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Exploring the AI-Empowered Curriculum Development of Management Accounting

Jinling Zhao, Wen Chen*
Shenzhen Polytechnic University, Shenzhen 518055, Guangdong, China

Author to whom correspondence should be addressed.

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Abstract: Because of the rapid development of artificial intelligence (AI), corporate financial work is experiencing a major, clear-cut transformation from basic accounting to intelligent decision-making. Management accounting roles now place new and specific demands on talent's data analysis, application of intelligent tools, and strategic decision-making abilities. More importantly, AI and management accounting are intrinsically aligned. Since the paper addresses accounting in the areas of data-driven decision support, forecasting and planning, and ecosystem construction, and draws upon the foundational practices of the Management Accounting course at a vocational undergraduate institution, it naturally and systematically discusses the goal system and content of an AI-empowered management accounting curriculum. The article makes a very clear and logical proposal: curriculum reform should be carried out from three levels, namely the development of curriculum standards and knowledge graphs, the restructuring of teaching content, and the intelligent transformation of the teaching - learning process, thereby constructing a new "teacher - student - machine" deeply interactive teaching ecology, and ultimately realizing the dual improvement of intelligent curriculum content and teaching effectiveness.

Keywords: Artificial intelligence; Empowerment; Management accounting; Curriculum development

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1. Introduction

With the development of artificial intelligence and automation technologies, basic accounting tasks (such as invoice entry and voucher processing) are gradually being replaced by financial robots and intelligent systems. The Ministry of Finance's *Guiding Opinions on Comprehensively Promoting the Construction of a Management Accounting System* emphasizes the need to promote the application of modern information technology in management accounting and encourages enterprises to use big data, AI, and other technologies to improve the level of management accounting, thereby providing policy support for the integration of management accounting and AI. In the future, enterprises will reduce basic financial positions, while the demand for high-value roles such as management accounting and strategic finance will continue to grow. The work content and auxiliary means of traditional management accounting positions have undergone tremendous changes [1]. Management accounting personnel need to possess the ability to apply a wide range of AI tools for data-driven forecasting, planning, and decision-making [2]. On the other hand, the development of the digital economy has given rise to a series of new management accounting-related positions, such as intelligent financial engineer, intelligent

financial operator, and intelligent financial planner. These changes in job roles bring about shifts in technical requirements. Therefore, an AI-empowered reform of the management accounting curriculum is imperative.

2. Analysis of the alignment between AI and management accounting curriculum reform

2.1. Data-driven decision support

Since the fundamental purpose of management accounting is to provide decision support for internal corporate management, and since its entire workflow is built upon data collection, analysis, and interpretation, it is natural that tasks such as cost analysis, budgeting, and performance evaluation all involve extensive data processing. Hence, AI technology, particularly machine learning and data analysis algorithms, is exceptionally well-suited to process large-scale data, detect patterns and trends quickly, and therefore offer far more reliable and timely decision support for management accounting.

2.2. Achieving forecasting and planning functions with AI

Since one of the fundamental functions of management accounting is to forecast future economic activities and financial performance, and since budgeting and financial forecasting are standard tools for supporting corporate strategy, it makes sense to use predictive models from AI technology (such as time series analysis and machine learning algorithms) to generate more accurate forecasts based on historical data and relevant external variables, thus improving budgeting and strategic planning in management accounting.

2.3. Application of AI technology to management accounting ecosystem construction

AI technology is not limited to application in a single link of management accounting, but can naturally and powerfully be integrated with various technical means used in management accounting (such as ERP systems and financial software) to build an intelligent management accounting ecosystem, thus making the workflow of management accounting more automated, more intelligent, and therefore more efficient. A concrete example is the integration of AI with ERP systems to automatically gather, analyze cost data, and produce real-time cost reports.

3. Objectives of AI-empowered management accounting curriculum development

3.1. Enhancing teaching quality and student learning experience with AI

Using AI technology to develop a learning tracking system makes it possible to collect real-time data on students' learning progress, mastery of knowledge points, quality of homework completion, and practical training performance, allowing the construction of accurate and reliable learning profiles for each student. This, in turn, facilitates the identification of strengths and weaknesses, naturally leading to customized learning suggestions, teaching resources, and tutoring plans, i.e., "teaching according to individual aptitude."

3.2. Improving the efficiency and quality of teaching interaction

Introduce intelligent learning assistants and intelligent teaching assistant tools as means to bring about the natural transition of teaching interaction from the traditional "teacher-student" interaction to the fully interactive "teacher-student-machine" model, and then explain that an intelligent learning companion offers after-class tutoring and knowledge point consolidation exercises tailored to each student's learning status.

Since an intelligent Q&A assistant answers students' questions in real time and gives clear, helpful explanations to help students solve learning bottlenecks, therefore, intelligent teaching assistant tools are very useful for teachers in doing lesson preparation, grading homework, retrieving resources, and so on, which allows teachers to focus more on classroom

instruction, improve teaching interaction quality, and thus naturally promote the development of students' higher-order thinking skills.

3.3. Optimizing teaching assessment and feedback mechanisms

By using AI technology to analyze learning behaviors and learning data, one can intelligently evaluate students' learning progress, quickly find out their weak points, generate individualized learning alerts and tutoring plans, thus properly guide student progress and naturally optimize teaching assessment and feedback.

3.4. Achieving the goal of cultivating students' AI literacy and comprehensive abilities

Because AI technology is applied in a way that thoroughly empowers teaching and learning activities, students' teamwork spirit is naturally strengthened, their ability to solve practical problems collaboratively is well developed, and they are logically led to explore innovative uses of AI technology in management accounting, hence their motivation for active learning and self-improvement is stimulated.

4. Content of AI-empowered management accounting curriculum development

4.1. Integration of AI and teaching content: Restructuring the curriculum system and content

4.1.1. Development of curriculum standards and knowledge graphs empowered by AI

Starting from the AI-enabled management accounting ecosystem and the management accounting cycle, and taking the latter as the central thread, a new generation of curriculum standards has been carefully developed, which clearly presents the application of AI technology in management accounting and defines students' knowledge, skill, and competency objectives in AI tool application and data processing [3].

The text first describes the construction of a four-tier node system of "foundation layer – ecosystem layer – business layer – technology layer." Then it clearly defines the relationships between nodes at each level, thus naturally leading to the establishment of a scientific, systematic, and practical three-dimensional curriculum standard of "knowledge – skill – competency". On this basis, a dynamic three-dimensional knowledge graph is developed, integrating core knowledge points of management accounting, AI technology knowledge points, and industry practice cases, while explicitly stating the logical relations, hierarchical connections, and application scenarios of each knowledge point, and finally presenting the knowledge points in a visualized manner.

4.1.2. Restructuring of teaching content empowered by AI

The content framework of the traditional management accounting curriculum is logically disassembled to construct a well-integrated "AI + management accounting" teaching content system[4], and in designing specific content, real enterprise scenarios are taken as the foundation, with AI naturally and systematically embedded in data governance, cost control, operational decision-making, and strategic management. More importantly, AI tools and methods are embedded from the basic layer of data intelligence up to the top layer of strategic value.

The Intelligent Budgeting and Cost Control Module presents AI-powered budget management tools in a logical, systematic way, enabling students to use AI tools for dynamic budget preparation, budget adjustment, cost forecasting, monitoring, and financial decision-making. Specifically, during the budgeting phase, AI tools analyze historical data and market trends to detect financial risks and therefore determine optimal resource allocation plans, whereas in the cost control phase, AI is applied to build a dynamic cost monitoring model that tracks cost changes in real time and automatically suggests cost optimization measures.

The Intelligent Financial Decision-Making Module is designed to construct an AI-based virtual enterprise financial decision-making simulation platform on which students can assume the roles of corporate financial managers and management accounting personnel, input various decision parameters (budget, investment, cost control), simulate business

situations, obtain real-time decision feedback and analysis, and therefore naturally and effectively improve their intelligent decision-making skills.

The Intelligent Management of Capital Flow Module uses AI technology to develop a dynamic capital flow management tool that realistically simulates the capital flow of enterprises under different market environments and economic conditions, therefore enabling students to carry out real-time fund monitoring and cash flow forecasting, and to improve their skills in using AI tools for fund management.

Since the course content is presented mainly through practical cases and makes a natural, logical connection between theory, AI technology application, and practical operation, it is therefore ideally suited for helping students master the basic knowledge and skills needed for management accounting in the AI era.

4.2. AI empowerment of the teaching-learning process: Optimizing teaching models and experience

4.2.1. Building an intelligent teaching platform empowered by AI

By integrating the functional modules of teaching management, course resources, interactive discussion, practice testing, and learning analytics, a cloud-based, fully integrated intelligent teaching platform can be built, which realizes intelligent management of the entire teaching process. The platform also allows seamless cross-terminal access (computers, mobile phones, etc.) and has comprehensive multimodal data collection capabilities. Since the system can collect multidimensional learning behavior data in real time, namely student login duration, learning progress, viewing of knowledge points, homework completion quality, practical training operation processes, and interactive discussion content, it is therefore possible to use big data analysis combined with AI algorithms to identify group skill gaps and individual learning problems, thus enabling dynamic calibration of teaching content to industry needs and forming a genuine closed-loop feedback of "teaching implementation – process tracking – effect evaluation – optimization and improvement," which in turn improves the pertinence and effectiveness of teaching.

4.2.2. Development of intelligent learning assistance and interactive feedback systems

Develop diversified AI agent learning assistance tools to give students full-scale, individualized learning support, hence the AI Intelligent Learning Companion, which, based on students' learning profiles and learning progress, automatically presents tailored learning suggestions and targeted knowledge point consolidation exercises to help students overcome their learning weaknesses. Also, there is the Instant Q&A Assistant.

Since the system answers students' questions in real time and gives timely, precise explanations, case analyses, and problem-solving suggestions, it is very helpful for students to overcome learning bottlenecks. Moreover, the Learning Trajectory Analysis Tool records students' full learning trajectory, analyzes learning behaviors and outcomes, and therefore naturally leads to real-scenario simulation practice to improve knowledge application ability.

An AI-driven interactive feedback mechanism is set up to support online questioning, group discussion, and achievement presentation activities, and therefore, AI tools can analyze the content of students' interactions in real time, give immediate and meaningful feedback on interaction effects, prompt students to think more deeply, communicate more actively, and thus greatly improve the efficiency and quality of teaching interaction.

4.2.3. AI-assisted teaching design

Use the auxiliary role of AI technology in teaching design and classroom management to optimize the teaching process and thus improve teaching efficiency, because AI tools can automatically adjust the speed and difficulty of the teaching content according to students' learning conditions and their mastery of knowledge, generate differentiated classroom activity plans, and therefore truly realize" teaching according to individual aptitude."

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Disclosure statement

The authors declare no conflict of interest.

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