Research on the impact of fintech innovation on the traditional financial system

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Keywords: Fintech; Digital transformation; Intelligent decision-making; Market Trends

Abstract: With the entry of fintech into a new era, financial services have entered a stage of high-quality development. Based on the core idea of adhering to market demand orientation, innovative propositions need to be proposed to better meet the financial service needs of the real economy. Based on the dynamic evolution of fintech development, a theoretical analysis framework for fintech development is constructed according to the inherent logic of fintech innovation. This framework can explain the financial service development mechanism jointly generated by the digital transformation mechanism and intelligent circulation mechanism involving fintech and traditional financial systems, and continue to explore the possibility of moving towards the goal of high-quality financial development from the perspective of institutional changes and practical deduction of fintech development. Fintech development aims to provide services that meet expected standards for the real economy, committed to continuously improving service quality and enhancing customer satisfaction. To this end, measures such as strengthening quality control based on the internal circulation of service quality, constructing an interaction and feedback mechanism between fintech and the quality perception of physical enterprises, and establishing an evaluation system between fintech and regulatory agencies should be taken to achieve high-quality development of fintech, promote the real economy, and truly meet market demand.

1. Introduction

As the essential responsibility of the financial industry and the general term for financial services, fintech can be divided into traditional and emerging fintech. Financial institutions also entrust technology companies to carry out digital transformation of financial services to improve the efficiency of financial services. Since the rise of Internet technology, fintech has become the key to financial services, as the degree of digitalization becomes an evaluation index. Unlike traditional financial services, fintech emphasizes data-driven, intelligent services, and user experience. Therefore, this article proposes the issue of fintech, and blockchain technology provides new solutions for financial services.

Fintech originates from information technology with the Internet as the core. Its digital transformation implies efficiency improvement and is also a tool for financial service innovation [1]. At the theoretical level, fintech pursues service efficiency and achieves modernization of financial services through the combination of data analysis and artificial intelligence, from the perspective of fintech structure. To this day, fintech has embarked on a unique path different from traditional finance. The comprehensive promotion of fintech not only rewrites the financial service model and reflects the spirit of technological innovation, but also rewrites the pattern of the financial industry, presenting a challenge to the traditional financial system. Therefore, we must have a forward-looking vision and a holistic perspective when discussing fintech. Therefore, the proposition of digital transformation in fintech has been put forward. In short, fintech is the necessary condition and guarantee for achieving high-quality development of financial services.

Based on the above background analysis, this article proposes a fusion strategy between fintech and traditional financial systems, aiming to explore how fintech can reshape financial services. Through theoretical analysis and empirical research methods, this paper solves the problem of fintech and traditional finance

  DOI: 10.25236/iemetc.2024.022

Based on the above background analysis, this article proposes a fusion strategy between fintech and traditional financial systems, aiming to explore how fintech can reshape financial services. Through theoretical analysis and empirical research methods, the problem of integration between fintech and traditional financial systems is solved. The main content is the study of the impact of fintech on traditional financial systems, effectively addressing risks in the process of financial innovation, which has crucial theoretical and practical significance.

2. Fintech and the ' Digitization ' of Blockchain to Achieve New Changes in Financial Services

2.1. Financial Ecological Change of Digital Transformation Content

Fintech is a concept developed in parallel with traditional finance. It is "saturated" with the concept of technological innovation, highlighting the efficiency orientation of financial services, and reflecting the strategic innovation of financial services since the rise of Internet technology [2].

2.2. Big Data, Cloud Computing, and Artificial Intelligence

2.2.1. User Behaviour Analysis and User Demand Forecasting

Big data analysis is a crucial standard of fintech, which accurately expresses user needs. Scholars have discussed different definitions of big data analysis from the perspectives of user behaviour and consumption habits. It is precisely because big data analysis is more predictive to some extent and belongs to market-oriented data science. Some scholars believe that big data analysis is the degree of user satisfaction or the quantification of user loyalty. The history of big data analysis can even be traced back to statistics, and its main activities include data collection and analysis. Data privacy and protection are closely related to the compliant operation of fintech. Through data encryption technology, data privacy has become a crucial responsibility of fintech. The main contribution of FinTech theory in the Internet era is data-driven service innovation. Therefore, the concept of fintech initially focused on measuring service quality based on data standard attributes [3].

2.2.2. Market Trends Drive Intelligent Decision-Making

Compared with traditional finance, fintech emphasizes the interrelationship between data-driven and artificial intelligence, with the feature of intelligence. Although some scholars question that big data analysis may not be directly related to intelligent decision-making, most scholars advocate that big data analysis can provide a rational evaluation of intelligent decision-making. Scholars and others proposed an intelligent decision-making model that includes multiple elements, which has since become a typical tool in the field of fintech, thus developing the concept of fintech intelligence. These scholars believe that fintech has innovation and is an "innovative service". Only fintech innovation contributes to the financial services efficiency. Therefore, fintech is the result of improving the efficiency of financial services. Some scholars have summarized fintech as a dual-track model, which includes data-driven fintech models and artificial intelligence-based fintech models. The former focuses on data analysis, while the latter focuses on intelligent decision-making, namely personalized services. Although fintech has experienced some practical failures, in the long run, it can promote innovation in financial services, and the concept of fintech has gradually become a consensus in fintech research and practice. The market trend promotes intelligent decision-making as shown in Figure 1 [4].

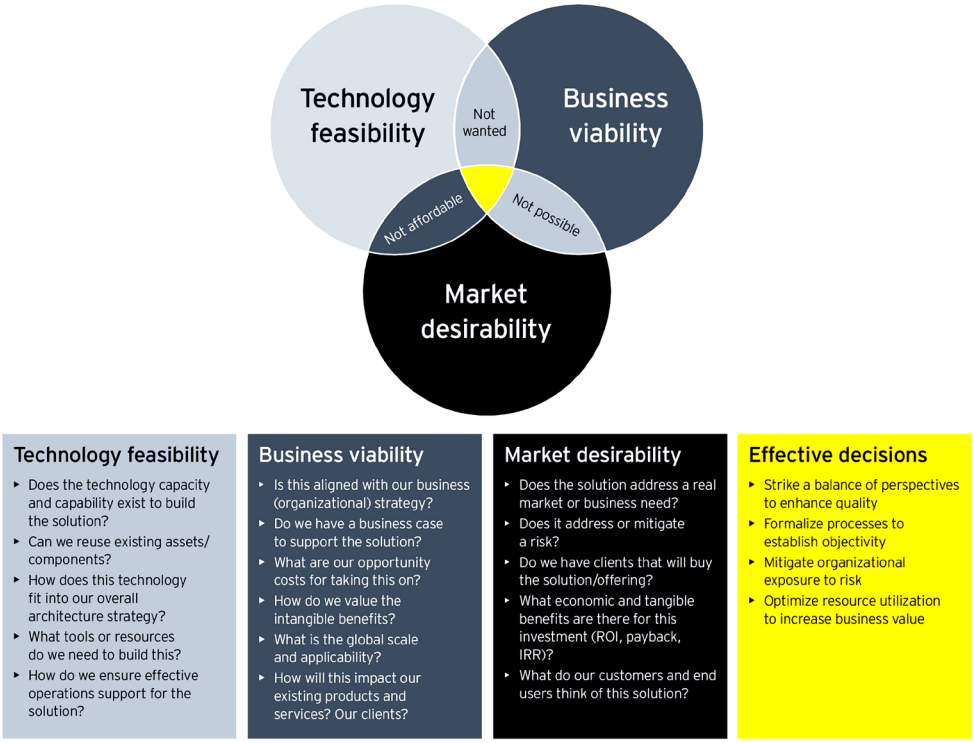

Figure 1: Market trends promote intelligent decision-making

3. Financial System Challenges Brought by Fintech and Regulatory Technology

3.1. Chaos of Data Security: Excessive Sharing of Information Causes Imbalances in the Financial System

The concept of data security focuses on information security issues. Data security is the application of risk management thinking in the field of fintech. The data-sharing framework, as a new alternative model, has entered the research field to overcome the shortcomings of traditional financial information silos. The basic concept of this framework is that data sharing should ensure the stable and effective implementation of the financial system, set compliance standards for the flow of financial data, capture sensitive information through encryption technology and permission management, and use data desensitization methods to measure data leakage risks. The data-sharing framework has restructured the financial information flow, emphasizing the need to enhance data security, information transparency, user privacy, and business continuity.

3.2. Algorithm Contradictions: Non-Humanized Operation under Automation Transcendence

3.2.1. Errors in Model-Based Decision-Making and Non-Humanized Deviation in Management

Algorithm models are the primary tools of fintech, highlighting the importance of data analysis and accurately reflecting the ever-changing state of market trends and user behaviour through machine learning. Some components of the fintech development are gradually taking shape, such as regulatory sandboxes and various evaluation systems, which are also receiving increasing attention. Some components of the development of fintech are gradually taking shape, such as regulatory sandboxes and various evaluation systems, which are also receiving increasing attention. However, from a practical perspective, the implementation of certain algorithmic models is still at a superficial stage. There are contradictions in the logical framework and generation mechanism of fintech, leading to issues of model bias. In the field of fintech, model-based decision-making plays a crucial role as the core driving force. It relies on complex algorithmic models, especially machine learning techniques, to deeply explore potential patterns in massive data and accurately predict market trends and user behaviour patterns. This data-driven approach provides a solid foundation for personalizing and enhancing the efficiency of financial services. With the continuous maturation of fintech, a series

of innovative practices have emerged. One such practice is the establishment of regulatory sandboxes, which aim to provide a secure experimental environment for fintech companies to test new products and services. This approach helps in reducing potential risks to consumers and the market. In addition, the establishment of various evaluation systems aims to ensure the quality and compliance of fintech products and services, thereby further promoting the healthy development of the industry.

However, despite the enormous potential of fintech, we cannot ignore the limitations and biases of model-based decision-making. On the one hand, algorithmic models often rely on historical data, which may lead to the misconception that past performance does not represent future results, especially in rapidly changing financial markets where the model may not be able to adapt to new market conditions promptly, resulting in prediction bias. On the other hand, human factors in the process of model design and optimization, such as data selection bias, the subjectivity of feature engineering, and the complexity of model interpretation, may also lead to model-type decisions deviating from expected goals and even exacerbating social inequality, such as algorithmic discrimination in credit approval [5].

3.2.2. Lack of Trust and Compliance Risk

From the perspective of regulatory technology, compliance is the fundamental aspect of fintech and the core manifestation of market trust. Therefore, regulatory technology primarily generates logic through compliance monitoring. Regulatory technology is a major component of fintech and an innovative entity in financial regulation. Regulatory technology strengthens risk control from the perspective of data governance in three main forms: the first is data auditing, which clarifies the seamless integration of data quality between regulation and business. The second is the standard formulation, which involves establishing data security standards, privacy protection standards, and publicly disclosing regulatory standards to the market to achieve standardized control of regulatory technology. The third is the internal process reengineering of regulatory technology. In recent years, big data analysis and other technologies have been used to enhance regulatory efficiency and enhance market transparency. However, compared to mature markets, the intelligence of current regulatory technologies still needs to be further improved.

3.3. The Birth of Derivative Risks under the Domination of Technology

The fundamental difference between operational risk, credit risk, and market risk and fintech lies in their technical attributes. The operational risk standards and compliance guidelines of fintech are aimed at safety, and the development of fintech mainly reflects efficiency and safety. In the risk management framework of fintech, risk identification, assessment, monitoring, and mitigation are the core values and highest standards for the development of fintech. The diversity of fintech types and the differences in application scenarios have led to a diversified risk trend. Although fintech has achieved success in risk management, the risk management system is still imperfect, and fintech itself lacks self-repair mechanisms, therefore, the shortcomings of the financial system caused by imperfection have affected the quality of financial services.

4. The Coping Strategies of the Development Process of the Financial Industry under the Challenge of Technological Innovation

4.1. Two-Way Adaptation: Fintech Gets Rid of Technical Challenges

4.1.1. Security Improvement of the System to Achieve High-Quality Protection of Data

From the perspective of risk management, data security cannot accurately provide the information needed by the market. The market mainly focuses on risk prevention and control for data security, but data security lacks relevant information and feedback mechanisms for risk assessment. The core of this problem may be data governance. In data governance, data security is often described as a "firewall", whose protection against data leakage directly reflects information protection capabilities. However, data security is mostly about information such as firewalls and encryption, and there is a lack of early warning for potential threats. Usually, data leaks are difficult to detect or warn of

promptly. Information asymmetry and imperfect data governance directly lead to obstacles to data security [6].

4.1.2. Fintech Upgrading under Regulatory Technology Domestication

From a regulatory technology perspective, data silos have long constrained the flow of market information. Since the 21st century, regulatory technology that integrates big data analysis, cloud computing, and artificial intelligence has reshaped market information flow through data sharing. However, the drawbacks of traditional data silos still constrain market transparency. Due to inconsistent data standards and the impact of data silos, data sharing still needs to be improved. Driven by regulatory technology, data sharing served as a direct way of market transparency. However, the actual impact of data flow, mainly based on data sharing, on the market remains to be discussed. Meanwhile, due to difficulties in data security, data sharing lacks market trust. Therefore, data sharing does not always seem to achieve the expected goals. It is evident that data sharing is not only a technical challenge, but also a matter of market trust [7].

4.2. Responsibility Sharing: Optimization of Regulatory Response Mechanism and Industry Governance

Undoubtedly, regulatory technology cannot avoid the double-edged sword of being an innovator in fintech. In the regulatory technology mechanism, compliance monitoring is a standardized and effective regulatory tool that plays a crucial role in fintech, which also makes regulatory technology a technical policy concept. Therefore, fintech, mainly based on regulatory technology, has become the regulatory mechanism of the financial market [8]. The practical interpretation of regulatory technology is generally a regulatory path gradually formed on a market-driven basis, although this path includes attempts at data governance. From data governance to regulatory technology, fintech has always been closely focused on market trust. Although regulatory technology should strive for market transparency to meet fintech requirements, amplifying data silos brings a dilemma: the phenomenon of data silos. Overall, there is still room for improvement in regulatory technology in areas such as market transparency, and its intelligence needs to be further improved, which is also a crucial task of fintech.

4.3. Return to the Essence: Strengthen Supervision and Restore the Nature of Service

When constructing fintech innovation, there are usually two key relationships to start with: one is the relationship between data and algorithms, and the other is the relationship between technology and the market. The relationship between data and algorithms can be directly extracted from original transaction records, while the relationship between technology and the market requires complex calculations on existing data to obtain. This relationship can reveal the profound correlation between market trends and customer needs. The construction process includes building a single-layer fintech model at the financial services level, building a single-layer fintech model at the product design level, building a single-layer fintech model at the risk management level, and constructing a multi-level fintech model for the entire financial industry. Compared with single-level fintech models, multi-level fintech models are more complex in structure, capable of storing a greater number of financial entities, and have more intricate entity relationships. Therefore, deep learning can be used to verify this relationship. It involves a neural network with shared variables, smaller parameter sizes, and higher application advantages compared to other models. In the application stage, this deep learning model can combine entities and relationships in fintech models to complete the representation from entity to relationship. The deep learning model can evaluate entities based on the loss function, identify the financial product with the highest score as the optimal solution, and multiple link predictions can enhance the accuracy of the fintech model. This process verifies the high accuracy of the developed fintech model.

5. Conclusion

Fintech has penetrated the financial industry, presenting new challenges and requirements for

financial services. Fintech is not only a symbol of digital transformation in the financial industry but also a crucial tool for financial innovation. It is an urgent requirement to achieve financial inclusivity and uphold financial market stability. Essentially, it reflects the inherent requirements of financial modernization. Fintech is guided by modern information technologies such as big data, cloud computing, and artificial intelligence. It constructs a theoretical analysis framework and practical mechanism for innovation in fintech. In recent years, modern information technologies such as blockchain and the Internet of Things have driven the digital transformation of the financial industry, empowering financial services and enhancing regulatory accuracy and scientificity through data sharing. Their value aligns with the inherent logic of fintech. Therefore, based on these modern information technologies, new avenues have also been opened up for fintech. In short, sustainable improvement and development of fintech can help better serve the real economy and enhance the transparency and stability of financial markets.

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