The Impact and Assistance of Artificial Intelligence in the Accounting Profession: Current Status, Future Prospects and Ethical Considerations

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Abstract: In the context of global digitisation, artificial intelligence is reshaping all industries, including accounting. As the foundation of business decision-making, accounting involves key processes such as financial accounting, budgeting and auditing. In the face of increasingly complex business, regulatory changes and market competition, traditional accounting models exhibit limitations such as low efficiency, high error rates and lack of real-time support. Artificial intelligence provides new tools - machine learning, deep learning, natural language processing, and robotic process automation (RPA) - to improve data processing and analyses, enabling accounting to evolve from reactive reporting to proactive risk prediction and decision support. This paper focuses on the current status, advantages, prospects, challenges and ethical issues of artificial intelligence applications in accounting. Through a systematic discussion, this essay aims to present a complete picture to practitioners, managers, and researchers - highlighting both the great opportunities for efficiency and decision-making, as well as the risks in terms of privacy, ethics, and liability. It is hoped that this essay will provide insights for future research and practice, and that with concerted efforts, the accounting profession can achieve sustained, healthy growth and innovation with the help of artificial intelligence.

1 INTRODUCTION

Accounting is one of the indispensable core elements of business activities and is responsible for the recognition, measurement, recording and reporting of economic information of enterprises. However, with the increasing complexity, globalisation and digitisation of the contemporary business environment, the traditional accounting model and processing methods are facing more and more challenges. In this background, the rise of artificial intelligence technology provides new ideas and tools for the accounting field, enabling it to process business and financial data in a more timely and accurate manner and provide strong support for decision-making.

Since 2020, governments and enterprises have been actively promoting the research and application of artificial intelligence technology. For the accounting industry, the value of artificial intelligence technology is not only reflected in the automated processing of repetitive and regular financial processes, but also in the functions of predictive analysis, fraud detection and risk control based on big data and machine learning. Through the synergy between people and artificial intelligence, the efficiency of the finance department has been significantly improved; on the other hand, it has also put forward new requirements on the traditional organisational structure, talent training, data compliance and industry ecology (Mohammad et al., 2020). It is in such an age of high convergence between technology and management that exploring the impact and ancillary value of artificial intelligence on the accounting industry is of both practical and long-term value.

This essay, entitled 'The Influence and Assistance of Artificial Intelligence in the Accounting Industry: Current Status, Future Prospects and Ethical Considerations', aims to provide a more in-depth explanation of the current status of the application of artificial intelligence in the accounting industry, its technological advantages, developmental potentials, challenges

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and corresponding ethical considerations, through systematic research and case studies. The structure of the article is as follows: firstly, it will introduce the current situation and application scenarios of artificial intelligence in the accounting industry; then it will summarize the benefits of artificial intelligence for accounting; secondly, it will discuss the future prospects of artificial intelligence; then it will focus on analyzing the challenges faced by artificial intelligence in the process of promoting artificial intelligence; and lastly, it will explore the ethical considerations of the combination of artificial intelligence and accounting with a view to providing reference thoughts and directions for the industry and the practitioners., and direction for the industry and practitioners.

2 THE CURRENT STATE OF AI IN ACCOUNTING

Artificial intelligence now covers a very wide range of areas which also includes industries such as accounting and auditing. Artificial Intelligence is generally used in business accounting to automate accounting tasks and analyse data thereby planning the finances of the business accordingly. The most common areas that artificial intelligence is designed to be used in accounting include, but are not limited to, the following three areas.

With fixed processes and regulations, RPA combined with the financial rules engine can achieve automated billing and tax reporting, improving compliance and accuracy. It also automatically generates financial reports or variance analysis reports through correlation analysis of multiple financial statements, ensuring logical consistency of data and reducing repetitive human efforts. The application of RPA technology can help the accounting department to free itself from tedious and repetitive operations and devote more energy to higher value-added business analysis and decision-making (Ruiz-Real et al., 2021). However, the promotion of RPA is still constrained by cost, system compatibility, and personnel training, which makes it difficult for many small and medium-sized enterprises to widely apply RPA in the short term.

In addition to automated processes, another major application of artificial intelligence in the accounting industry is intelligent auditing and data analyses, using models such as machine learning, data extraction and predictive analyses to provide deeper insights for auditors and financial managers. Intelligient audit uses full data scanning and algorithmic analysis to provide rapid early warning of potential fraud or risk, whereas traditional auditing often relies on sampling to detect compliance with a company's financial data (Zhang, 2020). Through the comprehensive analysis of the enterprises' historical data and external environmental data (such as industry indicators, macroeconomic data), to build forecasting models, assisting the management to make more scientific estimates of revenue, cost, cash flow. Through the comprehensive analysis of the enterprises' historical data and external environmental data (such as industry indicators, macroeconomic data), to build forecasting models, assisting the management to make more scientific estimates of revenue, cost, cash flow.

Globally, digital transformation in accounting and auditing is accelerating. The international Four accounting firms (e.g., PricewaterhouseCoopers, Deloitte, Ernst & Young, and KPMG) have introduced artificial intelligence technologies in their auditing and consulting practices, such as using machine learning algorithms to analyse client transactions in a real-time manner and identify anomalies, so as to improve the quality and efficiency of their audits (Schweitzer, 2024). In the Chinese market, with the focus on the digital economy in the 14th Five-Year Plan and the continued reform of the fiscal and taxation system, more and more startups and software vendors are entering into smart finance, accounting robots, and other segments of the market. Overall, the permeation of artificial intelligence in the accounting industry is still at an early stage, but from the perspective of both policy support and market demand, there is huge room for growth in the future.

3 BENEFITS OF ARTIFICIAL INTELLIGENCE FOR THE ACCOUNTING INDUSTY

With artificial intelligence evolving in the accounting industry, its application in the accounting industry has greatly optimized cost and time management. While traditional financial work often involves a large number of repetitive tasks such as data entry, report preparation and account reconciliation, artificial intelligence significantly reduces labour costs and cuts down on human error by automating these processes. At the same time,

artificial intelligence systems are able to analyse and process large amounts of financial data in a short period of time, enabling companies to complete financial reports and audits faster and improve overall operational efficiency. In addition, AI's ability to analyse real-time data enables enterprises to respond quickly to market changes, optimize resource allocation and enhance the accuracy of financial management. These advantages not only enhance the competitiveness of enterprises, but also promote the development of the finance industry towards intelligence and efficiency. There are a large number of repetitive and rule-based tasks in the accounting process, such as data entry, reconciliation, classification, etc., which are prone to errors and take up a lot of accountants' time. Automating these tasks with artificial intelligence technology can significantly reduce human error and increase processing speed. Especially in large enterprises or high transaction volume scenarios, the introduction of RPA and intelligent algorithms can reduce the number of manual interventions, thus realizing real-time and high accuracy in financial accounting (Cheng, 2020).

With the increasing size and complexity of financial data, it is difficult for manual audits to fully identify and locate potential irregularities and fraud. Through machine learning modelling of financial large data, abnormal transactions and risk patterns can be detected earlier, providing more targeted and comprehensive risk warnings to regulators, internal audits and external audits (Li et al., 2020). This not only improves internal control, but also promotes the formation of a culture of compliance and integrity.

With the help of deep learning and time series analysis models, artificial intelligence can provide more accurate forecasts of sales revenue, cash flow, inventory turnover, and so on. Management can then use the data insights to develop more scientific budgeting and resource allocation strategies. For example, by identifying cyclical and seasonal changes in historical data, artificial intelligence can assist enterprises in planning and arranging more effectively at the production and purchasing stages, so that they can reduce costs and increase efficiency in the highly competitive market (Rohmah et al., 2022).

From a longer-term viewpoint, artificial intelligence's impact on the accounting industry is deep and systematic. It not only promotes the transformation of enterprise finance departments, but also opens up new business forms for professional service organizations such as accounting firms. For example, artificial intelligence technology combined with audit cloud platforms can conduct in-depth audits and analyses of clients' multi-source data, leading to the iterative upgrading of traditional audit methodologies and service models (Adeyelu et al., 2024). This can lead to overall industry quality and is attracting more and more talent and capital into the accounting technology field, creating a positive loop.

4 THE FUTURE OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING

In the future, the artificial intelligence application in the accounting industry is bound to be deeply integrated with large data technology and cloud computing platform. On the one hand, cloud computing can provide large-scale elastic computing and data storage resources, allowing the accounting business to maintain efficient operations when dealing with complex multi-source data; on the other hand, large data technology provides a rich data base for the training and real-time analysis of artificial intelligence models, further improving key functions such as risk monitoring and budget forecasting (Hasan, 2022).

For RBA, Although RPA has been applied in many enterprises, current robots still rely on predefined scripts and rules and lack self-learning capabilities. With the further development of machine learning algorithms and natural language processing technology, the new generation of financial robots will have a higher level of adaptive capabilities and ‘human-like’ interaction. For example, when financial rules or business situations change, the robots will be able to update process logic autonomously through interaction with accountants, reducing reliance on human configuration.

In the future, auditors and regulators will also need artificial intelligence when dealing with more complex and cross-border economic activities. By connecting artificial intelligence with their own risk control systems, firms will be more efficient and adaptable in their information and data disclosure with regulators (Losbichler & Lehner, 2021). As regulations and laws improve, the accounting industry will become more open and transparent.

When the application of artificial intelligence in the accounting industry becomes more established, more personalized and customized financial

consulting and management services will become possible. The financial needs of small and medium-sized enterprises (SMEs) as well as emerging businesses are often marked by significant industry differences. By learning from a large number of industry cases and practices through the AI model, the artificial intelligence model is able to automatically produce relatively customized financial solutions, including automated auditing processes, intelligent tax optimization suggestions, refined cost control strategies, etc., providing more professional support for SMEs.

The deeper use of artificial intelligence will drive the accounting industry to make new demands on the talent structure. For finance practitioners, in addition to mastering traditional accounting and auditing knowledge, they must also have a basic understanding of data analysis, information systems, and the principles of AI models; for accounting firms, they need to establish internal interdisciplinary teams, including IT engineers and finance experts, to promote the implementation and continuous iteration of AI projects (Zhang, 2020). This also means that universities and training institutions need to adjust the course system of accounting majors as soon as possible, incorporate programming thinking, machine learning and data analysis into the teaching syllabus, and cultivate composite talents with both accounting and technology backgrounds.

5 CHALLENGES OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING APPLICATIONS

Although artificial intelligence has made great progress in the past few years, its application in the accounting field still faces some challenges. Deep learning models need to be trained on massive amounts of high-quality data to perform well, while corporate financial data often involves privacy and compliance requirements, making data acquisition costly. At the same time, SMEs' financial systems often lack sufficient digitalisation and standardization foundations, resulting in higher technical thresholds and implementation costs for AI solutions (Li et al., 2020).

For AI to be of real value in accounting roles, businesses often need to make adjustments to their business processes, organizational structure and division of staff accordingly. However, many enterprises lack systematic coordination between internal departments when carrying out digital transformation, and employees may also be resistant for fear of being replaced by technology. At the same time, there is a scarcity of talent in the market that understands both finance specialisms and is familiar with artificial intelligence, which needs to be supplemented through school-enterprise cooperation, internal training or external recruitment (Zhang, 2020).

With the large-scale application of artificial intelligence, the traditional accounting service ecosystem is also facing redefinition. Accounting agencies that provide basic bookkeeping and tax filing may gradually be replaced by more efficient intelligent systems; accounting firms that still use manual labour to complete audits will also find it difficult to compete with more digitized and automated organizations. Demands from within and outside the profession for accounting education, professional qualification systems, and related laws and regulations are also heating up, eventually leading to fundamental changes in the mode of operation and practice of the accounting profession.

6 ETHICAL CONSIDERATIONS OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING

Accounting data involves core business information of enterprises as well as personal information of employees and customers. Artificial intelligence applications often require centralized or distributed analysis and exploration of large-scale data if artificial intelligence applications are to achieve the best results, but this also brings the potential risk of information leakage and misuse. When artificial intelligence systems are interfaced with external cloud platforms or third-party data sources, it is necessary to ensure that the data meets privacy protection and security requirements throughout the entire process of collection, transmission, storage, and use (Zhang, 2020). Based on this, it is crucial to establish a comprehensive data authorization and access control system.

Accountants have a duty of professional ethics and independent auditing, and are required to be prudent and objective. However, if key aspects of accounting work are controlled by artificial intelligence systems, this may undermine the practitioner's control over the ‘truthfulness’ behind the financial figures. Professional scepticism and prudence may be undermined if accountants over-

rely on machine AI and neglect to make substantive investigations and independent judgements on unusual data (Zhang, 2020). Therefore, it is important to set up an effective process and review system so that accountants can maintain their professional independence and judgement with the aid of technology.

How should responsibility be apportioned when artificial intelligence systems make errors in decision-making or produce misleading financial conclusions? Should the algorithm provider bear the primary responsibility, or should the head of corporate finance bear the ultimate responsibility? With the current laws and regulations not yet perfect, the industry must take into account software licenses, data use agreements, and internal control processes to clarify the responsibility of artificial intelligence in accounting (Zhang, 2020). For financial decisions in high-risk areas, manual review and decision-making processes must be retained to ensure that accountability can be quickly defined and pursued in the event of a problem. Accountability is a multi-participation process that requires comprehensive consideration of various factors.

While artificial intelligence improves the efficiency and accuracy of accounting work, it is also challenged as to whether it will cause large-scale job losses. Some basic accounting jobs may disappear as a result of increased automation, and society needs to make appropriate employment and education policy adjustments to help practitioners transition smoothly. Only by ensuring that practitioners and society adapt to and share technological innovations can artificial intelligence achieve sustainable penetration and development in the accounting field (Schweitzer, 2024).

7 CONCLUSION

Artificial Intelligence is rapidly developing and being utilized in the accounting industry, from automation of financial processes to intelligent auditing, from predictive analyzes to compliance management, bringing unprecedented changes and opportunities to the accounting industry. With the help of artificial intelligence, the accounting department can not only significantly improve data processing efficiency and accuracy, but also gradually develop from a traditional accounting centre to a strategic department that provides high-level analysis and decision-making support, thus creating greater value in the enterprise and even in the market. However, while enjoying the benefits of technology, it is also important to pay attention to the challenges it brings, including organizational change, talent development, data privacy and professional ethics.

From the current situation, the depth and width of the application of artificial intelligence in the accounting industry is still expanding, and the deep integration of technology and management may lead to a new round of industry upgrading. In order to achieve this goal, all parties should work together: on one hand, the government and regulators should improve the relevant legislation and ethical guidelines, so as to provide a legally compliant and suitable test environment for the implementation of the new technology; on the other hand, accounting firms and enterprises need to actively carry out digital transformation and talent reserves, so as to ensure that the AI project can be implemented smoothly and achieve practical results. For individual accounting practitioners, they should continue to learn cutting-edge technologies and data analysis skills, while upholding professional ethics and independence, so as to find a higher-value career position in the emerging technology paradigm. With the efforts of many parties, the in-depth integration of AI and accounting can walk more steadily and farther, and make greater contributions to the development of the economy and society.

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