Empowerment of Management Accounting by AI Large Model: Research on Decision Optimization Mechanism and Risk Prevention and Control

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Abstract: The rapid advancement of artificial intelligence technology in China has profoundly transformed the field of management accounting. By effectively leveraging large-scale AI models, management accounting can be empowered to establish decision optimization mechanisms, ensuring scientific and rational decision-making while strengthening risk prevention and control to mitigate financial risks. The application of AI models in management accounting enables automated data processing and analysis, significantly reducing the workload of financial professionals and accelerating the preparation of financial statements and data analysis. Furthermore, these AI models utilize intelligent systems to process and calculate data, guaranteeing accounting accuracy and efficiency, thereby enhancing the quality of management accounting practices. This paper analyzes the empowerment of management accounting through AI models, highlights the importance of such technological integration, and proposes specific measures for optimizing decision-making mechanisms and strengthening risk prevention. The findings aim to provide valuable references for researchers in the field.

Keywords: AI Large Model; Management Accounting; Decision Optimization Mechanism; Risk Prevention And Control

1. Introduction

Against the backdrop of China's rapid scientific and technological advancement, artificial intelligence (AI) has been widely adopted across various sectors. By implementing large-scale AI models in management accounting, organizations can not only optimize decision-making and execution processes but also enhance risk prevention and control. This transformation of management accounting functions elevates corporate financial management standards and fosters sustainable business growth. Therefore, management accountants should strategically leverage AI models to optimize decision-making and mitigate risks. Through adopting intelligent decision-making and data analytics, they can transform their working methods, improve operational efficiency, establish effective decision optimization mechanisms, and ultimately strengthen risk management capabilities.

2. The Importance of Empowering Management Accounting with AI Large Models

Table 1. Management Accounting Efficiency Before and After AI Intervention

Core scenarios in management accounting	Before the use of AI	After the AI intervention	Efficiency/accuracy improvement rate
cost accounting	Manual data collection takes 8-12 hours with an error rate of 3%-5%	Automatically fetching data takes 40-60 minutes with an error rate below 1%	Efficiency improves by 10-15 times, and accuracy increases by over 60%
budget making	Cross-department collaboration takes 7-10 days	Sync business data in real time and complete it in 2–3 days	Reduce cycle time by 70% and improve budget alignment by 45%

Management accounting empowered by AI large models can automate tasks to enhance efficiency. AI technology optimizes financial processes, enabling intelligent and automated management accounting operations that reduce manual workloads and boost productivity. Furthermore, the adoption of AI models shifts the focus of management accounting functions, facilitating

in-depth data analysis and decision support. This integration effectively bridges financial and operational departments, strengthening internal management effectiveness [1], as detailed in the table 1.

3. AI Large Model Enables the Decision Optimization Mechanism of Management Accounting

3.1 Intelligent Prediction and Budget Management

Driven by data, large-scale AI models can revolutionize management accounting's budgeting and forecasting systems. By leveraging machine learning algorithms to integrate multidimensional information-including operational data, industry trends, and macroeconomic indicators-these models dynamically optimize budget frameworks, significantly enhancing financial prediction accuracy. Analyzing budget management processes reveals that AI models demonstrate robust computational intelligence. Through natural language processing technology, they conduct in-depth business demand analysis, streamline budget preparation workflows, and develop multi-scenario budget plans using historical data, thereby reducing preparation time. During budget execution, intelligent monitoring platforms should be strategically deployed. Pattern recognition technology enables rapid detection of operational anomalies, automatically triggering early warning mechanisms to formulate corrective measures, ensuring strict control over budget deviation risks. Additionally, adaptive learning algorithms should be applied during budget adjustments to continuously track market changes and optimize resource allocation. This ensures the feasibility of budget plans while maintaining alignment with corporate operational environments [2].

3.2 Strategic Decision Support

The application of large-scale AI models enables the transformation of strategic decision-making frameworks in management accounting, with data integration and intelligent analytics driving strategic upgrades. AI-powered strategic analysis deeply correlates financial metrics with market data to construct rational evaluation models. From a budget management perspective, intelligent algorithms break through traditional budgeting constraints while employing machine learning to predict financial outcomes of strategic initiatives. AI systems effectively integrate platform data, combining industry-specific insights with macroeconomic indicators to develop multi-dimensional evaluation frameworks. Furthermore, large-scale AI models synergistically analyze structured and unstructured financial/market data, utilizing algorithmic models for decision simulations. This ensures dynamic strategic assessment and generates actionable recommendations containing elements that can be thoroughly analyzed. By establishing intelligent decision support systems, management accounting can enhance its strategic value to effectively navigate complex business environments[3].

3.3 Introduction of Intelligent Financial System

The development of intelligent financial systems powered by AI large models enhances corporate management accounting efficiency and optimizes decision-making processes, as show in Figure 1. By implementing intelligent financial systems such as AI financial robots, organizations can automate management accounting workflows, process financial data automatically, and expedite the completion of management accounting tasks, thereby improving operational efficiency.

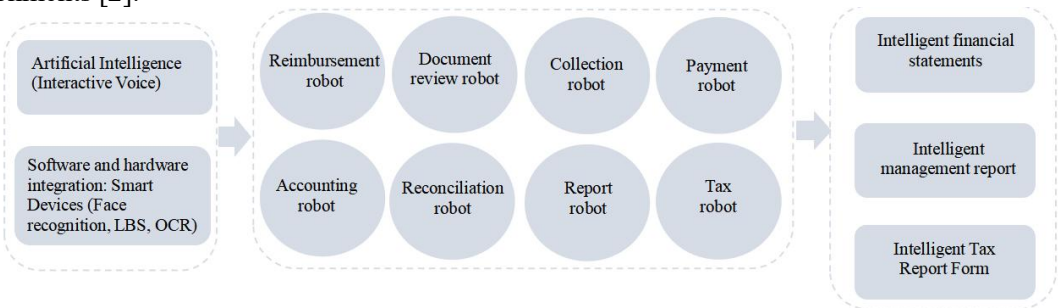

Figure 1. Intelligent Financial Robot

These systems also enable automated analysis of financial data through predefined rules and algorithms, providing actionable insights for corporate decision-making and achieving

intelligent decision-making objectives. Intelligent financial systems comprehensively integrate both financial and non-financial data, leveraging data mining and analysis to identify underlying patterns and elevate strategic decision-making capabilities For instance, companies can forecast future sales volumes by analyzing historical sales data and market trends, enabling safer production planning and optimized inventory management. Furthermore, the implementation of intelligent financial systems strengthens internal controls, facilitates real-time monitoring of financial status, and ensures the effectiveness of management accounting operations [4].

3.4 Optimizing Management Processes and Organizational Structure

When integrating AI technology with management accounting, enterprises must restructure their organizational frameworks and optimize management processes to ensure effective AI implementation. The management workflow is illustrated in Figure 2. Traditional hierarchical systems still exhibit limitations, resulting in rigid departmental functions and excessive information transmission layers. These constraints hinder cross-departmental collaboration required by large-scale AI models and fail to guarantee real-time decision-making [5].

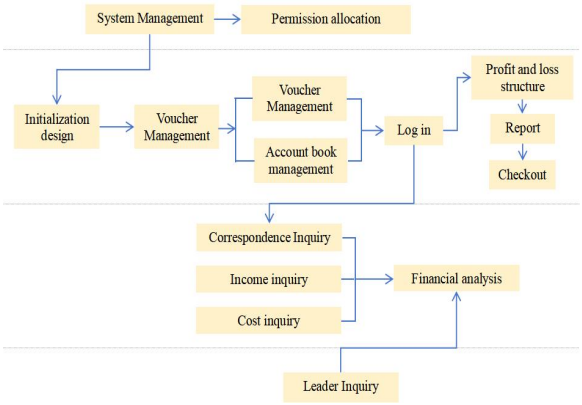

Figure 2. Management Flowchart

Therefore, companies should initiate systematic restructuring by establishing agile architectures driven by data. Establishing an AI Strategy Committee and a Digital Transformation Office is essential to coordinate all operations, enabling management accounting to evolve into a technology-enabled system. A closed-loop management framework should be implemented, with key components and measures shown in the diagram. From a process perspective, enterprises should automate management accounting workflows and develop intelligent decision-support systems. For instance, implementing dynamic cost forecasting models in cost control can break down data silos and establish centralized data centers. This approach not only facilitates deep integration of AI models with management accounting but also transforms its functions, ultimately upgrading corporate decision-making models [6].

Key points	Technology research and development Algorithm optimization	Data management Basic support	Process transformation Institutional guarantee	Organizational innovation Collaborative ecosystem
Main measures	Technical aspect Management level	Algorithm model Data governance	Intelligent recognition Standard formulation	Data analysis Talent cultivation

Figure 3. Key Points and Major Measures

4. Empowerment of Risk Prevention and Control in Management Accounting by AI Large Models

4.1 Risk Management and Intelligent Internal Control

From a risk management perspective, AI systems can integrate diverse heterogeneous data sources and establish rational risk assessment mechanisms. The process is illustrated in the diagram below, with real-time updates to the mechanism. By combining capital flow information and supply chain transaction networks, dynamic credit scoring of suppliers is performed to issue corresponding risk alerts, ensuring accurate detection of suspicious transactions [7]. Meanwhile, machine learning technologies should be employed to conduct in-depth analysis of historical audit data, clarify business rules, and identify potential risk points (e.g., contradictory contract terms) through large-scale AI models. At the intelligent internal control level, AI models can automate business processes and enhance compliance supervision, achieving fully closed-loop operations. For comprehensive supervision and control of suspicious transactions across the entire chain, natural language processing technology should be applied during compliance management. This enables intelligent interpretation of policies, regulations, and internal control systems, real-time monitoring of business activities, and timely identification of non-compliance to promptly block violations. Large-scale AI models can systematically transform expert experience

through knowledge graph construction, establish risk response strategy libraries, and dynamically update them based on actual conditions. Upon detecting anomalies, they can automatically initiate compliance checks, formulate comprehensive corrective plans, comprehensively identify risks and diagnose issues, implement timely corrective measures, and achieve intelligent management objectives [8].

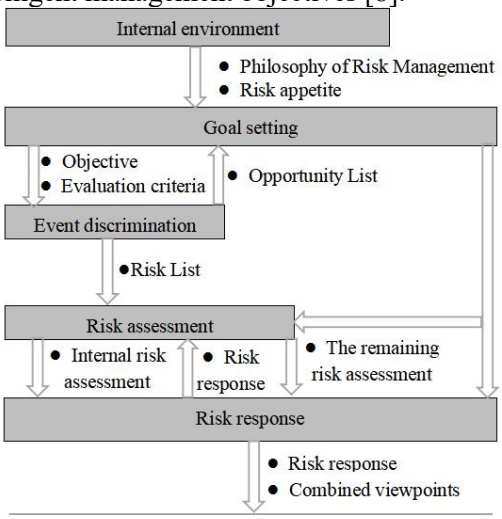

Figure 4. Risk Assessment Process

4.2 Improving data quality and management standards

To overcome the application bottlenecks of artificial intelligence technology in management accounting, it is essential to enhance data quality, improve data management standards, and establish a comprehensive data governance framework. Management accountants should standardize data collection processes, ensure legitimate and reliable data sources, unify data formats, and establish reasonable data standards. Regular data correction, cleaning, and updates should be conducted to improve data integrity and accuracy. Additionally, data security measures must be strengthened through strict access control and appropriate encryption technologies to protect sensitive data comprehensively. Periodic audits should be performed to effectively mitigate risks. Simultaneously, optimizing and regulating large-scale AI models is crucial. Utilizing diverse training datasets enables these models to cover various business scenarios, including extreme cases, thereby reducing algorithmic bias [9]. After obtaining model predictions, managers should thoroughly compare them with actual outcomes to promptly identify and correct deviations. Continuous model updates and upgrades should be implemented to enhance adaptability. Management accountants should adopt explainable AI technologies to clearly present decision-making logic, facilitating oversight and adjustments by management. Strengthening employee training programs will improve system operation capabilities, ensure accurate result interpretation, and reduce operational risks. Furthermore, management accountants should establish a comprehensive risk monitoring mechanism across the entire process, including real-time monitoring systems and pre-configured anomaly alert thresholds. When the cost or budget data generated by the AI model deviates from expectations or exceeds permissible limits, automated alerts should be triggered to enable timely intervention. To address risks such as model failures and data breaches, management accountants must develop contingency plans with clearly defined accountability, establish response procedures, and engage industry and legal experts. A thorough compliance assessment of AI model applications should be conducted to ensure alignment with tax and financial regulations, thereby mitigating potential risks [10].

4.3 Strengthen Data Security Management and Compliance Management

In implementing AI-powered risk prevention in management accounting, robust data security measures must be prioritized. AI systems process diverse data types including supply chain information, customer profiles, and financial records. Any data breaches resulting from inadequate security protocols could severely disrupt business operations and cause financial losses. To mitigate risks, enterprises should establish comprehensive data security frameworks, utilize encryption technologies for enhanced protection, and prevent vulnerabilities during data storage and transmission. Regular data backups and well-designed disaster recovery plans are essential to address potential data loss or system failures. Compliance management must be strengthened through strict adherence to tax and financial regulations, while AI models should optimize accounting processes to elevate data protection standards. Beyond rigorous compliance audits of internal procedures, companies must ensure AI model designs comply with legal requirements. Establishing dedicated compliance teams and implementing strict monitoring of AI applications are critical to

maintaining regulatory compliance and preventing risks stemming from inadequate data security and compliance management [11].

4.4 Enhancing Professional Training for Employees

To effectively prevent and manage accounting risks, enterprises should leverage large-scale AI models for comprehensive empowerment, particularly by enhancing professional training for employees. This enables them to properly utilize AI tools to innovate management accounting workflows, reduce human errors, and prevent potential financial risks. To achieve this, companies should optimize recruitment strategies by prioritizing candidates' professional competencies, ensuring they possess strong data analysis and technical understanding capabilities, along with cross-departmental collaboration skills and comprehensive qualifications to successfully complete management accounting tasks. Enterprises should utilize multiple channels to publish job postings, enhancing their appeal to versatile professionals. Outstanding management accountants must not only master accounting expertise but also possess knowledge in artificial intelligence, information technology, and data science. Meanwhile, with the rapid development of AI technology in China, the field has seen numerous innovative tools and methodologies. Therefore, accounting professionals need to continuously learn and master these new tools to adapt to industry changes. To improve employee training quality, companies should develop well-structured training programs that enhance workforce capabilities in an AI-driven environment. Training content should cover AI principles, smart financial system operations, and strict data security and compliance measures to prevent financial risks [12].

5. Conclusion

In summary, AI-driven big data plays a pivotal role in empowering management accounting practices. It optimizes workflow efficiency, refines decision-making mechanisms, and shifts functional priorities to enhance overall effectiveness. When implementing AI models, enterprises should align with management accounting requirements to establish optimized decision-making frameworks. By leveraging AI-powered data analysis, organizations can improve the scientific rigor and practical outcomes of strategic decisions. Furthermore, AI models should be utilized to strengthen risk management, establishing comprehensive risk control systems that effectively mitigate financial risks and drive sustainable corporate growth.

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