from banks, but they can borrow on P2P. And, since there are no intermediaries, interest rates tend to be lower. In addition, the P2P lending method greatly simplifies the loan approval process and greatly improves efficiency. However, precisely because of this, the risk of borrowing also comes with it [5]. Additionally, cryptocurrency is an additional crucial aspect of digital financing. Cryptocurrency is a digital form of currency founded on cryptography to secure transactions and regulate the issuance of currency. The origins of cryptocurrencies date back to 2009 when Bitcoin was introduced as the first decentralized digital currency. The emergence of Bitcoin has stimulated global interest in cryptocurrencies and blockchain technology. Cryptocurrency is not subject to legal constraints or oversight, and it has an extremely volatile market. Its emergence brings with it new systemic hazards.

3. Systemic Risk

The development of financial technology has driven the continuous development of digital finance, which has also brought new impacts on systemic risk. There are various definitions of systemic risk. According to the definition of systemic risk, it is the possibility of instability resulting from contagion in all or a portion of the financial system due to the interaction of size factors, business complexity, inter-institutional linkages, and/or financial markets (interconnectedness), as well as excessive behavioral tendencies from financial actors or institutions to follow the business cycle [1]. While someone proposes that, on the other hand, systemic risk is the possibility of a systemic chain reaction brought on by the failure of a single institution that has a negative ripple effect on other institutions and the actual economy [6]. From different definitions, it can be found a common point that systemic risk will eventually spread from the problem of one institution to the whole economy and then bring about the instability or even collapse of the whole economy.

There are many causes of systemic risk, and it generally believes that the size, complexity, interconnectedness, and critical functions of financial institutions are the main causes of systemic risk [7]. With the development of Internet technology and data finance, some liquidity risks, credit risks, market risks, technical risks, and new regulatory monitoring challenges will all have an impact on systemic risks [8]. The 2008 financial crisis is a good example of systemic risk. The collapse of the US housing market and the crisis in the subprime mortgage market. In 2007, home prices in the United States began to fall sharply, and many borrowers were unable to repay their loans, resulting in a large number of defaults and property auctions. These loans were packaged and sold in the form of subprime securities, which caused great volatility in financial markets. Investors gradually lost confidence in the value of mortgage-backed securities, triggering a liquidity crisis and a credit crisis. Due to the close connection between financial institutions, when financial institutions in the United States are impacted, financial institutions around the world are also implicated, triggering systemic risks and causing the global financial system to fall into crisis.

4. The Impact of Digital Finance on Systemic Risk

The rise of digital finance has dramatically disrupted the way the financial industry does business. The expansion of digital technology and the Internet has increased the degree to which the world's financial systems are interconnected. However, it has also led to the emergence of new systemic risks [9]. Thanks to digital finance, transactions and payments in the financial sector have become easier on a global scale. Thanks to the spread of electronic payment systems and digital currencies, people are now able to conduct business across borders without the involvement of traditional financial institutions. This has helped to enhance financial connectivity between countries and regions. The foundation of all digital financial transactions is data. The development of technologies such as big

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data and cloud computing has made it easier for financial institutions to access and analyze large amounts of user data. This enables institutions to provide personalized services that are more responsive to customer needs. Data sharing and data analysis have also facilitated greater interconnectivity among financial institutions. The emergence of digital finance has led to the creation of a variety of innovative financial products and services, including cryptocurrencies such as Bitcoin, mobile payments, and peer-to-peer lending. The increasing number of innovative financial products and services in the market has strengthened the connection between customers and various financial institutions.

There are a number of key benefits associated with digital finance. The following are some of the ways in which digital finance might increase the transparency of financial services: Consumers and regulators will be able to have a better understanding of the nature of financial goods and services thanks to the digital platforms that financial institutions can use to make information more effectively public. This will result in a reduction in the danger of information asymmetry. Technologies such as big data and machine learning, made possible by digital finance, can assist financial institutions in better identifying and managing risks, which can be beneficial to the institutions. For instance, banks can more precisely analyze the credit risk of loan applicants and, as a result, reduce the percentage of bad debts through the use of big data analytics [10]. However, the innovation of the financial system brought about by digital finance also brings with it many new potential systemic risks.

Due to the continuous strengthening of financial interrelationships, the contagion effect may increase, which in turn brings new systemic risks. The current mobile payment is closely related to the live-streaming industry and e-commerce. In China, many industries are using WeChat Pay or Alipay. Whether it's live broadcast rewards, game recharge, online shopping, or even phone bill recharge and small shops on the roadside, mobile payment closely connects various industries and people, and everyone relies heavily on these mobile payment platforms. However, once there is a problem with the mobile payment platform, such as information security or payment security, the above-mentioned industries will all suffer a devastating blow. In addition to online payments, P2P lending may also cause large-scale systemic risks due to contagion effects. For example, in 2015, a huge Ponzi scheme broke out on a P2P lending platform, "E Zubao," in China, involving millions of investors. Since then, the entire P2P industry in China has suffered a crisis of confidence, investors have withdrawn their funds, and a large number of platforms have encountered liquidity crises or closed down. This case reveals the correlation and contagion effect between Internet financial platforms. The collapse of one platform may trigger a crisis of confidence in the entire industry and lead to systemic risks.

The widespread adoption of electronic payment has coincided with the rise of digital finance; however, this trend brings with it certain payment-related risks. The term "payment risk" refers to the uncertainty that can arise during transactions, such as the possibility of a failed payment, fraud, or identity theft. These dangers could result in monetary losses for both financial institutions and individual customers, which would have a deleterious impact on the overall stability of the financial system. In addition, digital finance involves a significant amount of user data and sensitive information, such as information that can be used to identify an individual, financial data, and other types of information. It would be disastrous for both users and financial institutions if any of these three things happened: the data was leaked, it was misused, or it was accessed without authorization. This could result in a crisis of trust, reduce users' trust in the digital financial platform, and have an impact on the system's stability [10]. A catastrophic data breach occurred at one of the largest financial institutions in the United States, JP Morgan, in 2014. Hackers broke into the computer network of the bank and stole the personal information of more than 76 million of the institution's customers and 7 million small businesses. This event made a significant dent in people's faith in the integrity of the entire monetary system and brought to light the precarious state of information

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security at financial institutions as a whole. It sparked widespread alarm and prompted widespread concern.

Market volatility has increased as a result of the development of digital finance, particularly the rise of cryptocurrencies. Due to its generally low market capitalization, lack of established institutional participation, lack of liquidity, technical risk, and significant speculative factors, the cryptocurrency market is notoriously volatile. Wild price swings in the cryptocurrency market are frequently caused by speculation. Due to their propensity to focus only on short-term gains, speculators frequently engage in a variety of buying and selling activities that drastically alter the market. For instance, in 2021, the price of Bitcoin will experience significant short-term fluctuations. Due to the high level of market volatility, there may be abrupt shifts in investor sentiment and market panic, which raises systemic risk. The cryptocurrency market is dominated by leverage trading or trading with borrowed money. Leveraged trading can cause massive losses and a domino effect when the market is erratic. If a large number of traders are unable to meet borrowing obligations, a liquidity crisis and the possibility of a systemic collapse could result.

5. Digital Finance and Coping Strategies for Systemic Risk

The development of digital finance has had a significant impact on the financial industry, which has substantially enhanced efficiency and provided many new opportunities, but at the same time, new systemic dangers have also emerged. This can be deduced from the content space that was presented above. As a result, the topic of how to govern digital finance has developed into a very significant one.

First of all, there is a need for increased regulation of the financial markets. Put in place an effective regulatory structure: The operations of digital financial markets and institutions should be subject to regulation, which requires regulators to design and enforce relevant regulations and regulations. People need to set up stringent entry requirements for a variety of financial organizations, including peer-to-peer lending platforms, digital payments, internet insurance, internet funds, and Internet funds in general. Establish a set of tools for conducting in-depth assessments and tests over extended periods of time on these various financial institutions. People need strong anti-money laundering legislation and effective supervision of financial institutions [11]. When it comes to some new types of businesses that have been spawned as a result of digital banking, People need to pay careful attention to screening in order to stay away from sticky situations like Ponzi schemes [12].

Second, the financial industry needs more transparency. Investors, consumers, and regulators can all benefit from having a better understanding of the risks that are taken on by digital financial institutions if the regulatory party makes it a requirement for these organizations to disclose their business and risk profiles. For instance, these institutions might make consistent disclosures regarding their financial position, risk management measures, and any newly discovered or previously recognized hazards. This can reduce the problems caused by information asymmetry. A more accurate assessment of the systemic risk can be made by all parties with the assistance of increased transparency. If information on institutional risk is made available to the public, investors and consumers, as well as regulators, will be better able to make decisions based on more accurate information, and regulators will be better able to monitor risk.

Third, it is needed to create recovery and continuity strategies for the implementation of failures [12]. Because digital banking is dependent on technology, any faults that occur with the technology could result in systemic hazards. Therefore, organizations need to create failure recovery and continuity strategies to ensure that they can promptly restore service in the aftermath of a technical breakdown, thereby preventing risk from spreading throughout the organization. In addition to this, we need to devise a method that can accurately identify, forecast, and protect hazards related to information technology while also reducing the likelihood of systemic risks to the greatest extent

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possible [13]. Digital financial institutions should adopt strict cybersecurity measures, including data encryption, multiple identity verification, and real-time monitoring, to protect user data and transaction security. At the same time, regular security audits and risk assessments should be conducted to identify potential security vulnerabilities and weaknesses, and timely measures should be taken to fix them.

Finally, it needs to improve international cooperation and information sharing and education of market participants. Digital finance is global, so international cooperation and information sharing are critical to reducing systemic risk. Regulators should strengthen cross-border cooperation, share information and experience, and strengthen supervision and compliance of cross-border digital financial activities. In addition to financial institutions, strengthening the education of investors and users is also very important. The financial industry needs to improve consumer understanding and risk awareness of digital financial products and services. By cultivating the rational investment and usage behavior of investors and users, the risks brought about by blind investment and the use of digital financial products are reduced.

6. Conclusion

In conclusion, this paper aims to shed light on the interplay between digital finance and systemic risk. By exploring key areas within digital finance, including digital payments, P2P lending, and virtual currencies, it can gain a deeper understanding of the risks involved and their potential to impact the stability of the financial system. Ultimately, the findings of this research will contribute to the formulation of appropriate supervision and risk management strategies, which are vital for ensuring the resilience and sustainability of the financial system in the era of digital finance. This paper finds that while the digital transformation of finance has brought great improvements in efficiency, it has also brought some new systemic risks. The impact of digital finance on systemic risk is two-sided, so how to supervise it is very important. Improved regulation, increased transparency, enhanced inspection mechanisms and remedies for systemic risks, and increased international cooperation will be meaningful in reducing the occurrence and impact of systemic risks. In today's society, systemic risk has always existed. As the Federal Reserve continues to raise interest rates, the market fluctuates violently, bank assets have been impacted, and the banking industry has also ushered in a new crisis. In the era of digital finance, there must always be an alert to potential systemic risks.

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