Research on the Construction of Competency Framework and Cultivation Path of Intelligent Finance Talents

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ABSTRACT

With the integration of financial applications and artificial intelligence technologies such as "Big Data, AI, Cloud Computing, Internet of Things, and Mobile Internet", intelligent finance has emerged as an inevitable outcome of digital transformation and AI development. Talent cultivation is pivotal to advancing intelligent finance. Driven by industrial transformation and technological innovation, domestic universities have launched intelligent finance programs, exploring innovations in financial talent cultivation. They aim to establish a competency framework-based training system for intelligent finance talents, meeting the demand for financial professionals to adapt to digital transformation and AI advancement.

Keywords: Intelligent finance, Competency framework, Talent cultivation.

1. INTRODUCTION: RELEVANT CONCEPTS AND RESEARCH

1.1 Definition and Connotation of Intelligent Finance

Intelligent finance refers to modern financial management built on a new generation of information technologies including artificial intelligence, cloud computing, big data analytics, and blockchain. Its core features include realizing human-machine intelligent interaction and collaborative operations, constructing multi-modal information processing systems, and leveraging intelligent algorithms to drive financial data processing. Based on data processing, it reconstructs financial data models, establishes distributed data-sharing mechanisms, and implements data objectification management. This drives full-process digital upgrading of financial management, intelligent leapfrogging of financial operations, and the construction of a new financial value creation system.

Compared with traditional financial management, intelligent finance improves the accuracy and timeliness of massive financial data processing, enhances the scientificity and foresight of management decisions, and achieves real-time risk identification and precise early warning in risk control. The transformation and application of intelligent finance have shifted financial personnel's focus from basic accounting to strategic support, value creation from post-event recording to pre-event prediction, and functional auditing from data recording to strategic management. Empowered by technology, intelligent finance improves the quality and efficiency of financial management, creating greater strategic value for enterprises.

1.2 International and Chinese Research

1.2.1 International Research

In recent years, international research on intelligent finance theory has focused on five areas at the intersection of AI and accounting: automated processes, risk identification and prediction, audit and compliance checks, financial statement analysis, and intelligent financial decision support. Key areas include the integration of RPA and AI, applications of blockchain and smart contracts, and the use of predictive analytics models. The United States is in a leading position in the research of intelligent financial development. Its financial institutions and

large and medium-sized enterprises have formed a mature application ecosystem for intelligent financial systems in credit analysis, market risk and operational risk management. For example, U.S. accounting software companies like Intuit have developed AI-driven systems that automatically categorize and process financial data, significantly improving data processing accuracy and efficiency.

In 2019, the Association of International Certified Professional Accountants (AICPA) and the Chartered Institute of Management Accountants (CIMA) jointly released the "CGMA Management Accounting Competency Framework", defining accounting professional skills as five dimensions: technical skills, business skills, interpersonal skills, leadership skills, and digital skills. Among these, digital skills include information and digital literacy, digital content innovation, problem-solving, data strategy and planning, data analysis, and data visualization.[1]

1.2.2 Chinese Research

In recent years, as financial management has evolved from informatization to intelligence, the Chinese government has issued a series of policies forming a theoretical and policy framework for intelligent finance development. These include the "National 14th Five-Year Plan for Digital Economy Development", SASAC's Guidelines for Accelerating World-Class Financial Management Systems in Central Enterprises, the Ministry of Finance's Accounting Industry Talent Development Plan (2021-2025), and the revised "Accounting Law" (2024). These policies provide guidance for the digital transformation of the accounting industry and the practical application of enterprise intelligent finance.

According to the "2024 Survey Report on the Status of Intelligent Financialization in Chinese Enterprises"[2], driven by policy support, technological iteration, and industrial demand, China's intelligent finance development focuses on three areas: deepening technological application, exploiting data asset value, and transforming talent structure. AI technologies such as ChatGPT and DeepSeek are accelerating the integration of business and finance. Enterprises are increasingly focusing on financial data governance and value mining, driving financial personnel to transform into cross-functional roles combining "finance + technology + business". This has also prompted adjustments in university talent cultivation and enterprise training systems. Adjustments in the cultivation of smart finance talent within domestic higher education accounting and finance programs by the end of 2024 are shown in "Table 1".

Table 1. Intelligent finance-related programs and talent cultivation in Chinese universities

Undergraduate Programs			Graduate Programs		
No.	University	Program (Direction)	No.	University	Cultivation Direction
1	Renmin University of China	Accounting (Intelligent Accounting)	1	Renmin University of China	Intelligent Accounting
2	Zhejiang University	Accounting (Intelligent Finance)	2	Research Institute of Central University of Finance and Economics, Guangdong-Hong Kong-Macau Greater Bay Area (Huangpu)	Intelligent Finance
3	Shanghai University of Finance and Economics	Financial Management (Intelligentization)	3	Nanjing University of Posts and Telecommunications	Data Analysis and Accounting Decision-Making
4	Nanjing University of Finance and Economics	Accounting (Intelligent Accounting)	4	Southeast University	AI and Big Data Financial Analysis
5	Jiangxi University of Finance and Economics	Accounting (Digital Intelligence Financial micro-specialty)	5	Guangdong University of Finance and Economics	Intelligent Accounting
6	Sun Yat-sen University	Accounting (Digital Intelligence Business Direction)	6	Shandong University of Finance and Economics	Intelligent Accounting Analyst
7	Shandong University of Finance and Economics	Accounting (Intelligent Accounting)	7	Hebei University	Accounting Information Systems & Big Data, Intelligent Finance
8	Nanjing University of Science and Technology	Accounting (Intelligent Accounting)	8	Jiangxi University of Finance and Economics	Big Data Application and Management Accounting

| 9 | Guangdong University of Finance and Economics | Financial Management (Intelligent Finance) | 9 | Southwestern University of Finance and Economics | Data Analysis and Financial Decision-Making |
| 10 | Guangzhou College of Commerce | Financial Management (Intelligent Finance) | 10 | Chongqing University of Technology | Big Data and AI Finance |

a   *Data Source*: Compiled from information on the official websites of surveyed universities

2. CONSTRUCTION OF THE COMPETENCY FRAMEWORK FOR INTELLIGENT FINANCE TALENTS

Against the backdrop of AI and digital transformation, the deep integration of industrial scenarios and data technologies has spawned new industries and technologies. Industrial development and job requirements now demand innovative talents who can proficiently use AI tools and intelligent financial systems, possess business management insight and decision-making capabilities, and master interdisciplinary knowledge. This shift not only requires practitioners to improve their technical application skills but also emphasizes the cultivation of strategic thinking and data analysis abilities. The integration of professional competence with data technology literacy and application capabilities has become an essential quality for accounting professionals.

The development of intelligent finance relies on a complete technological ecosystem, with its infrastructure and core capabilities built on three key technologies: AI and machine learning, big data technology, and cloud computing.

First, AI and machine learning serve as the core technical foundation of intelligent finance, endowing financial systems with intelligent capabilities through machine learning algorithms, natural language processing (NLP), and other technologies. Machine learning continuously optimizes the analysis of massive financial data, improving the accuracy and efficiency of predictive models. For example, generative AI (e.g., ChatGPT, DeepSeek) enhances the efficiency and creativity of automated financial statement generation and financial decision support.

Second, big data technology provides a solid data foundation for intelligent finance, with advantages in data diversity, real-time processing, and large-scale analysis. It supports multi-dimensional analysis of enterprise financial data and enables data visualization, helping managers gain insights into business trends more efficiently.

Finally, cloud computing provides the foundational infrastructure for the flexibility and efficiency of intelligent financial systems. Its high-performance databases, distributed computing frameworks, and data algorithm libraries ensure efficient and stable financial data processing, while enabling elastic scalability and rapid deployment of systems. The deep integration of these three technologies drives innovation in intelligent finance, unlocking significant application potential in financial automation, intelligent analysis, and decision optimization.

Empowered by AI technologies and intelligent tools, financial professionals in the context of intelligent finance will redirect their efforts more toward roles as information miners, risk managers, operational decision-makers, and value creators. The objective of accounting is shifting from fiduciary responsibility to decision support. Thus, against the backdrop of digital economic transformation and intelligent finance advancement, China's competency framework for intelligent finance talents encompasses five dimensions: "professional value", "accounting professional competence", "data technology competence", "business-finance integration capability", and "value creation capability".[3] The specific framework for smart finance capabilities is shown in "Table 2".

Table 2. Intelligent finance competency framework

Professional Value	Compliance Management; Honesty and Integrity; Social Responsibility
Accounting Professional Competence	Financial Accounting; Accounting Analysis; Risk Control; Strategic Management
Data Technology Competence	Data Collection; Data Modeling; Data Utilization; Digital Literacy
Business-Finance Integration Capability	Process Design; Data Integration; Business Decision-Making
Value Creation Capability	Team Management; Organizational Leadership; Interdisciplinary Collaboration

2.1 Professional Value

Professional ethics and values form the bottom line of the accounting profession and guide the growth of accountants. In an AI-driven, data-intensive work environment, accounting personnel must comply with regulatory requirements and business ethics when using AI for data processing and risk management. They should ensure data objectivity and confidentiality, and fairly reflect business data and the legitimate rights of stakeholders.

2.2 Accounting Professional Competence

The advancement of financial intelligence is driving accounting personnel to focus on participating in management through forecasting and decision-making. Based on a thorough understanding of the enterprise's business model, they should leverage the accuracy and efficiency of intelligent systems without over-reliance. They must develop professional judgment based on accounting expertise, participate in enterprise investment, financing, and capital operation activities, conduct assessments and decision-making, design risk control mechanisms, and provide financial information basis for strategic decision-making and value creation.

2.3 Data Technology Competence

Accounting personnel need to master AI generative tools and basic computer programming skills. They should use big data technology to mine massive amounts of operational, management, procurement, and sales data related to financial activities; and be proficient in organizing and collecting internal and external enterprise data. Additionally, they must possess the ability to safely and efficiently collect, process, analyze, and apply data, transforming it from industrial chains and value chains into valuable information and knowledge.

2.4 Business-Finance Integration Capability

Traditional accountants are confined to recording and disclosing business activities within the enterprise. However, innovative business models in the digital era require deeper synergy between finance and business. Financial personnel must grasp industry trends, emerging technological changes, market policies, industrial chain dynamics, and competitor information. They should actively participate in business operations, understand the entire process, all scenarios, and full lifecycle of business activities, so as to support business development and performance goals. This is both a demand of enterprise digital transformation and a requirement for career advancement in intelligent finance.

2.5 Value Creation Capability

The development of intelligent finance involves the continuous integration and innovation of emerging technologies and accounting practices. Accounting personnel need innovative strategic thinking, data-driven thinking, interdisciplinary thinking, and scenario-based thinking. They must adapt to new business models, products, services, and platform economies driven by enterprise transformation. They should not only combine knowledge of corporate strategy, risk management, and macroeconomics but also financial expertise, business insights to become promoters of enterprise transformation and value creators. By using data technology, they can leverage financial data to identify business opportunities, participate in capital operations, risk control, strategic decision-

making, and value creation, thereby fulfilling the roles of "decision supporter" and "value creator". Therefore, financial personnel in the context of intelligent finance must possess interdisciplinary learning capabilities and interdisciplinary knowledge to create value so as to adapt to job changes amid new business forms and technologies.

3. CHALLENGES IN CULTIVATING INTELLIGENT FINANCE TALENTS

3.1 *Multidimensional Competency Deficiencies in the Intelligent Finance Transition*

Traditional financial personnel exhibit significant gaps in core technology application during the transition to intelligent finance, including insufficient data technology competence, business-finance integration capability, data risk governance capabilities, and Foundational IT competency. Concurrently, technical integration barriers further arise from inadequate capacities in information demand planning, information integration, data mining, and information visualization, along with a lack of ability to organically integrate data technology with financial expertise. Key links such as information demand planning, system integration, data mining, and visualization are underdeveloped, resulting in deficient information processing capabilities. Compounding these issues, current professional certification frameworks lack intelligent finance competency standards, causing credentialing systems to fail to keep pace with rapid technological iterations.

3.2 *Rapid Iteration of Intelligent Finance Technologies*

The evolution of artificial intelligence technologies, particularly advancements in large-scale models (e.g., from ChatGPT to DeepSeek in financial applications), continuously drives the development of intelligent finance. Confronting this trend, finance professionals must develop both the capacity to integrate domain expertise with technical tools and problem-solving abilities in complex business scenarios. However, the effective application of emerging technologies requires a solid foundation of professional expertise. Without such a foundation, even advanced technologies cannot be integrated into practical work.

Consequently, constructing competency frameworks and cultivation pathways for intelligent finance talents necessitates rethinking accounting education in higher institutions, particularly within environments where big data and AI technologies infuse accounting practices for process optimization and quality enhancement.

3.3 *Current Status and Challenges of the Intelligent Finance Talent Cultivation System*

The construction and implementation of an intelligent finance talent competency framework require professional talent cultivation. However, globally, the cultivation of intelligent finance talents remains in a nascent stage: university training objectives are misaligned with industry job demands, and many institutions merely incorporate intelligent finance tracks into traditional accounting programs without establishing independent cultivation systems. For instance, they only bolster traditional curricula with new courses on data technology, financial sharing, and data visualization. Teaching materials lag in development, as key technologies like RPA and financial robotics are not integrated into core curricula, and there is a lack of interdisciplinary course design that integrates "finance + technology + business." Additionally, there are deficiencies in teachers' practical enterprise experience, with a low proportion of interdisciplinary instructors capable of teaching AI and big data. Recruiting faculty with technical backgrounds poses challenges, as university salary systems hold limited appeal to high-tech enterprise professionals.

4. OPTIMIZATION PATHS FOR CULTIVATING INTELLIGENT FINANCE TALENTS

With the development of AI, the boundaries between accounting personnel and their work are becoming blurred. The transformation to intelligent finance aligns with industrial development and technological innovation, making the shift from traditional single-discipline accounting talents to interdisciplinary ones an inevitable trend in university education.

Intelligent finance is interdisciplinary, requiring reforms in training goals, curriculum systems, course content, teaching models, and industry-education integration. Cultivating intelligent finance talents requires support from AI-enabled

education, intelligent system platforms, and big data technology to achieve multi-dimensional integration.

4.1 Reshaping Training Goals

Intelligent finance talent cultivation should integrate accounting, computer science, and data science, producing interdisciplinary talents capable of adapting to future industrial transformation and technological innovation. These talents should master accounting, data analysis, and intelligent decision-making skills, with strategic thinking and communication abilities. Thus, the goals for cultivating intelligent finance talents should emphasize: diverse knowledge structures encompassing the organic integration of accounting expertise, data analysis technologies, and business decision-making capabilities; comprehensive capabilities featuring a tripartite proficiency framework spanning financial operations, system design, and strategic decision-making; and an open cultivation system emphasizing the characteristics of university-enterprise collaboration and industry-education integration. In the intelligent era, accounting education should be grounded in cultivation environments, guided by industrial demands, and centered on application-oriented capability development. It should focus on fostering analytical judgment, problem-solving, and innovation capabilities in digital-intelligent professional scenarios, thereby avoiding disconnects between university talent cultivation and enterprise talent demand.[5]

4.2 Reconstructing the Curriculum System

Curricula for intelligent finance should be systematic, practical, targeted, and timely. Based on business decision scenarios faced by accountants in an intelligent environment, a "platform + module" curriculum structure should be established, with a 50% accounting, 30% data science, and 20% business analysis ratio[4]. Digital technology courses should focus on understanding and applying technical principles and tools. Basic platform courses include Principles of Accounting, Python Fundamentals, and Management Information Systems; core professional courses include Intelligent Financial System Design, Financial Big Data Analysis, and RPA Financial Robotics Development; and elective modules include "AI + Finance" and "Law & Business + Finance" courses such as Data Mining and Intelligent Decision-Making, Intelligent Financial

Sharing, Digital Management Accounting, and Intelligent Auditing and Golden Tax IV. Additionally, micro-specializations adapted to industrial transformation and technological innovation should be offered through dynamic mechanisms to meet innovative and personalized talent demands prompted by evolving job roles.

4.3 Adjusting Course Content

Course content design requires the organic integration of intelligent pedagogy and disciplinary knowledge, necessitating both dedicated intelligent technology courses and the continuous embedding of intelligent scenarios with professional applications across curricula. This ensures curricula enhance both professional competence and proficiency with new tools like data analysis. Content can be optimized by: intelligent transformation of traditional courses (e.g., Incorporating Python applications into Financial Management); professionalization of technical courses (e.g., integrating RPA financial robotics development into Python Programming); and project-based transformation of practical courses (e.g., Implementing Business-Finance Integration projects in Capstone Practicums). Courses should also combine intelligent tools to form modular clusters such as traditional accounting & common platforms modules, intelligent system architecture & intelligent tool application modules, automated tool application & intelligent data analysis modules—building a "finance + technology + business" competency framework and curricular architecture.

4.4 Innovating Teaching Models

The reconstructed curriculum system propels pedagogical innovation. Systematic cultivation of intelligent finance talents can employ AI-enhanced online-offline hybrid teaching, integrating centralized instruction with self-directed learning. This approach leverages data technologies to transcend temporal and spatial constraints. Project-driven learning — introducing real enterprise projects into classroom and on-site teaching — encourages interdisciplinary problem-solving and produces practical outcomes.

Instruction combines lectures with case-based seminars, supplemented by corporate site visits to dismantle disciplinary barriers. Guided by real-world business problems, students: the first is to autonomously explore and synthesize knowledge;

the second is to utilize AI generative tools for information curation; the third is to conduct evidence-based research to produce value-driven deliverables.

Universities should establish intelligent finance laboratories with financial robotics and BI analysis platforms, develop virtual simulation projects, and adopt student-centered pedagogy to cultivate practical competencies in Big data processing, Data mining and cleansing, and AI generative tool application.

4.5 Deepening Industry-Education Integration

Industry-education integration combines university and enterprise resources to align talent supply and demand. Accounting education in the digital economy requires scenarios and data: universities should collaborate with enterprises to integrate theory and practice, and combine virtual simulation with real scenarios—enhancing financial professionals' competence. For example, UFIDA and Kingdee have partnered with domestic universities to establish intelligent finance colleges, implementing an "academic-industry dual mentor system" where enterprise mentors teach technical courses and supervise graduation projects.

Intelligent finance, driven by data scenarios and technology, requires interdisciplinary talents with solid accounting expertise, proficiency in next-generation information technologies, and the capacity to utilize intelligent tools and systems for efficient business analysis and decision support amid a technology-driven digital economy and volatile internal and external operating environments.

5. CONCLUSION

In the current digital economy, there is a burgeoning demand for intelligent finance talents, whose ability structures are distinctly interdisciplinary—integrating "finance + technology + business". Universities must adapt to economic and industrial transformation, build high-quality financial education, reconstruct curricula and technology integration paths, and emphasize deep integration of technology and professionalism. A four-dimensional collaborative mechanism— "government guidance, industry oversight, institutional leadership, and enterprise participation"—should be established to form a sustainable, four-in-one joint cultivation ecosystem encompassing talent demand, cultivation, supply, and evaluation[6]. This ecosystem will drive the development of an intelligent finance talent cultivation system that caters to enterprises' needs for transformation and upgrading.

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