

Application of Artificial Intelligence in Corporate Financial Accounting

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Abstract—With the rapid development of artificial intelligence (AI) technology, its application in corporate financial accounting has become increasingly widespread. This paper explores the current status, main technologies, application areas, and challenges and opportunities of AI in corporate financial accounting. Through an analysis and review of extensive literature, this study finds that AI technologies, such as machine learning, natural language processing, and Robotic Process Automation (RPA), are reshaping the workflows and decision-making models in corporate financial accounting. These technologies demonstrate tremendous potential in financial reporting automation, intelligent auditing, financial forecasting, and risk management. However, the application of AI also faces challenges such as data quality, ethical issues, and talent shortages. This paper proposes a series of recommendations to promote the effective application and sustainable development of AI in corporate financial accounting.

Index Terms—AI, Corporate Financial Accounting, Machine Learning, Natural Language Processing, RPA

I. INTRODUCTION

In the wave of digital transformation, artificial intelligence (AI) technology is profoundly changing the way businesses operate and make decisions. As one of the core functions of enterprises, financial accounting is also experiencing revolutionary changes brought by AI. In recent years, with the rapid advancement of AI technologies such as machine learning, natural language processing, and computer vision, their application scope in the field of financial accounting has been continuously expanding, and the depth of application has been deepening. AI technology is reshaping traditional financial accounting workflows, improving work efficiency, enhancing decision support capabilities, and creating new value for enterprises [1].

However, the application of AI technology in the field of financial accounting is still in the development stage, facing numerous challenges and opportunities. How to effectively integrate AI technology with traditional financial accounting practices, how to ensure the interpretability and reliability of AI systems, and how to address the ethical and legal issues brought by AI applications are all important issues that need to be resolved urgently. Therefore, in-depth research on the application of AI in corporate financial accounting work has important theoretical and practical significance [2].

This study aims to systematically review and analyze the current status of AI applications in corporate financial accounting, the main technologies involved, application areas, and the challenges and opportunities faced. Through a review

and analysis of relevant domestic and international literature, this paper will explore the following research questions:

- (1) What are the main AI technologies applied in corporate financial accounting work?
- (2) In which specific areas of financial accounting has AI been applied, and what are the effects?
- (3) What challenges does AI face in financial accounting applications?
- (4) How to promote the effective application and sustainable development of AI in corporate financial accounting work?

The structure of this paper is as follows: The second part introduces the main technologies of AI application in corporate financial accounting; the third part analyzes the application of AI in specific areas of financial accounting; the fourth part explores the challenges faced by AI applications; the fifth part proposes suggestions for promoting the effective application of AI; and finally, the conclusion.

II. MAIN AI TECHNOLOGIES APPLIED IN CORPORATE FINANCIAL ACCOUNTING

The application of AI technologies in corporate financial accounting mainly involves aspects such as machine learning, natural language processing, and RPA. These technologies provide powerful technical support for the automation, intelligence, and decision support of financial accounting work, as shown in Figure 1.

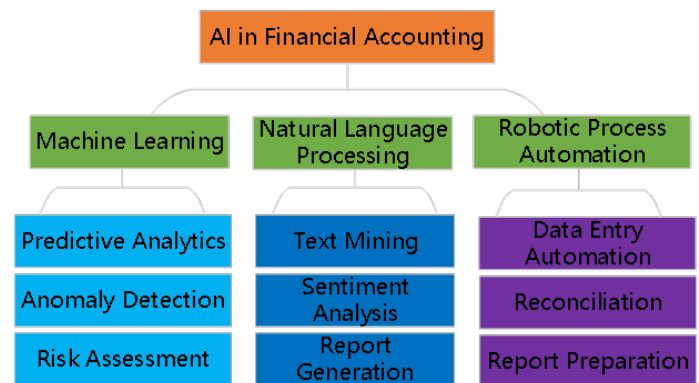


Fig. 1. Main AI technologies applied in corporate financial accounting and their relationships

A. Machine Learning Technology

Machine learning is one of the core technologies of AI, enabling computer systems to automatically improve their performance through experience. In the field of financial accounting, machine learning technology is mainly applied to data analysis, pattern recognition, and predictive modeling. For example, through deep learning algorithms, complex neural network models can be constructed for tasks such as financial risk assessment, credit scoring, and fraud detection [3]. Traditional machine learning algorithms such as Support Vector Machines (SVM) and Random Forests also perform well in financial data classification and regression analysis. These algorithms can handle high-dimensional data and capture complex non-linear relationships, thus being widely applied in tasks such as financial forecasting and anomaly detection [4]. In addition, reinforcement learning technology also shows great potential in areas such as investment portfolio management and algorithmic trading, capable of automatically adjusting decision strategies according to changes in the market environment [5].

B. Natural Language Processing Technology

Natural Language Processing (NLP) technology enables computers to understand, interpret, and generate human language. In the field of financial accounting, NLP technology is mainly used to process and analyze unstructured text data, such as financial reports, news articles, and social media content. By applying NLP techniques such as text mining, sentiment analysis, and named entity recognition, enterprises can extract valuable information from massive text data to support decision-making [6]. For example, NLP technology can be used to automatically extract and classify key information from financial reports, generating structured data for further analysis. At the same time, NLP can also be used for public opinion monitoring and market sentiment analysis, assessing company reputation and market trends by analyzing news reports and social media content [7]. Moreover, AI systems based on large-scale language models, such as GPT-3, are bringing new possibilities to application areas such as automatic generation of financial reports, intelligent customer service, and financial consulting [8].

C. RPA Technology

Robotic Process Automation (RPA) is a technology that uses software robots or AI workers to automate repetitive tasks. In the field of financial accounting, RPA technology is mainly used to automate daily data processing and report generation tasks, greatly improving work efficiency and accuracy [9]. RPA systems can mimic human operations to perform tasks such as data entry, verification, calculation, and report generation. Compared with traditional automation methods, RPA has stronger flexibility and adaptability, can be quickly deployed and adjusted, and does not require large-scale modifications to existing IT systems [10]. By combining RPA with AI technology, more intelligent automation can

be achieved, such as automatically identifying and handling abnormal situations, or making intelligent decisions based on historical data and business rules [11].

III. APPLICATION OF AI IN SPECIFIC AREAS OF CORPORATE FINANCIAL ACCOUNTING

AI technology has been widely applied in multiple specific areas of corporate financial accounting, including financial reporting automation, intelligent auditing, financial forecasting, and risk management. These applications not only improve work efficiency but also enhance the accuracy and timeliness of financial decision-making.

A. Financial Reporting Automation

The preparation of financial reports is an important link in corporate financial accounting work, traditionally requiring a lot of manpower and time. By applying AI technology, especially RPA and NLP, enterprises can achieve a high degree of automation in the financial report preparation process. RPA systems can automatically collect and organize financial data from various sources, performing necessary calculations and verifications. NLP technology can be used to automatically generate report text, ensuring the accuracy and consistency of report content [12]. Research shows that AI-driven financial reporting automation can significantly improve the efficiency and accuracy of report preparation. For example, a survey of Fortune 500 companies showed that after adopting AI technology, the average time for financial report preparation was reduced by 40%, and the error rate decreased by 60% [13]. In addition, AI systems can continuously monitor and analyze financial data, generating management reports in real-time to provide timely information support for enterprise decision-making [14].

B. Intelligent Auditing

AI technology is revolutionizing the audit process, making it more efficient, accurate, and comprehensive. Machine learning algorithms can analyze massive transaction data to identify abnormal patterns and potential fraudulent behavior. NLP technology can be used to analyze unstructured audit evidence, such as contract text and email communications [15]. Intelligent audit systems can perform full sample audits instead of traditional sampling audits, thereby improving the coverage and accuracy of audits. For example, Deloitte's Argus system uses machine learning and computer vision technology to quickly analyze and extract key information from lease contracts, greatly improving audit efficiency [16]. Another study showed that after adopting AI technology, the efficiency of audit work improved by more than 30%, while significantly reducing the risk of human error [17].

C. Financial Forecasting and Decision Support

AI technology, especially machine learning algorithms, demonstrates powerful capabilities in financial forecasting and decision support. By analyzing historical data and external

information, AI systems can generate more accurate financial forecasts, supporting enterprises in budget planning and resource allocation [18].

For example, time series analysis and deep learning models can be used to predict key financial indicators such as sales revenue, cash flow, and stock prices. A study on S&P 500 companies showed that financial forecasting models based on deep learning are 15-20% more accurate than traditional statistical methods [19]. In addition, AI systems can integrate multi-source data, such as macroeconomic indicators, industry trends, and social media sentiment, to provide more comprehensive decision support information [20].

D. Risk Management

In the field of risk management, AI technology is helping enterprises better identify, assess, and manage various financial risks. Machine learning algorithms can analyze complex data patterns to identify potential risk factors and abnormal situations. NLP technology can be used to analyze unstructured risk information, such as news reports and regulatory documents [21].

For example, credit risk assessment is an important area of AI application. By analyzing multi-dimensional information such as borrowers' financial data, transaction history, and social media activities, AI models can generate more accurate credit scores. Research shows that credit scoring models based on machine learning improve accuracy by 10-15% compared to traditional scoring methods [22].

Furthermore, AI technology also plays an important role in areas such as market risk management, operational risk management, and compliance risk management. For example, JP Morgan's COiN platform uses machine learning technology to review commercial loan agreements in seconds, greatly improving the efficiency and accuracy of compliance reviews [23].

Table I summarizes the specific applications and effects of AI in the main application areas of corporate financial accounting:

IV. CHALLENGES FACED BY AI APPLICATIONS IN CORPORATE FINANCIAL ACCOUNTING

Despite the tremendous potential shown by AI technology in the field of corporate financial accounting, its application still faces many challenges, mainly including aspects such as data quality and security, interpretability and reliability, ethical and legal issues, and talent shortage.

A. Data Quality and Security

The performance of AI systems largely depends on the quality of data used for training and operation. However, corporate financial data often has problems of incompleteness, inconsistency, or inaccuracy, which may lead to biases or errors in the prediction results of AI models. For example, a study on financial data quality found that about 30% of corporate financial data has quality issues, which seriously affects the accuracy of AI models [24].

In addition, the security and privacy protection of financial data is also an important challenge. AI systems need to process a large amount of sensitive financial information. How to ensure the security of data in the collection, transmission, and processing processes, and prevent data leakage and unauthorized access, is a problem that enterprises must solve [25].

B. Interpretability and Reliability

Many AI models, especially deep learning models, are often criticized as "black boxes," making it difficult to explain their decision-making processes. This is particularly problematic in the field of financial accounting, as financial decisions and reporting require a high degree of transparency and interpretability. For example, in credit risk assessment, merely giving a credit score is not enough; it is also necessary to explain the specific factors leading to this score [26].

Lack of interpretability not only affects the credibility of AI systems but may also bring legal and regulatory risks. A survey on AI applications in the financial field showed that about 60% of respondents consider the interpretability of AI systems as one of the main obstacles to their adoption of AI technology [27]. Therefore, developing interpretable AI models and improving the transparency and credibility of AI systems is an important direction of current research.

C. Ethical and Legal Issues

The application of AI technology also faces a series of ethical and legal challenges. For example, AI systems may unintentionally introduce or amplify existing biases, leading to unfair decisions. In the financial field, this may manifest as credit discrimination against specific groups or inequality in investment opportunities [28].

Moreover, the use of AI systems also involves issues of responsibility attribution. For example, if an AI system makes an incorrect financial decision resulting in losses, who should be responsible? Is it the company that developed the AI system, the enterprise using the system, or the government department responsible for regulation? These questions currently have no clear answers in law [29].

D. Talent Shortage

Implementing AI technology requires compound talents who understand both financial accounting and AI technology. However, such talents are very scarce in the current market. A global survey showed that over 70% of enterprises stated that the lack of talents with dual skills in AI and finance is the main obstacle to their application of AI in the financial field [30].

In addition, the rapid development of AI technology also brings challenges to existing financial accounting personnel. They need to continuously learn new skills to adapt to the work style changes brought by AI. How to cultivate and attract AI talents, and how to help existing employees improve their skills, are issues that enterprises need to seriously consider [31].

TABLE I
MAIN APPLICATION AREAS OF AI IN CORPORATE FINANCIAL ACCOUNTING

Application Area	AI Technology	Specific Application	Effect
Financial Reporting Automation	RPA, NLP	Data collection and organization, report generation	Preparation time reduced by 40%, error rate decreased by 60%
Intelligent Auditing	ML, NLP	Anomaly detection, full sample auditing	Efficiency improved by 30%, reduced human error
Financial Forecasting	ML, Deep Learning	Revenue prediction, cash flow prediction	Accuracy improved by 15-20%
Risk Management	ML, NLP	Credit scoring, compliance review	Accuracy improved by 10-15%, efficiency significantly improved

Table II summarizes the main challenges faced by AI applications in corporate financial accounting and their impacts:

V. RECOMMENDATIONS FOR PROMOTING EFFECTIVE APPLICATION OF AI IN CORPORATE FINANCIAL ACCOUNTING

To address the above challenges and promote the effective application and sustainable development of AI technology in corporate financial accounting work, this study proposes the following recommendations:

A. Improve Data Quality and Security

Enterprises should establish a sound data governance system to ensure the accuracy, consistency, and completeness of financial data. This includes implementing data quality management processes, regularly conducting data audits and cleaning, and using data validation tools [32]. At the same time, enterprises need to strengthen data security management, adopt technical measures such as encryption and access control to protect sensitive financial information, and formulate strict data use and sharing policies.

B. Develop Interpretable AI Models

Researchers and enterprises should focus on developing interpretable AI models to improve the transparency of AI systems. For example, techniques such as Local Interpretable Model-agnostic Explanations (LIME) can be adopted to provide understandable explanations for AI model decisions. In addition, enterprises can establish an audit mechanism for AI decisions to ensure that the output results of AI systems are verified and explained by humans before use.

C. Establish AI Ethics and Governance Framework

Enterprises should establish an AI ethics and governance framework to clarify the principles and standards for using AI systems. This includes formulating AI ethical guidelines, regularly assessing the fairness and bias of AI systems, and establishing appeal and correction mechanisms for AI decisions. At the same time, enterprises also need to closely monitor the development of AI-related laws and regulations to ensure that AI applications comply with regulatory requirements.

D. Strengthen Talent Cultivation and Skill Improvement

Enterprises should increase efforts in cultivating and introducing AI talents. They can cultivate compound talents with dual skills in financial accounting and AI through cooperation with universities and establishing internal training systems. At the same time, enterprises also need to provide AI skill training for existing financial accounting personnel to help them adapt to the work changes brought by new technologies.

E. Promote Cross-domain Cooperation

Promoting cross-disciplinary cooperation in fields such as financial accounting, AI technology, and legal regulation can accelerate innovation and application of AI technology in the financial accounting field. Enterprises can establish partnerships with universities, research institutions, and technology companies to jointly conduct AI application research and practice. At the same time, they should also strengthen communication with regulatory agencies to promote the formulation of regulations and standards adapted to AI technology development.

VI. CONCLUSION

This study systematically explores the current status of AI technology applications in corporate financial accounting work, the main technologies involved, application areas, and the challenges and opportunities faced. The research finds that AI technologies, especially machine learning, natural language processing, and RPA, are reshaping the workflows and decision-making models of corporate financial accounting. These technologies demonstrate tremendous potential in areas such as financial reporting automation, intelligent auditing, financial forecasting, and risk management, significantly improving work efficiency and decision-making accuracy. However, the application of AI technology also faces many challenges, including data quality and security issues, interpretability and reliability of AI models, ethical and legal issues, and talent shortages. To address these challenges, this study proposes a series of recommendations, including improving data quality and security, developing interpretable AI models, establishing AI ethics and governance frameworks, strengthening talent cultivation and skill improvement, and promoting cross-domain cooperation.

TABLE II
MAIN CHALLENGES FACED BY AI APPLICATIONS IN CORPORATE FINANCIAL ACCOUNTING

Challenge	Specific Manifestation	Impact
Data Quality and Security	Incomplete, inconsistent data; risk of data leakage	Affects AI model accuracy; increases security risks
Interpretability and Reliability	Opaque decision-making process of AI models	Reduces user trust; increases legal risks
Ethical and Legal Issues	Potential bias; unclear responsibility attribution	Leads to unfair decisions; increases legal risks
Talent Shortage	Scarcity of compound talents; insufficient skills of existing personnel	Hinders AI technology implementation; increases training costs

In the future, with the continuous advancement of AI technology and the improvement of relevant regulations, the application of AI in corporate financial accounting work will become more widespread and in-depth. Enterprises need to actively embrace AI technology while prudently addressing the challenges it brings, to achieve intelligent transformation of financial accounting work and enhance their competitiveness and value creation capabilities.

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