

Research on the Impact of Artificial Intelligence on the Development of the Accounting Industry

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Abstract: The article explores the application of artificial intelligence in the field of accounting. Although artificial intelligence technology can improve accounting efficiency and accuracy, there are also a series of issues such as data quality, data security and privacy, model interpretability and auditing, and the balance between artificial intelligence technology and human professional literacy. Therefore, in application, it is necessary to balance the relationship between technology and human professional literacy, establish data quality control, data security protection, model interpretability, and audit mechanisms, and enhance the skills and knowledge of accountants to adapt to the development of artificial intelligence technology.

Keywords: Artificial intelligence, Accounting, Data quality, Data security, Model interpretability, Audit.

1. Introduction

With the advent of the digital age, the application range of artificial intelligence technology is becoming increasingly widespread. Artificial intelligence technology has gradually become an important means of reducing costs and increasing efficiency in various fields, and the accounting field is no exception. Artificial intelligence technology can not only improve the accuracy and efficiency of accounting data, but also help enterprise managers better understand financial data in order to make business decisions and strategies.

2. The Application Status of Artificial Intelligence in the Accounting Field

The application of artificial intelligence technology in the accounting field is becoming increasingly widespread, involving various aspects such as financial data processing, analysis, prediction, and risk management. Among them, some of the most popular applications include automated generation and classification of accounting vouchers, financial analysis and forecasting, intelligent and dynamic financial reporting, automated risk management and compliance review, and big data-based financial fraud detection.

2.1. Automated generation and classification of accounting vouchers

The generation and classification of automated accounting vouchers is one of the earliest applications of artificial intelligence technology in the accounting field. In this regard, artificial intelligence technology can recognize the text on accounting vouchers through OCR technology and automatically classify it, helping accounting personnel save time and improve work efficiency. With the continuous improvement of computer technology and data processing capabilities, more and more types of accounting vouchers can be automatically generated and classified to improve the efficiency and accuracy of accounting work.

The generation and classification of automated accounting vouchers are achieved using natural language processing technology and machine learning algorithms. Among them,

natural language processing technology is mainly used to identify and understand the textual information in accounting vouchers, including dates, amounts, accounts, and other content. Machine learning algorithms can be trained and learned based on existing data samples, thereby improving the accuracy and efficiency of voucher classification.

In addition, automated generation and classification of accounting vouchers can also save accountants a lot of time and effort, giving them more time for data analysis and financial decision-making. At the same time, this technology can also reduce the risk of human error and fraudulent behavior, improving the reliability and transparency of financial management.

2.2. Financial analysis and forecasting

Financial analysis and forecasting are another common application of artificial intelligence technology in the accounting field. Through machine learning and data mining techniques, artificial intelligence robots can extract valuable information from a large amount of financial data for financial analysis and prediction, helping enterprises make better decisions. For example, artificial intelligence technology can be used to predict stock prices, market trends, etc., to assist enterprises in formulating investment strategies. Traditional financial analysis methods require a lot of manpower and time, while artificial intelligence technology can help enterprises quickly analyze financial data and predict future financial conditions. Some researchers use machine learning algorithms such as neural networks and random forests to predict financial data of companies. For example, Wang Chunhua (2023) [1] used the LSTM neural network model to classify and predict the financial situation of ST enterprises. The research results indicate that deep learning based methods have higher prediction accuracy and stability.

In addition, artificial intelligence technology can also assist enterprises in conducting financial risk analysis. For example, Wang Yulong et al. (2022) [2] constructed a corporate debt default risk prediction model using seven machine learning algorithms to predict the default risk of the enterprise. Research has shown that machine learning models can effectively predict the risk of corporate debt default. The accuracy of most models is above 0.8, indicating that machine learning models have good predictive performance for debt

defaults.

2.3. Intelligence and dynamism of financial reporting

In the digital era, financial reports present situations such as large amounts of information, complex structures, and lack of emphasis. The form and timeliness of financial reports constrain the full value that reports should play. With the promotion of artificial intelligence in financial reporting reform, future financial reports will develop towards intelligence and dynamism (Li Hongqin, 2020) [3].

The main purpose of intelligent and dynamic financial reporting is to improve the accuracy, accuracy, and reliability of financial reporting. This method can be achieved through the following methods:

Automated data collection and reporting: Automated data collection and reporting is the core of intelligent and dynamic financial reporting. By using artificial intelligence technology, automatic collection, cleaning, classification, and analysis of company financial data can be achieved, thereby automatically generating accurate and standardized financial reports.

Automated report generation and publication: The use of artificial intelligence technology can achieve automated financial report generation and publication. Based on company financial data, artificial intelligence systems can automatically generate standardized and dynamic financial reports, and automatically publish them on company websites, mobile applications, and other platforms for shareholders and investors to access, truly achieving timeliness.

Intelligent financial analysis: By using artificial intelligence technology, intelligent analysis of financial reports can be achieved. For example, using machine learning algorithms can predict future financial trends and risks, thereby providing better decision support for enterprise management.

2.4. Automated risk management and compliance review

Automated risk management and compliance review are another important application of artificial intelligence technology in the accounting field. Artificial intelligence can help accounting personnel quickly and accurately detect and predict risks, reducing errors and vulnerabilities. At the same time, it can automate audit and compliance processes, improving efficiency and accuracy.

Automated risk management is mainly achieved through data mining and machine learning technologies. By analyzing historical data of enterprises, automated risk management can help enterprises identify potential risks and provide accurate predictions and recommendations. In addition, automated risk management can automate the compliance review process, ensuring the compliance of the enterprise while reducing the time and cost of compliance review.

2.5. Financial fraud detection based on big data

Financial fraud detection based on big data is an important application of artificial intelligence in the accounting field. The application of big data technology can collect and analyze a large amount of financial data to discover abnormal patterns and behaviors, helping accounting firms and companies more accurately detect financial fraud.

Research has shown that financial fraud detection based on

machine learning algorithms has achieved good results. For example, Gyamfi and Abdulai (2018)[4] found through experiments that using support vector machine (SVM) algorithms can achieve an accuracy of up to 80%, which is significantly improved compared to similar work references. In addition, using deep learning algorithms such as convolutional neural networks (CNN) and recurrent neural networks (RNN) can also achieve good fraud detection results.

3. The Impact of Artificial Intelligence on the Accounting Field

3.1. The impact of artificial intelligence technology on the accounting profession

Artificial intelligence is reshaping the future of many professions, with accounting being one of the most important (Eleonora Stancheva, 2018) [5]. The deep integration of emerging technologies such as artificial intelligence in the accounting field has brought tremendous changes to the accounting industry, such as reengineering accounting procedures, reducing accounting information errors and distortions, improving accounting efficiency, and promoting the transformation of accounting professional structure (Zhang, 2020) [6]. With the continuous progress of artificial intelligence technology, we are facing a shift from concerns about automation of accounting tasks to the accounting industry embracing artificial intelligence capabilities for its own benefit, and accounting is increasingly approaching the management functions of companies. The transformation of this professional positioning not only changes the content and methods of accounting work, but also puts forward new requirements for the quality and ability of accounting professionals.

The general situation in China's accounting industry is that the basic accounting personnel have reached saturation and the reserve of senior talents is insufficient. The rapid development of artificial intelligence technology has driven the digital transformation of the accounting field, promoting the updating and upgrading of accounting and financial information systems, and automating some tedious tasks in the accounting field such as voucher review and bill classification. This has enabled accounting personnel to focus more on high-level tasks such as data analysis and prediction. This will directly promote the transformation of accounting personnel from basic accounting to management accounting. Through the processing or generation of enterprise financial data through artificial intelligence, accounting personnel can evaluate various economic activities of the enterprise, analyze the causes and impacts, control costs, reasonably control budgets, propose future strategic decisions, and assist in internal governance of the company (Zhang zixin, 2016) [7]. The completion of these tasks inevitably requires accounting personnel to be proficient in management accounting knowledge, possess the vision of enterprise managers, have excellent data analysis skills, and have strong communication skills.

3.2. The Impact of Artificial Intelligence Technology on Accounting Education

The rapid development and application of artificial intelligence technology have put forward new requirements and challenges for accounting education. Scholars have also conducted extensive research on the impact of artificial

intelligence technology on accounting education. For example, Shaffer et al. (2020)[8] believe that accountants who accept new technologies such as artificial intelligence will be able to use such technologies to provide more professional consulting and services to clients. Holmes and Douglas (2022)[9] pointed out that the development of artificial intelligence technology will change the focus of accounting courses to include specialized computer skills. These studies provide important references for the reform of accounting education. Traditional accounting courses can no longer meet the needs of the artificial intelligence era. Students need to understand the basic knowledge and application of artificial intelligence technology, as well as its impact on the fields of finance and accounting.

The widespread application of artificial intelligence technology has automated a large amount of financial and accounting work, which means that artificial intelligence technology has begun to replace traditional financial and accounting work.

Therefore, accounting education needs to focus on cultivating students' computer programming and data analysis skills to adapt to this new work environment. At the same time, the application of artificial intelligence technology has also made accounting education more interdisciplinary and comprehensive. For example, artificial intelligence technology requires a deep understanding of data science, artificial intelligence ethics, and other aspects. Accounting education also needs to pay attention to the safety and reliability of artificial intelligence technology, as the accuracy and confidentiality of financial and accounting data are crucial. Students need to understand the security risks of artificial intelligence technology and how to address them.

4. The Application Challenge of Artificial Intelligence Technology in the Accounting Field

4.1. Data security and privacy issues

Data security and privacy issues are one of the important challenges faced by the application of artificial intelligence in the accounting field. With the rapid development of big data technology, enterprises are facing increasingly complex data security and privacy issues. When artificial intelligence technology is applied to the accounting field, data protection has become a crucial issue.

Firstly, data leakage and data destruction are the main risks in the application of artificial intelligence technology in the accounting field. To address these issues, it is necessary to establish a secure data storage and transmission system to ensure that sensitive data is not leaked or attacked. In addition, it is necessary to establish a comprehensive data backup and recovery mechanism to respond to emergencies.

Secondly, data privacy is also an indispensable aspect of the application of artificial intelligence technology in the accounting field. When using artificial intelligence technology for data analysis and prediction, the risk of personal privacy and trade secrets leakage becomes higher. In order to protect personal privacy and trade secrets, a series of measures must be taken to ensure the security of data.

Some scholars have proposed other solutions, such as a data security guarantee mechanism based on blockchain technology. Shrier et al. (2016)[10] pointed out that blockchain technology has the characteristic of

decentralization, which can ensure that data is not tampered with, making it more secure and reliable. In addition, blockchain technology can also grant access to data to specific individuals to protect the privacy of the data. However, blockchain technology also faces some challenges, such as high costs and slow speed (Lu, 2018) [11]. However, compared to traditional security mechanisms, blockchain technology still has some issues in scalability, privacy, and security, which require further research and improvement.

4.2. Model interpretability and audit issues

Another challenge for the application of artificial intelligence technology in the accounting field is model interpretability and audit issues. Model interpretability refers to people's ability to understand how a model makes decisions and predictions. In many application fields, such as healthcare and finance, the interpretability of models is particularly important, as decisions in these fields may have significant impacts on people's lives and property. Currently, people generally refer to understandable models as transparent models, while incomprehensible models are referred to as black boxes (Lipton, 2018) [12].

In terms of auditing, the opacity of artificial intelligence technology is also an issue. Auditors need to be able to track and understand the financial statements and transactions of a company to confirm their accuracy and legality. However, the complexity and interpretability of artificial intelligence models may make it difficult for auditors to understand the data and algorithms on which the model is based, and to verify the accuracy and fairness of the model.

In order to address the interpretability and audit issues of models, scholars have proposed many methods and techniques. One method is to use interpretable models such as logistic regression and decision trees, which have simple and intuitive structures and are easy to interpret. In addition, some researchers are studying how to use machine learning techniques to generate explanations, such as using neural networks to annotate decisions to help people understand how models make decisions. In addition, to address audit issues, some researchers have proposed audit methods based on behavioral finance and audit methods based on data analysis. These methods aim to help auditors understand the financial statements and transactions of a company and provide strong evidence when abnormal situations are discovered.

4.3. The Balance between Artificial Intelligence Technology and Human Professional Literacy

The development of artificial intelligence technology has brought many opportunities for the future of the accounting profession, but it has also brought some challenges. One key challenge is how to balance the relationship between artificial intelligence technology and human professional literacy. Although artificial intelligence technology can greatly improve the efficiency and accuracy of accounting work, it cannot replace the judgment and decision-making abilities of human accountants. Accountants need to possess certain professional knowledge and experience to ensure the accuracy and reliability of accounting work. Therefore, how to find a balance between artificial intelligence technology and human professional literacy has become a key issue in the application of artificial intelligence in the accounting field.

According to Chukwuani (2020)[13], accountants need to understand the basic knowledge and applications of artificial

intelligence technology, and apply it to accounting practice. This requires accountants to continuously learn and improve their skills and knowledge to adapt to the rapid development of artificial intelligence technology. In addition, accountants also need to have good communication and collaboration skills to effectively interact and collaborate with artificial intelligence technology. In this process, accountants can use artificial intelligence technology to provide more data and information for their work, and also need to extract effective information from the data and analyze it in order to make correct decisions.

In addition, accountants also need to maintain their professional qualities, including ethical and legal awareness. Because artificial intelligence technology can handle a large amount of data, but the data itself does not have moral and legal awareness, it requires accountants to remain vigilant when using artificial intelligence technology, ensure the legality and accuracy of the data, and protect customer privacy and confidential information.

Although accountants need to collaborate effectively with artificial intelligence technology, artificial intelligence technology cannot completely replace the role of human accountants. In daily work, accountants need to continue to play the role of risk management and decision-making, which requires them to have critical thinking and problem-solving skills to adapt to the constantly changing business environment. Therefore, the balance between artificial intelligence technology and human professional literacy is very important. Only by finding the appropriate balance point can the advantages of artificial intelligence technology be utilized and the efficiency and accuracy of accounting work be improved.

5. Conclusion and Outlook

With the support of artificial intelligence technology, accounting work can be more efficient and accurate, thereby improving the efficiency and accuracy of accountants. However, while artificial intelligence technology brings new opportunities to the accounting field, we also face many challenges. Data quality, data security, data privacy, model interpretability, and audit issues are all urgent issues that we need to address. At the same time, the balance between artificial intelligence technology and human professional literacy cannot be ignored. This requires us to reform the training of accounting personnel to adapt to the development of the times.

With the continuous development of artificial intelligence technology, it will have a more profound impact on the accounting field. In the future, the development trend of artificial intelligence technology mainly includes the following aspects:

Deep learning technology will be widely applied in the accounting field. Deep learning is an artificial intelligence technology based on neural networks, which can automatically discover patterns and patterns in a large amount of data through learning, thereby achieving autonomous decision-making and self optimization. In the field of accounting, deep learning technology can be applied to automated voucher generation and classification, financial analysis and prediction, fraud detection, and other aspects.

Natural language processing technology will become an important application of artificial intelligence in the field of accounting. Natural language processing technology can help

machines understand natural language, thereby achieving automated processing and analysis of financial reports, accounting standards, laws and regulations, and other texts. In the future, natural language processing technology is expected to achieve intelligent recognition and application of accounting standards, automated generation and analysis of financial reports, and other functions.

The application scope of artificial intelligence technology will be further expanded. In addition to the existing fields of automated accounting voucher generation, financial analysis and prediction, risk management, and compliance review, artificial intelligence technology can also be applied to auditing, tax planning, financial management consulting, and other aspects of accounting firms. In the future, artificial intelligence technology will be more widely penetrated into various fields of the accounting profession.

Artificial intelligence technology will be deeply integrated with human intelligence. In the future, artificial intelligence technology will pay more attention to the synergy with human intelligence, and through cooperation with professionals from accounting firms, the intelligent transformation of the accounting field will proceed smoothly.

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