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"Finance and Artificial Intelligence (AI)" Current Research Progress and Issues

Kanjin Wang[1,a,*]

[1]*Department of finance, Guizhou University of Finance and Economics, Guiyang, China*
a. 2490524094@qq.com
**corresponding author*

Abstract: In consequence of the ongoing evolution of technology, the global technological level has undergone a qualitative leap. In consequence, we have inaugurated a new era of Artificial Intelligence. Artificial Intelligence (AI) represents the central technology driving both technological revolution and industrial transformation. As a novel and significant domain of Artificial Intelligence, financial intelligence has garnered considerable interest from both academic and industrial circles. The objective of this article is to provide an overview of the principal stages of technology-driven financial development. As a result of ongoing technological advancement, the concept of financial intelligence has emerged and evolved. This article will examine the applications of AI in financial domains, including wealth management, risk management, and financial security. It will also analyse the challenges associated with the use of AI in finance and propose potential solutions. Finally, it will evaluate the current state and advancement of AI in these financial fields, with a view to establishing a foundation for future technological developments in the field of finance.

Keywords: Artificial Intelligence (AI),financial technology, wealth management, financial security

1. Introduction

Artificial Intelligence (AI). It is a new technical science to study and develop the theory, method, technology and application system for simulating, extending and expanding human intelligence. Artificial Intelligence is a branch of computer science that attempts to understand the nature of intelligence and produce a new kind of intelligent machine that can react in a similar way to human intelligence.[1]

Research in this field includes robotics, speech recognition, image recognition, natural language processing, and expert systems. For example: face recognition technology, speech recognition technology, intelligent algorithm recommendation technology based on user interests. The rapid development of AI affects all walks of life, of which the most influential is the financial field, that is, science and technology finance.[4]

The Global Financial System Council of the World Economic Forum in Davos also divided the development of global fintech into three stages, including the initial stage before the 2008 international financial crisis; The period from 2008 to 2016 was a stage of rapid development, mainly driven by the widespread use of ai technology; The next few decades, beginning in 2016, will be a

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period of long-term challenge and impact, as financial technology (FinTech) will reshape customer behavior, business models, and the structure of the financial services industry.[1]

2. Artificial Intelligence financial development status

In the current financial field, the application of Artificial Intelligence technology in risk control has achieved remarkable results. Many financial institutions at home and abroad, such as China's Tencent Finance, widely apply machine learning algorithms to achieve more accurate and real-time risk assessment through deep mining of market, industry and customer data. Taking Tencent Finance as an example, Artificial Intelligence technology is used to build a more refined user portrait through the analysis of users' trading behaviors, social networks and other multidimensional data, thus improving the accuracy of individual credit risk judgment.

At the same time, internationally renowned financial enterprises such as JPMorgan Chase effectively identify potential risks in market fluctuations through machine learning models and make corresponding decisions quickly to ensure the robustness of assets.

In risk prediction, deep learning and neural network technologies are increasingly used to automatically learn complex non-linear relationships and help financial institutions better understand market changes and the risks of financial products.

In financial risk control, Artificial Intelligence has played an important role in risk assessment, providing financial institutions with more accurate and efficient assessment means. For example, China Merchants Bank has made full use of Artificial Intelligence technology to achieve intelligent and accurate risk assessment through big data analysis, machine learning and deep learning. Taking China Merchants Bank as an example, through the introduction of Artificial Intelligence risk model, it successfully improved the accuracy of customer credit risk judgment.

By analyzing a customer's transaction history, credit history, and other linked data, AI algorithms can more fully assess each customer's credit profile and thus more accurately judge loan default risk. In the field of financial risk control, AI is playing an increasingly critical role in fraud detection, providing financial institutions with powerful tools to identify and prevent fraud. For example, China's Alipay and foreign Pay Pal have successfully applied Artificial Intelligence technology to effectively improve the accuracy and real-time of fraud detection through complex algorithms and big data analysis. As a leading payment platform in China, Alipay has built an advanced fraud detection system by introducing machine learning and deep learning technologies.

The system can quickly identify potential fraudulent activities by real-time monitoring and analysis of multidimensional data such as users' transaction behavior, device information, and geographic location. In terms of international finance, with the help of advanced Artificial Intelligence technology, Pay Pal builds a complex model to detect fraud through deep mining of card transaction data. The system can not only identify abnormal transaction patterns, but also adjust risk assessments based on real-time data, improving the timeliness and accuracy of fraud detection, and providing a more secure transaction environment for cardholders.

3. Perspective in AI and application

In this section, I would like to elaborate on the use of financial intelligence in different fields and the latest progress in various countries, so as to prove that Artificial Intelligence technology can improve the efficiency and quality of services and reduce labor costs.

3.1. Wealth management and Artificial Intelligence

Traditional wealth management services are provided by professional investment advisors who spend a lot of time with energy to provide clients with financial planning and other services, while charging

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a higher fee as compensation. This model has led to some pain points where the wealth management market cannot continue to expand: for example, the barriers to participation are too high and limited to high net worth groups, or the communication process is cumbersome and the client experience is poor.

On the demand side, wealth management involves a large number of interaction links of information flow and data flow such as customer communication, risk assessment, asset allocation and performance feedback, which consumes the time and energy of investment advisers and customers, and also limits the expansion of wealth management business and the improvement of user experience. From the perspective of supply side, in the process of matching assets and risk preference, there are a large number of different types of risks and personalized investment decisions, which need to rely on quantitative analysis technology.

Artificial Intelligence and big data algorithms can quickly collect information, quantitative evaluation, investment research analysis, and execution of transactions, minimize operational risks, reduce costs and increase efficiency, and inject new vitality into the traditional wealth management model. Therefore, Artificial Intelligence technology can be fully applied in four business scenarios, such as marketing and service, investment research ability improvement, financial product evaluation and asset risk management, and effectively promote the rapid development of China's wealth management industry.[1]

For example, in customer marketing and service. How to get more clients and maintain close relationships with clients has long been one of the difficulties in the wealth management industry. Artificial Intelligence and machine learning algorithms can play a lot of roles in customer marketing services.

More specifically, Artificial Intelligence can accumulate and analyze customer behavior data in real time, analyze potential customer characteristics, accept marketing information preferences, risk preferences, etc., and use digital technology to dynamically identify and predict customer financial needs to achieve thousands of financial goals. For example, in terms of customer acquisition, it is the goal of financial institutions to accurately reach potential customers and facilitate transactions.

Artificial Intelligence algorithms will set data labels such as customer group characteristics, time preference, access channels, online behavior and customer group feedback according to business logic and existing information system basis, build algorithm models accordingly, and train Artificial Intelligence systems to identify customer core needs. At the same time, build a matching wealth management product system, find neglected rules and connections in the existing business scenarios, accurately recommend products, and refer to conversion rate, profit, cost control and so on in practice.To measure the effectiveness of the model and continuously optimize and adjust.

Than, In terms of customer operation, Artificial Intelligence can dynamically analyze the customer life cycle based on existing data, external data and business rules, and accurately describe the customer portrait in a targeted manner, so as to track the customer status, timely insight into the needs, and achieve the goal of accurate customer management.

The core theory of accurate customer management believes that customers have a "customer life cycle" after entering the company, and different life cycles require different strategies to "teach students according to their abilities". For example, in the novice period, customers need to improve their growth speed, invest in incentive policies, and provide exclusive rights and interests. In the mature stage, it is necessary to increase the frequency of contact and increase the recommendation of multiple scenes. Artificial Intelligence algorithms have this rule.[2]

The combination of effects can accurately reach different life cycle customer groups and form service resource allocation.The decision basis has a significant effect on improving the repurchase rate and reducing the turnover rate.

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For example, Bank of America Merrill Lynch found direct deposit business through churn prediction model.The opening of Direct Deposit will significantly reduce customer churn and increase usage.The value of the account, at the same time, the number of direct deposit services opened by the subscriber, can also be used

It is an important index to quantify the performance of the investment bank.

In terms of accurate recommendations, machine learning algorithms can be used based on user profiles.Household behavior data, financial product features, through intelligent matching, intelligent push for users.Recommend financial products, and then based on the suitability test, risk characteristics distribution for use.Households recommend a combination of products.[2]

In addition to financial product recommendations, Artificial Intelligence is based on user holding.Position status, personal goals, behavioral characteristics, etc., to recommend suitable investment workers for users.Have or serve; Based on multi-algorithm fusion strategy, tracking user content browsing,Comments, reading time and other behaviors, providing content recommendations based on online behavior,Create a smarter, smarter financial services experience for wealth management clients.[2]

3.1.1. Risk management and Artificial Intelligence

In the seed industry, the application of AI in risk management is transforming traditional methods of risk assessment and management. AI technology improves the accuracy and efficiency of risk prediction by analyzing large amounts of data and identifying patterns and trends. [3]

AI and machine learning technologies are capable of processing and analyzing large data sets to identify possible risks and make predictions. The application of this technique is not limited to simple data processing, but also includes the use of advanced predictive analytics and natural language processing to extract useful information from data. [3]

For example, in the financial services industry, AI models are used for credit risk modeling and fraud detection to predict and prevent potential risk events by monitoring and analyzing transaction behavior. AI can monitor and evaluate various risks in real time, improving the ability of enterprises to respond to future uncertainties.

With AI, businesses can identify risks faster and respond quickly, reducing potential financial losses. The application of AI in data classification and threat analysis helps enterprises optimize risk management processes, such as preventing equipment failures by analyzing machine operation data, or preventing security breaches by monitoring network security data.

Through in-depth analysis of historical and real-time data, AI helps companies build a predictive risk management framework. This includes using machine learning algorithms to identify risk factors that could lead to financial impact and implementing appropriate preventive measures to mitigate those risks.

This predictive ability of AI is achieved by improving the speed and accuracy of data processing, as well as the ability to carry out complex scenario analysis and stress testing. For example, the application of AI in seed industry risk management has greatly improved the speed and accuracy of risk identification and management.

Through real-time data analysis and sophisticated predictive models, AI technology enables businesses to optimize risk management and financial forecasting processes by taking effective preventive measures before risks actually occur. This not only helps enterprises reduce potential financial losses, but also improves the adaptability of enterprises to market changes and the overall business stability [3].

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3.1.2. Financial security and Artificial Intelligence

With the rapid development of Artificial Intelligence technology, its application in the financial field is increasingly extensive, especially in the field of financial security. Governments and financial institutions have invested significant resources in exploring how to use AI technology to improve financial risk management and data security.

First of all, take the United States as an example of leading technological innovation and application. As the leader of global financial technology innovation, the United States is in a leading position in the research and application of Artificial Intelligence and financial security.

Citibank, for example, has developed an AI-based compliance management system that monitors and identifies potential compliance risks in real time by analyzing transaction data and behavioral patterns. This not only improves the efficiency of compliance management, but also significantly reduces compliance costs. Similarly, jpmorgan Chase has used AI technology to develop an intelligent risk control platform to identify and prevent potential risks through real-time analysis of market data and trading behavior.[8]

Secondly, in China, the Chinese government attaches great importance to the application of Artificial Intelligence technology in the financial field and has introduced a series of policies to support the development of financial technology. In the field of financial security, Chinese financial institutions have extensively applied big data, machine learning and natural language processing technologies to improve risk management and anti-fraud capabilities. For example, China Construction Bank used AI technology to optimize its credit risk assessment model, effectively reducing the non-performing loan ratio. Meanwhile, Ant Financial's intelligent risk control system is able to quickly identify and block fraud by monitoring and analyzing transaction data in real time.[7]

Finally, take Europe as an example, focusing on data privacy and ethics

European research in the field of Artificial Intelligence and financial security is more focused on data privacy and ethics. The European Union's General Data Protection Regulation (GDPR) sets strict norms for financial institutions to handle customer data. Under this framework, European financial institutions place particular emphasis on data protection and algorithmic transparency when applying AI technologies. [6]

For example, Barclays Bank in the United Kingdom has developed an AI-based anti-money laundering system to effectively identify potential money laundering by monitoring and analyzing transaction data in real time, while ensuring the privacy and security of customer data.

4. Intelligent finance existing problems and I personally researched the solution

Financial intelligence has played an important role in risk management, trade execution, etc., but it still faces some challenges. Here are some existing problems and solutions:

With the rapid development of Artificial Intelligence technology, financial intelligence has played an important role in improving the efficiency and accuracy of the financial industry. However, in practical applications, financial intelligence still faces some challenges and problems that need to be continuously improved and solved.

4.1. Data quality issues

Financial intelligence is highly dependent on data, but problems with data quality often affect its effectiveness. There may be noise, errors, or missing values in the financial data, causing the accuracy of the intelligent model to decrease.[5] The methods to solve this problem include strengthening data cleaning and preprocessing technology to improve the accuracy and integrity of data. In addition, establishing data sharing mechanisms and expanding the size and quality of data sets will help improve the analytical capabilities of financial intelligence.

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4.2. The model relies too much on historical data

Financial intelligence models are often trained and forecast based on historical data, which can lead to biased predictions of future trends as the market environment may change in the future. The solution is to continually update and optimize models to incorporate new data and leverage more advanced AI techniques, such as deep learning, to improve models' ability to predict future trends.

4.3. Information asymmetry

The problem of information asymmetry in the financial market is still prominent, The information provided is confusing and incorrect, so the authenticity of the data needs to be verified,especially the huge difference between internal information and external information, which will affect the decision-making effect of financial intelligence. The key to solve this problem is to establish a more complete financial information system and strengthen the standardization and transparency of data. Through data mining and analysis technology, the negative impact of information asymmetry can be effectively reduced.[7]

4.4. Insufficient prevention of financial risks

There are deficiencies in risk prevention of financial institutions, and the identification and prevention of potential risks are not in place, resulting in frequent risk events in the financial market.[8] It is necessary to strengthen the internal risk management of financial institutions and establish a sound risk assessment and control mechanism. In addition, financial regulators should strengthen the monitoring and early warning of the financial market, use data analysis and other technical means to establish a sound risk early warning system, and improve the anti-risk ability of the financial market.

4.5. Data security and privacy protection

The sensitivity of financial data requires a high degree of data security and privacy protection, but current financial intelligence algorithms may not be able to fully guarantee the security of data. [9]Strengthening data encryption and protection technologies and complying with relevant data privacy regulations are key to ensuring data security. At the same time, using technologies such as differential privacy, data analysis can be carried out under the premise of protecting privacy.

4.6. Insufficient explainability of the model

The results of some financial intelligence algorithms are difficult to interpret and can lead to user distrust of their results. By using highly interpretable algorithms or model interpretation tools, increasing the interpretability of the model makes it easier for users to understand the decision-making process of the model and increase trust in financial intelligence.

4.7. Challenges to financial inclusion

There is still much to be done to make financial services more inclusive, especially in remote and poor areas. With the power of financial technology, such as mobile payment and Internet banking, the cost of financial services can be reduced and the efficiency of financial services can be improved, so as to better meet the financial needs of ordinary people. The government can also encourage financial institutions to increase their financial services to these regions through policies and incentives.[10]

To sum up, although financial intelligence faces some challenges, these problems can be effectively solved through continuous technological innovation and institutional improvement. In the

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future, financial intelligence will play a more important role in promoting the stability and development of the financial industry.

5. Conclusions

Finally, we also know that ai finance has multiple meanings at the policy level. It represents the government's support and guidance for innovation and technology application in the financial sector, aiming to promote the deep integration of the financial industry with modern information technology, and to enhance the efficiency, quality and universality of financial services.

The policy encourages financial institutions to use smart technology to optimise risk management, reduce operating costs and expand service boundaries to meet the needs of the digital transformation of the economy. At the same time, the policy also focuses on regulating the development of smart finance to protect the stability of the financial market and the legitimate rights and interests of consumers.

AI finance also has a lot of practical value

(1) Improving the efficiency of financial services

Smart finance can realise automated business processes, such as loan approval and risk assessment, greatly reducing processing time and improving customer satisfaction.

(2) Reduce financial service costs

Through intelligent operation and management, it reduces manual intervention and lowers operation costs such as manpower and material resources.

(3) Enhance risk management capability

Using big data and advanced algorithms, we can predict and assess risks more accurately and take preventive measures in advance.

(4) Promote financial innovation

Provide technical support for the innovation of financial products and services to meet diversified financial needs.

(5) Promote financial inclusion

Enable financial services to cover more remote areas and vulnerable groups, and improve the accessibility of financial services.

AI finance can also adjust many problems

(1) solving information asymmetry, intelligent finance can integrate multi-source data, understand customers and markets more comprehensively, and reduce risks and resource mismatch caused by information asymmetry.

(2) optimise the allocation of financial resources, based on accurate data analysis, directing funds to areas and projects with more development potential and benefits.

(3) enhance the effectiveness of financial supervision, help regulators to monitor the financial market dynamics in real time, and detect and deal with abnormal situations in a timely manner.

(4) improve the financing difficulties of micro, small and medium-sized enterprises (MSMEs), using big data to assess corporate credit and provide MSMEs with more convenient financing channels.

Finally, in order to ai financial popularity in a wide range of facilities in some bad local government can use some strategies to develop ai financial

(1) strengthen policy support, introduce targeted preferential policies, such as tax breaks, financial subsidies, etc., to encourage financial institutions to carry out intelligent financial services.

(2) promote infrastructure construction, increase investment in basic hardware facilities such as communication networks and electricity, and improve Internet coverage and data transmission conditions.

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(3) carry out financial education and training, raise local residents' awareness and acceptance of smart finance, and cultivate relevant talents.

(4) establish a co-operation mechanism to co-operate with financial institutions or technology enterprises in developed regions to introduce advanced smart financial technology and experience.

(5) build a local financial service platform, integrate local financial resources, construct an intelligent financial service platform and provide one-stop financial services.

(6) strengthen data security, establish a sound data security management mechanism, and protect user information and financial transaction security.

In summary, smart finance has important policy implications and practical value. For regions with relatively weak infrastructures, the government can give full play to the advantages of smart finance and promote the improvement of local financial services and economic development through the reasonable use of relevant strategies.

With the help of ai, the financial industry has undergone comprehensive changes, as mentioned above in risk assessment, financial security, etc., intelligent finance can make a lot of improvements in these aspects.

In this paper, I elaborate on a large number of ai finance examples and their development process, etc. I pay attention to the most advanced progress, and use various countries as examples to elaborate, hoping that this article can lay a good foundation for the future ai finance and provide a good road for the future development of intelligent finance.

References

[1] *ZHENG X ,ZHU M ,LI Q , et al. FinBrain: when finance meets AI 2.0 [J]. Frontiers of Information Technology & Electronic Engineering, 2019, 20 (07): 914-925.*

[2] *Tang Lijuan. Application of Artificial Intelligence Technology in Financial Management and Economic Benefit Analysis [J]. Old Brand Marketing, 2024, (21): 57-59.*

[3] *Yang X. Optimising financial forecasting and risk management in the seed industry using AI [J]. Molecular Plant Breeding, 2024, 22 (20): 6955-6960. doi:10.13271/j.mpb.022.006955.*

[4] *Siddik B A ,Li Y ,Du M A , et al. Fueling financial development: The crucial role of generative AI financing across nations [J]. Finance Research Letters, 2025, 72 106519-106519.*

[5] *Olabanji O S ,Olaniyi O O ,Olagbaju O O . Leveraging Artificial Intelligence (AI) and Blockchain for Enhanced Tax Compliance and Revenue Generation in Public Finance [J]. Asian Journal of Economics, Business and Accounting, 2024, 24 (11): 577-587.*

[6] *EXPLORING ROLE OF FINANCE, AI IN ENERGY TRANSITION [J]. Oil & Gas News, 2024,*

[7] *L E H . AI Revealed:Theory • Applications • Ethics[M]. Mercury Learning and Information: 2024-11-08.*

[8] *Machado R M ,Asadi A ,Souza D R W R , et al. Green AI in the finance industry: Exploring the impact of feature engineering on the accuracy and computational time of Machine Learning models [J]. Applied Soft Computing, 2024, 167 (PB): 112343-112343.*

[9] *Money20/20 USA Previews Agenda, Speakers and Integration of AI and Finance [J]. Wireless News, 2024,*

[10] *Lee C K D ,Guan C ,Yu Y , et al. A Comprehensive Review of Generative AI in Finance [J]. FinTech, 2024, 3 (3): 460-478.*