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Challenges and Industry-Education Integration Strategies in Higher Vocational Tax and Finance Talent Cultivation under the Background of Artificial Intelligence

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Abstract: Against the backdrop of artificial intelligence (AI) technology fully permeating the tax and finance industry, traditional tax and finance work models have undergone fundamental changes. New business forms such as the promotion of electronic invoices, the popularization of intelligent accounting systems, and intelligent early warning of tax risks have put forward new requirements for the cultivation of higher vocational tax and finance talents. Based on the needs of industrial intelligent transformation, this paper analyzes the prominent challenges faced by current higher vocational tax and finance talent cultivation in terms of curriculum system, teaching staff, practical teaching, and industry-education integration. Combining with domestic colleges' practical cases of "AI + Tax and Finance" talent cultivation, from four dimensions of curriculum reconstruction, teaching staff upgrading, practical innovation, and mechanism guarantee, it proposes optimization strategies for talent cultivation with deep industry-education integration as the core, providing a reference for higher vocational colleges to cultivate compound skilled talents suitable for intelligent tax and finance positions.

Keywords: Artificial Intelligence; Higher Vocational Education; Tax and Finance Talents; Industry-Education Integration; Talent Cultivation Model.

1. Introduction

The shift from traditional manual bookkeeping and offline tax filing to intelligent accounting, big data analysis, and risk early warning mechanisms—driven by the deep implementation of the "AI era" and the booming digital economy—is driving the transformation of the traditional fiscal and taxation industry towards a modern fiscal and taxation management system amidst "changes unseen in a century." To adapt to social development and job requirements, the Ministry of Finance's Work Standards for Accounting Informatization has introduced clear regulations to promote the digital transformation of finance and support the informatization requirements for the expansion of financial functions, newly establishing provisions for intelligent fiscal and taxation positions such as "financial software management personnel" and "financial big data analysis personnel." Modern enterprises require multi-dimensional, composite fiscal and taxation talents who are no longer simply limited to traditional bottom-level accounting, but rather understand fiscal and taxation rules and can utilize technologies such as AI. This compels fiscal and taxation personnel to master the operation of intelligent fiscal and taxation systems, possess deeper professional knowledge in fiscal and taxation, and simultaneously the core capabilities of big data fiscal and taxation analysis and AI tool application.

There are over fifty vocational colleges nationwide offering fiscal and taxation-related majors. These institutions serve as the primary base for cultivating technical and skilled fiscal and taxation talents. Due to their relatively large training scale, they play a pivotal role in serving the economies of various regions. However, the rapid pace of socio-economic development, the swift transformation of the industry, and the advent of the AI era have resulted in a structural contradiction between talent supply and industry demand in vocational education. This is mainly manifested in the failure of faculty capabilities to keep up, the lagging content of curricula, and the disconnect between student practical scenarios and actual needs. [1]

2. Impacts and Challenges of Artificial Intelligence on Higher Vocational Tax and Finance Talent Cultivation

2.1. Disconnect Between Industry Demands and Talent Training Positioning

Traditional higher vocational education training curricula aim to help students acquire skills such as manual financial record-keeping and voucher examination. Essentially, skills in basic accounting and fundamental tax filing are considered the core training goals. However, as society has stepped into the age of artificial intelligence, the development of the socio-economy increasingly requires all-around composite talents capable of using AI tools. These abilities are not merely able to extract the worth of large-scale data, yet can also conduct analyses and make determinations about intricate finance and taxation operations. Yet, the talent development plans in the majority of present-day higher vocational education establishments are behind the times, which makes it hard to fulfill the job demands of the AI era.From the viewpoint of present socio-economic development demands, the criteria for job competencies are manifested in the following areas: First, the competence to grasp and utilize fundamental financial accounting and tax law information; second, the skill to adeptly handle intelligent technology instruments, like making use of intelligent book-keeping systems and running financial robots; third, the capacity to combine and comprehensively employ AI technology along with other

relevant skills to tackle intricate problems faced in finance and taxation operations.

2.2. Asynchronization Between Intelligent Technology and Curriculum System Development

At present, the curriculum arrangement for finance and taxation majors in higher vocational institutions still shows evident shortcomings.The design of the curriculum system exerts a notable influence on the efficiency of talent nurturing, acting as the principal vehicle for talent development.The specific deficiencies are shown in the following parts: Firstly, the course content cant meet the needs of the artificial-intelligence era and has the problem of delayed updates.When choosing textbooks, the scope of content related to artificial intelligence is restricted, and practical application situations are absent.The course-work is mainly theoretical, separated from the most recent industry technologies and standards. As a result, students knowledge cannot meet social requirements.Second, the curriculum frameworks in most higher vocational institutions still revolve around conventional courses.Courses linked to smart finance and taxation operations are either rare or occupy a small proportion; for example, cutting-edge courses like Financial and Economic Big Data Technology Basic Analysis, Enterprise Big Data Intelligent Practice Application and Analysis, and RPA Intelligent Simulation are provided at a low frequency.Thirdly, the level of structural integration among the provided courses is not high.Artificial intelligence and conventional finance-and-taxation knowledge, along with big data technology and fundamental accounting, present a state of being mutually fragmented.There exists a deficiency of profound integration between finance/taxation and technology in cross-disciplinary fields, which results in graduates having weak application abilities in interdisciplinary domains. [2-3]

2.3. Insufficiency of "Dual-Qualified" (Double-Competence) Teaching Staff

Currently, the distribution of finance and taxation teaching staff in higher vocational institutions often presents frequent problems, like a shortage of technical abilities, inadequate attention to practice, and an excessive focus on theory.These circumstances cant satisfy the teaching needs within the context of the artificial-intelligence era anymore.This is primarily manifested in the following areas: Firstly, the majority of teachers havent received systematic instruction in fields such as artificial intelligence and big data technology, and they havent developed proficiency in intelligent technology either.Furthermore, their current traditional knowledge has difficulty meeting the requirements of intelligent finance and taxation course teaching.Consequently, when carrying out teaching and operations related to intelligent finance and taxation systems, they encounter difficulties in offering effective guidance to students.Secondly, theres a lack of enterprise-related practical experience. A number of teachers have long centered only on in-class teaching and havent been deeply involved in intelligent finance and taxation work within companies.Their comprehension of real-world situations, including corporate smart financial procedures, job specifications, and technological applications, is not in-depth. This makes it hard to integrate actual business contexts for case-based instruction and practical advice.Thirdly, the composition of the faculty is not rational.There exists a scarcity of composite educators who have both in-depth finance and taxation knowledge and proficiency in artificial intelligence technology.Moreover, the ratio of industry professionals involved in teaching is small, which makes it arduous to incorporate the most recent industry advancements and practical expertise into classroom teaching.

2.4. Disconnect between Practical Teaching and Real Job Scenarios

Practical teaching is a key link in the cultivation of vocational tax and finance talents, but there are currently many problems in practical teaching: First, the simulation degree of the practical training environment is low. At this stage, the practical training bases of most vocational colleges still lack the simulation of real scenarios such as tax data analysis, intelligent financial systems, and artificial intelligence (AI) bookkeeping and tax filing. Most of them still use traditional financial simulation software for basic bookkeeping and tax filing. Students rarely have the opportunity to access intelligent tax and finance platforms that are in line with society. Second, the practical training content is outdated. It does not involve emerging industry practical training projects such as RPA (Robotic Process Automation) invoice recognition, automatic tax declaration, and intelligent risk early warning. Students still mainly focus on economic businesses like manual bookkeeping and traditional tax filing, and lack the application ability of intelligent tax and finance software systems. Third, the teaching practice model is singular. Students' off-campus internships mostly remain at the level of simple labor output for basic accounting, while on-campus simulated practical training cannot meet the needs of students' AI practice. It is difficult for students to truly engage in real enterprise tax and finance businesses. Fourth, the practical training assessment method is singular. It places too much emphasis on theoretical knowledge and basic operation assessments, while neglecting the comprehensive evaluation of students' application abilities in intelligent technologies.

2.5. Disconnection in Industry-Education Integration

Currently, industry-education integration in higher vocational tax and finance programs mostly remains at a superficial level of cooperation and fails to achieve deep integration with the industry. There are six major problems: first, the form of cooperation is misaligned—the traditional "accounting factory" model still focuses on basic operations like manual bookkeeping, which does not meet the new-stage demands of the industry such as AI-based intelligent accounting and tax risk early warning; second, resource conversion is not timely—the latest industry technologies, standards, and cases cannot be quickly transformed into teaching resources, and the speed of knowledge updating lags far behind industrial transformation; third, teaching and practice are poorly connected—teaching segments are disconnected from actual enterprise workflows, making it difficult for students to develop systematic professional competencies; fourth, technical barriers are too high—enterprises are unwilling to open up core technologies and data, making it hard for institutions to access cutting-edge technologies; fifth, social service capabilities are insufficient—institutional intellectual resources fail to be effectively transformed into productivity that serves

enterprises; sixth, student role positioning is biased—students remain "users" of tools rather than "trainers" of AI tools, making them unable to adapt to the demands of the intelligent era. These issues lead to industry-education integration being unable to deliver tangible results and failing to effectively support the cultivation of intelligent tax and finance talents. [4]

3. Industry-Education Integration Strategies for Higher Vocational Tax and Finance Talent Cultivation under the Background of Artificial Intelligence

3.1. Restructure the Curriculum System: Build an Interdisciplinary Integrated Curriculum Module of "Tax and Finance + AI"

Led by industry needs, well re-construct the curriculum system of Basic Module, Core Module, Expansion Module to reach the in-depth integration of tax and finance knowledge and AI technology. The Fundamental Module keeps essential courses like Financial Accounting and Tax Law to strengthen students professional groundwork in taxation and finance; The Key Module includes advanced courses such as Accounting AI Simulation, Smart Financial Big Data Analytics, AI Tax and Finance Practice Utilizing Large Models, and Financial Shared Services to develop students capacity to utilize artificial intelligence; The Extension Module can bring in competency-oriented courses that assist students in improving their comprehensive application skills and continuous learning skills, such as Python Basics and Big Data Technology Application Assessment, Financial Data Safety and Compliance, and AI Accounting Morals and Practice.

3.2. Enhance the Faculty: Establishing a Dual-Qualified Composite Instructional Team

To thoroughly improve the intelligent literacy and enterprise practical skills of teachers in higher vocational institutions, it is essential to set up a faculty building model featuring two-way connection and cooperation between schools and enterprises.First, bring in technical key-figures in intelligent finance and taxation with abundant enterprise-related experience, along with experts from relevant fields. This is done to optimize and upgrade the schools teaching staff structure and augment the power of full-time teachers.Secondly, enhance collaboration with leading-edge financial software companies like Zhonglian, Keyun, and Yonyou, and jointly conduct training initiatives centered on artificial intelligence and finance-taxation topics.For instance, arrange training for cutting-edge technology courses like AI tool utilization, big data tech analysis, and hands-on operation of intelligent finance and taxation systems. This is done to enhance the on-the-job training of the current teaching staff.Thirdly, vocational colleges should periodically arrange for teachers to do practical work in the intelligent finance and taxation units of enterprises, and adopt a system where teachers take short-term positions in enterprises for training.This enables teachers to get involved in dealing with actual economic operations and resolving practical project-related issues within enterprises. As a result, it enriches their initial traditional knowledge frameworks, accumulates hands-on experience in intelligent finance and taxation, and keeps up with social advancements. Meanwhile, it also feeds back relevant practical industry insights into education and teaching.Ultimately, higher vocational institutions can periodically invite professionals from relevant sectors to the campus to deliver talks.Registered Tax Consultants, Certified Public Accountants, and corporate finance executives are able to act as part-time instructors to set up a resource repository of industry or enterprise specialists. This guarantees that national policies, social progress, and the most recent industry tendencies are grasped at all times, and practical know-how is genuinely incorporated into daily classroom instruction.

3.3. Enhance Practical Teaching Innovation: Establishing a Real Scenario, Intelligent Platform Practical Framework

The teaching approach of higher vocational institutions should conduct innovative practical undertakings, formulating on-campus and off-campus simulation training practical schemes, directed by actual job demands.The training sites on the campus are able to mimic real-world situations like automated tax filing systems, intelligent invoice recognition operations, and financial risk early-warning systems.By constructing an AI finance-tax factory and bringing in large model platforms from software firms for intelligent tax declaration and book-keeping, students are able to genuinely acquire the core competencies of AI technology via virtual simulation platforms.Moreover, project-centered practical training materials can be carefully designed, taking actual finance, taxation, and economic operations acquired from enterprises as vehicles.Students are divided into teams to collaborate in fulfilling the operations of the whole business procedure, like computing intelligent tax burdens and analyzing multi-faceted financial statements, thus improving students overall financial abilities.

Regarding off-campus practical activities, strengthen school-enterprise collaboration and jointly set up stable internship platforms with companies, advancing the order-based class training approach.For instance, the Deyongxin Order Class at Guangdong Finance and Trade Vocational College employs a phased practice approach of campus-based training, corporate practice, on-the-job internship. It enables freshmen to be exposed to corporate culture, sophomores to engage in corporate practice, and juniors to carry out on-the-job internships, thereby realizing a seamless link among teaching-training-employment. [5]

3.4. Improve the Integration Mechanism: Build a "Five-Dimensional Linkage" Industry-Education Integration Ecosystem

Break the "broken chain" barrier in industry-education integration and build a "Five-Dimensional Linkage" mechanism of "professional positioning - curriculum restructuring - faculty upgrading - practical empowerment - industry-education integration" to achieve the deep integration of education chain, talent chain, industry chain, and innovation chain. First, establish a school-enterprise collaborative education council composed of schools, enterprises, and industry associations, hold regular meetings to analyze the development trends and job demands of the intelligent tax and finance industry, jointly formulate talent cultivation plans, restructure the curriculum system, and build

training bases to ensure precise alignment between talent cultivation and industry demands; second, jointly establish industry colleges, such as the "AI Accounting Industry College" jointly built by Chengdu Ginkgo Hotel Management College and Kingdee Jing, introducing real enterprise cases and intelligent financial platforms to achieve the integration of theory and practice and the integration of industry and education, and jointly carry out teaching, training, scientific research and other activities; third, establish a resource sharing mechanism, where enterprises open intelligent tax and finance platforms, real business data, industry cases and other resources to schools, and schools provide talent training, technology research and development and other services for enterprises, achieving complementary resources between schools and enterprises; fourth, implement the "introducing enterprises into campus" model, bringing enterprises' intelligent tax and finance departments into the campus, allowing students to have close contact with real enterprise working environments, participate in real project operations, and achieve seamless connection between classrooms and workplaces.

4. Case Analysis: Typical Models of Industry-Education Integration Practices in Domestic Institutions

4.1. Guangdong Finance and Trade Vocational College's "Order-Based Class" Model

Guangdong Polytechnic of Finance and Trade has cooperated with Shenzhen Deyongxin Tax and Finance Group to launch the "Deyongxin Order Class." After 13 years of accumulation, a "Three-Dimensional Linkage" cultivation system has been formed. In terms of jointly hiring faculty, 12 tax agents and accountants from the enterprise serve as part-time teachers, while the school's key teachers regularly go to the enterprise for practice. In terms of co-building the curriculum, the school and the enterprise jointly developed textbooks such as Tax-related Accounting and SOP Tutorial for Tax and Finance Positions, integrating the course content into the enterprise's core business modules. In terms of jointly promoting practical training, students participate in the training of real accounting tasks within the enterprise. The school implements a step-by-step practical training model, adopting the "On-the-job Internship, Enterprise Practice, and On-campus Training" mode. This model has achieved a win-win situation for the school, enterprise, and students. It has cumulatively cultivated more than 600 students for the school. Every graduating cohort interns at the enterprise, with a retention rate accounting for 30% of the company's annual total recruitment.

4.2. Hebei Vocational College of Communications' "AI Finance and Taxation Town" Model

Hebei Vocational College of Communications has set up an AI Finance and Taxation Town practical training foundation, bringing in Yonyou Finance and Taxations AI Factory solution.It handles more than 500 digital electronic invoices each day, enabling 50 registered students to take part in actual finance and taxation business handling.The educational institution utilizes an enterprise-grade intelligent book-keeping large-scale model to facilitate tax submission.Via the instruction of this model, students acquire crucial technologies including intelligent invoice identification and finance-taxation large-model adjustment.It additionally enables the conversion of students from conventional basic accounting practitioners to software users, and then to AI trainers.

4.3. Chengdu Gingko Hotel Management College's "AI + Accounting" Model

Chengdu Gingko Hotel Management College has rebuilt its relevant curriculum system, offering new emerging industry courses such as Intelligent Financial Big Data Analysis and Accounting Artificial Intelligence Simulation, establishing the "AI + Accounting" core objective. It deeply integrates content such as big data analysis, big data security, and artificial intelligence financial ethics. The school introduces real enterprise finance and taxation cases, establishes an AI Accounting Industry College, and regularly conducts faculty training in artificial intelligence technology, focusing on creating a dual-drive model of technology and practice. Currently, the college possesses a "dual-qualified" (double-competence) teaching team of about 60%, with the goal of establishing a curriculum cluster including big data risk early warning, RPA automation, and intelligent auditing within three years, focusing on the cultivation of digital and intelligent accountants. [6]

From the above cases, it is clear that only by deepening the integration of industry and education is a feasible solution to resolve the talent cultivation difficulties in higher vocational colleges in the context of the artificial intelligence era. To achieve the goal of cultivating talents that meet the needs of social development, it is necessary to precisely align talent training programs with industry demands, and improve the quality of talent cultivation through industry-education integration and school-enterprise cooperation in education work.

5. Conclusion and Prospects

The rapid development of today's social economy and the advent of the artificial intelligence era have brought significant challenges to the cultivation of finance and taxation professionals in higher vocational colleges, while also providing important opportunities for reforming future finance and taxation talent training models. Currently, the finance and taxation talent training programs in higher vocational colleges face numerous problems, including outdated curriculum systems, faculty capabilities that cannot keep up, vague training positioning, disjointed teaching practices, and shallow integration of industry and education, which urgently require systematic rectification through deep integration of industry and education.

This paper puts forward the reconstruction of interdisciplinary courses in AI finance and taxation, the enhancement of the composite dual-qualified teaching faculty, the establishment of real scenarios for teaching practice, and the improvement of the collaborative mechanism for school-enterprise cooperation in education.By adopting the four-in-one industry-education integration approach involving curriculum restructuring, faculty improvement, practical innovation, and mechanism assurance, it is intended to develop comprehensive professionals for intelligent finance and taxation jobs that suit the current requirements of society and enterprises, effectively addressing the current challenges in talent cultivation.Illustrations from relevant domestic

vocational colleges (higher) suggest that only profound industry-education integration can bring about the accurate alignment of the industrial chain and the education chain, upgrade the overall quality of talent nurturing, and strengthen the comprehensive employability competitiveness of graduates.

Looking forward, as the AI era develops, the cultivation of higher-vocational finance and taxation talents will call for continuous and profound reform. Firstly, it is crucial to enhance the instruction of theoretical knowledge about big data security and intelligent technology, developing students capacity to consciously adhere to legal and regulatory norms when using AI technology. Secondly, the extent of depth and breadth in industry-education integration needs to be broadened through integrating pertinent resources and setting up industry-education communities. In this way, the long-term mechanism for school-enterprise cooperation in education can be re-established. Thirdly, we should strictly track the development trends of the industry, constantly incorporate new regulations, new cases, and new technologies into the teaching process, and make dynamic adjustments to the talent cultivation plans and curriculum systems according to requirements. Ultimately, emphasis ought to be placed on the long-term development of students career plans, allowing them to rapidly adjust to the swift alterations in the industry. In teaching, the spotlight should be on fostering students ongoing learning capabilities and creative thinking.

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