Research on the Transformation of Digital Financial Services Model Enabled by Artificial Intelligence

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Abstract

This article systematically explores the internal logic and implementation path of the transformation of digital financial service models enabled by artificial intelligence from a theoretical perspective. The research shows that artificial intelligence can effectively alleviate information asymmetry, reduce transaction costs, and promote the transformation of service models from standardization to personalization, from passive response to proactive prediction, and from human-driven to intelligent-driven. The article analyzes from application dimensions such as intelligent risk control, intelligent marketing, and intelligent customer service, and points out that current challenges include data security and algorithm transparency, and makes forward-looking predictions on future development trends

Keywords: Artificial intelligence; Digital finance; Service model transformation; Intelligent risk control; Inclusive finance.

1. Introduction

With the rapid development of information technology, digital finance has become the core driving force for the transformation and upgrading of the financial industry. The traditional financial service model has gradually shown limitations in terms of efficiency, coverage, and personalization, making it difficult to meet the increasingly diverse market demands [1]. The rise of artificial intelligence technology provides new technical support and theoretical possibilities for the deep transformation of the digital financial service model. With its powerful data processing capabilities, intelligent decision-making abilities, and continuous learning capabilities, artificial intelligence is profoundly reshaping the supply mode, interaction mode, and value creation mode of financial services [2]. From intelligent customer service to intelligent risk control, from precise marketing to intelligent investment advice, artificial intelligence has permeated every aspect of digital financial services, promoting the transformation of service models from standardization to personalization, from passive response to active prediction, and from human-driven to intelligent-driven [3]. This article aims to systematically analyze the enabling mechanism of artificial intelligence on the digital financial service model from a theoretical perspective, explore the path of service model transformation triggered by it, and conduct forward-looking thinking on future development trends, with the aim of providing references for theoretical research and practical exploration in the digital finance industry.

2.The Theoretical Foundation of Artificial Intelligence and Digital Financial Services

2.1 The Connotation and Characteristics of Digital Financial Services

Digital financial services refer to the comprehensive financial service forms provided to users through digital technologies such as the Internet, big data, and cloud computing, including payment settlement, credit financing, investment and wealth management, and insurance services, etc. [4]. Compared with traditional financial services, digital financial services have significant characteristics of de-intermediation, scene-based, and inclusive. De-intermediation is reflected in that the supply of financial services no longer heavily relies on physical outlets and human counters, but is achieved through digital platforms for direct contact. Scene-based means that financial services deeply integrate into users' daily consumption, travel, socialization and other life scenarios, achieving seamless connection between services and demands. Inclusive means that digital financial services can cover a wider range of long-tail customer groups, especially small and medium-sized enterprises and low-income populations that are overlooked in the traditional financial system [5]. However, while digital financial services are developing rapidly, they also face problems such as intensified information asymmetry, increased difficulty in risk identification, and serious homogeneity of services. The solutions to these problems urgently require the introduction of higher-level intelligent technologies.

2.2 The Theoretical Logic of Artificial Intelligence Empowering Financial Services

From a theoretical perspective, the logic of artificial intelligence empowering financial services is rooted in information economics and transaction cost theory. Information economics indicates that the core issue of the financial market is information asymmetry, and artificial intelligence technology can effectively reduce the degree of information asymmetry and improve the efficiency of financial resource allocation [6]. Transaction cost theory shows that the provision of financial

services involves a large amount of search costs, negotiation costs, and supervision costs, and artificial intelligence through automated processing and intelligent decision-making can significantly reduce these costs, thereby expanding the boundaries of financial services [7]. From the perspective of the long-tail theory, constraints often focus on high-value customers, but artificial intelligence technology significantly reduces the marginal cost of serving long-tail customers, thus making inclusive finance move from concept to reality [8]. In the field of intelligent investment advisors, studies have shown that artificial intelligence-driven automated investment recommendations reduce service costs while also bringing new behavioral finance challenges [9]. Therefore, the integration of artificial intelligence and digital finance is not a simple technical overlay, but a fundamental reconfiguration of the service paradigm at the theoretical level.

3.The Transformation Path of Digital Financial Services Mode Driven by Artificial Intelligence

3.1 Transition from Standardized Services to Personalized Services

Although the traditional digital financial services have gone beyond the boundaries of entities to a certain extent, their service contents and product recommendations are still basically standardized, and it is difficult to accurately meet the different needs of different users. The introduction of artificial intelligence technology has fundamentally changed this situation. By comprehensively analyzing multi-source heterogeneous information such as user behavior data, transaction data and social data, artificial intelligence can build high-dimensional user files and deeply understand each user's risk preference, consumption habits, financial needs and life cycle stages. On this basis, financial service institutions can realize intelligent matching and dynamic product recommendation, and provide tailor-made financial solutions for different users. The change from "one size fits all" to "customization to everyone" not only improves the user experience and satisfaction, but also greatly improves the conversion rate of financial products and customer satisfaction. The realization of this personalized service mode marks a profound change in digital financial services: they are no longer product-centric, but customer-centric.

3.2 Transition from Passive Response to Active Prediction

The traditional financial service model is essentially a passive response model. In this model, financial institutions only provide services when users express their needs. Artificial intelligence technology enables digital financial services to actively predict and provide future-oriented services. By using machine learning to identify patterns and predict trends in historical data, financial institutions can predict potential financial needs before users clearly express them and provide corresponding service plans in advance. For example, in the field of credit, artificial intelligence can analyze users' business data and behavior tracks to determine their potential financing needs and actively provide them with credit products. In the field of wealth management, intelligent systems can put forward suggestions for portfolio adjustment according to market trends and users' asset allocation, and take the initiative to propose changes. This active forecasting service model greatly shortens the service response time, improves the speed and forecasting ability of financial services, and changes financial services from "user search service" to "user search service".

3.3 Transition from Manual Driving to Intelligent Driving

In the early days of digital financial services, even if they can do it online, they rely heavily on manual work to accomplish important things. For example, verify customers, evaluate risks and make investment decisions. Now, with the in-depth application of artificial intelligence technology, these steps have changed from manual work to intelligent operation. In customer service, natural language processing technology enables intelligent agents to understand what users really want and provide accurate answers. This greatly reduces the work of human agents. For risk management, artificial intelligence can monitor a large amount of transaction data in real time. It can quickly identify strange transactions and frauds. Its response speed and accuracy are far superior to manual control. In the investment decision link, intelligent investment consultants can automatically generate portfolio suggestions according to user profiles and market analysis. This lowers the threshold for professional investment services. The implementation of intelligent driving mode not only improves service efficiency, but also enables financial institutions to concentrate limited human resources on more creative and strategic work. Thereby comprehensively improving the organizational efficiency.

3.4 Transition from Single Scenarios to Ecological Integration

Artificial intelligence technology promotes digital financial services to go beyond the limitations of a single scenario and move towards an ecological development model of multi-scenario integration. Traditional digital financial services are usually limited to specific online scenarios, such as e-commerce payment or online lending, while artificial intelligence can seamlessly integrate financial services into a wider range of life and production scenarios through cross-scenario data integration and intelligent analysis. Smart healthcare, smart education, smart transportation and other fields can all deeply couple with financial services to form a "scenario plus finance" integrated ecosystem. Under this model, financial services are no longer an independent functional module, but rather are integrated as an embedded capability into various digital

ecosystems, achieving ubiquitous availability and immediate accessibility of services. The formation of the ecosystem integration model has also promoted the continuous expansion of the boundaries of financial services, giving rise to more innovative service forms and business models.

4.Applications of Artificial Intelligence in Digital Financial Services

4.1 Application in Intelligent Risk Control

Risk control is a core aspect of financial services and also one of the areas where the application of artificial intelligence yields the most significant results. The traditional risk control system mainly relies on manual inspection and static rules. It has the problems of limited coverage, low speed and high subjectivity. By constructing a multidimensional risk assessment model, artificial intelligence technology can comprehensively analyze different types of data. These data include users' credit records, behavioral characteristics, social relationships and device information. This helps to comprehensively identify and continuously monitor credit risk, operational risk and fraud risk. In the pre-lending stage, artificial intelligence can quickly assess whether customers are qualified and make a decision on their credit, thus greatly shortening the approval time. During the loan period, the intelligent system can monitor the borrower's behavior changes in real time and quickly issue a warning when there is a risk of non-repayment. In the post-loan stage, the intelligent recycling system can create different recycling strategies according to the customer's delay type to improve the recycling efficiency. The use of intelligent risk control has changed the risk management in financial services: we don't just react after problems occur, but try to prevent and control problems, thus making the financial system more stable.

4.2 Application in Intelligent Marketing

Artificial intelligence also plays an indispensable role in the process of obtaining and retaining digital financial services. Traditional marketing methods usually use a wide range of promotion strategies, which are expensive and ineffective. Artificial intelligence can realize intelligent distribution and accurate positioning of marketing information by accurately analyzing users' personal data and behaviors. The system can send the most suitable product information at the best time and channel according to the user's life stage, interest and consumption ability. This greatly improves the accuracy and efficiency of marketing. At the same time, artificial intelligence can continuously track and optimize marketing effects and adjust strategies to adapt to market changes. The application of intelligent marketing greatly reduces the acquisition cost of digital financial services, improves the conversion rate and customer retention rate, and provides important support for the sustainable growth of financial institutions.

4.3 Application in Intelligent Customer Service and User Experience Optimization

User experience is a key factor in the competitiveness of digital financial services. The intelligent customer service system based on natural language understanding and dialogue management technology can answer users' questions 24 hours a day and handle various service requests, including account checking, business handling and complaints and suggestions. Compared with traditional manual customer service, intelligent customer service can simultaneously serve a large number of users and continuously improve the accuracy and humanized degree of responses through continuous learning. In addition, artificial intelligence is widely applied in the continuous optimization of user experience. By analyzing user behavior data and feedback information in each service stage, the intelligent system can identify pain points and bottlenecks in the service process and propose optimization suggestions to promote continuous iterative upgrading of the service experience.

5.Challenges and Prospects of Artificial Intelligence Empowering Digital Financial Services

5.1 Current Main Challenges

Although artificial intelligence has brought profound changes to the digital financial service model, its application still faces many challenges. Firstly, there is the issue of data security and privacy protection. The efficient operation of artificial intelligence relies on the support of massive data, and the high sensitivity of financial data makes data collection, storage, and use subject to strict compliance requirements. Secondly, there is the problem of insufficient algorithm transparency and explainability. Financial decisions concern users' vital interests, and if the decision-making process of artificial intelligence systems lacks transparency, it will be difficult to gain the trust of users and regulatory authorities. Thirdly, there is the issue of technical ethical risks. The application of artificial intelligence in financial services may trigger ethical problems such as algorithm discrimination and information cocoons, which require high attention. Finally, there is the problem of a shortage of talents, with a severe lack of compound talents who are proficient in both finance and artificial intelligence, which hinders the deep application of artificial intelligence in the financial sector.

5.2 Prospects for Future Development Trends

Looking ahead, the empowerment of digital financial services by artificial intelligence will exhibit the following development trends. Firstly, large model technology will drive a further leap in the intelligence level of financial services. New-generation artificial intelligence technologies such as large language models will make the interaction methods of financial services more natural and the decision-making capabilities stronger. Secondly, the maturity of technologies such as federated learning and privacy computing will effectively resolve the contradiction between data security and privacy protection, clearing the obstacles for the in-depth application of artificial intelligence in the financial sector. Thirdly, regulatory technology will be deeply integrated with financial technology, and artificial intelligence will be widely applied in regulatory fields such as compliance review and anti-money laundering monitoring, achieving "technological management of technology". Fourthly, artificial intelligence will promote digital financial services to develop in a more inclusive and inclusive direction, enabling high-quality financial services to benefit a wider range of people. It can be foreseen that the deep integration of artificial intelligence and digital finance will continuously unleash tremendous innovative energy, promoting the financial service model to enter a higher-level intelligent era.

6.Conclusion

The rapid development of artificial intelligence technology is triggering a systematic transformation of digital financial service models. From personalized services to proactive predictions, from intelligent driving to ecological integration, artificial intelligence, with its unique technological advantages, has reshaped the supply logic and value creation methods of financial services. In core application areas such as intelligent risk control, intelligent marketing, and intelligent customer service, artificial intelligence has demonstrated significant enabling effects. However, challenges such as data security, algorithm transparency, and technical ethics cannot be ignored. In the future, as technology continues to evolve and the governance system is continuously improved, artificial intelligence will surely drive digital financial services to enter a new stage that is more intelligent, more inclusive, and more secure, providing a more solid financial support for the high-quality development of the real economy.

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