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Analysis of Innovative Strategies for Big Data and Accounting Professional Teaching under the Background of Industry-Education Integration

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Abstract: The rapid development of the digital economy has posed unprecedented new challenges and transformative opportunities to the traditional accounting profession. Consequently, industry-education integration is increasingly serving as a critical pathway for modernizing and transforming financial accounting disciplines in higher education. This study comprehensively examines current industry trends and evolving talent demands through the strategic lens of industry-education integration. It systematically analyzes the primary challenges currently faced in big data and accounting education, such as outdated curricula, insufficient practical training, and a disconnect between academic instruction and enterprise requirements. To address these critical gaps, the paper proposes a series of targeted, innovative strategies designed to overhaul the educational framework. These comprehensive measures include establishing an integrated curriculum system that seamlessly combines specific job roles, academic courses, professional competitions, and industry certifications. Furthermore, the study advocates for creating robust industry-academia practice platforms featuring real-world corporate scenarios and end-to-end financial workflows. It also emphasizes the necessity of implementing project-driven, case-based teaching methodologies to enhance student engagement. Additionally, strengthening dual-qualified faculty development and developing multi-stakeholder, process-oriented evaluation systems are identified as essential components for sustainable educational reform. Ultimately, this research aims to significantly enhance the overall teaching quality in big data and accounting programs, thereby cultivating high-caliber, interdisciplinary professionals who are fully capable of meeting the dynamic and complex demands of the modern financial industry.

Keywords: industry-education integration; big data; accounting education; teaching innovation; talent cultivation; educational reform

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1. Introduction

Industry-education integration represents a transformative educational model designed to align academic resources with industrial demands, fostering collaboration between educational institutions and enterprises. This model prioritizes the joint development of talent cultivation programs, the co-construction of training facilities, and the sharing of faculty expertise to ensure a seamless connection between the development of skilled professionals and the evolving needs of industries. In the realm of higher education, such integration is pivotal for enhancing the quality of talent and equipping students with competitive employability skills. By embedding industry-education integration into the curricula of big data and accounting programs, students gain a comprehensive understanding of industry trends, acquire hands-on operational expertise, and proactively adapt to the dynamic requirements of future job markets [1]. This paper delves into innovative pedagogical strategies tailored for big data and accounting education, emphasizing the importance of aligning academic instruction with practical

industry applications to cultivate versatile professionals capable of thriving in a data-driven economy.

The rapid evolution of information technologies, including cloud computing, the Internet of Things, big data, and artificial intelligence, is fundamentally reshaping industrial ecosystems. These advancements are driving the accounting profession's transition from traditional "accounting-oriented" models to innovative frameworks centered on "data-driven intelligent governance." At the policy level, national directives such as China's 14th Five-Year Plan for Accounting Reform and Development, alongside updates to professional standards by the Ministry of Education, underscore the necessity of deepening the digital transformation of accounting practices. This transformation extends accounting functions beyond conventional fiscal documentation to encompass strategic support and proactive risk management. Corporate financial models are undergoing significant upgrades, with the widespread adoption of financial shared service centers and intelligent audit platforms. Consequently, the focus of financial operations has shifted from retrospective documentation to real-time monitoring and forward-looking decision-making processes. These changes have elevated societal expectations for accounting professionals, transitioning from a reliance on traditional fiscal knowledge to a demand for multifaceted skills, including data modeling, intelligent tool utilization, and industry-finance integration analysis. The core competencies required of modern accounting professionals now encompass data literacy, fiscal expertise, managerial insight, and decision-making proficiency. Enterprises are increasingly facing shortages of adaptable professionals capable of leveraging big data technologies for financial analysis, risk prediction, and strategic decision-making. Key roles such as financial business partners, specialists in financial informatization transformation, overseas finance experts, and comprehensive financial managers are particularly in demand [2, 3]. Moreover, the emergence of "financial data experts"—individuals proficient in both accounting practices and data analytics—has highlighted a critical talent gap. These professionals are essential for addressing the growing complexity of financial ecosystems and ensuring that organizations can effectively navigate the challenges posed by digital transformation [3, 4].

2. Issues in Big Data and Accounting Professional Education

2.1. The Curriculum System Lags Behind Industrial Technological Advancements

The curriculum systems for big data and accounting programs in many universities are increasingly falling behind the rapid pace of technological advancements in the industry. Despite the growing importance of digital transformation, course content often remains entrenched in traditional accounting frameworks, offering limited integration of emerging technologies such as big data, artificial intelligence, blockchain, and robotic process automation (RPA). These technologies, which are critical for modern financial applications, are frequently addressed only superficially, with minimal emphasis on their practical implementations, tools, and methodologies. This disconnect between academic instruction and industry demands results in a fragmented curriculum structure. Course modules often lack organic synergy, failing to establish a cohesive knowledge framework that integrates accounting principles with big data analytics and management strategies [5]. For instance, the absence of comprehensive modules that simulate real-world business scenarios—such as cash flow analysis and data-driven decision-making—hinders students from developing the practical skills required to navigate complex, data-intensive environments. Consequently, graduates are often ill-prepared to meet the immediate needs of enterprises seeking "digital-intelligent" accounting professionals who can seamlessly adapt to and operate within technologically advanced ecosystems. This gap underscores the urgent need for academic institutions to modernize their curriculum systems, ensuring that students acquire not only theoretical knowledge but also the practical competencies necessary to thrive in a rapidly evolving digital landscape. By

fostering a more integrated and application-oriented approach, universities can better align their programs with the demands of the contemporary accounting profession.

2.2. There Is a Tendency in Teaching to Emphasize Theory over Practice.

In the teaching of big data and accounting programs, there remains a persistent inclination to prioritize theoretical instruction over practical application. Many educational settings rely heavily on a unidirectional approach, where instructors predominantly deliver theoretical knowledge without adequately integrating hands-on experiences [6]. Practical training sessions, when included, are often confined to simplistic, pre-configured operations within simulation software. These exercises fail to replicate the intricate, dynamic, and large-scale financial data environments encountered in real-world business scenarios. Consequently, students are deprived of opportunities to engage with unstructured data, navigate multi-system data interfaces, or perform financial analysis and decision-making within authentic business processes. While students may grasp theoretical concepts through this approach, they often struggle to apply big data technologies effectively to address practical financial challenges, such as identifying cost drivers, forecasting cash flows, or assessing risks. This gap in practical training is further exacerbated by the limitations of both on-campus and off-campus training facilities. Advanced tools, such as intelligent financial software and blockchain audit platforms, are either underutilized or absent in many training laboratories. Moreover, the slow pace of updates to these facilities prevents students from accessing industry-relevant tools and environments. This disconnect between academic training and industry demands underscores the need for a more balanced approach that integrates robust practical training with theoretical instruction, ensuring that students are better equipped to meet the challenges of modern financial and data-driven industries.

2.3. Lack of Practical Industry Experience among Faculty Members

Teachers play a pivotal role in implementing educational reforms, yet the faculty in big data and accounting programs face notable structural challenges that hinder their effectiveness. A significant proportion of instructors are recent university graduates whose expertise is predominantly rooted in academic theories. These individuals often lack hands-on experience in practical corporate environments, such as financial big data analysis, the implementation of intelligent fiscal systems, or the execution of business-finance integration projects. While they may possess a theoretical understanding of concepts like big data and smart accounting, their ability to translate these ideas into effective teaching cases, methodologies, or techniques derived from real-world applications remains limited. This gap in practical expertise undermines the quality of instruction and the relevance of the curriculum to industry needs. On the other hand, veteran instructors with extensive accounting knowledge frequently find themselves unfamiliar with emerging big data technologies, further exacerbating the issue. The shortage of dual-qualified teachers—those who combine academic knowledge with substantial industry experience—creates a disconnect between cutting-edge technological advancements and their application in corporate settings. Compounding this issue is the slow pace at which many educators update their knowledge base, leading to outdated teaching materials that fail to align with the latest industry developments. This misalignment compromises the effectiveness of talent development programs, as students are not adequately prepared to meet the evolving demands of the job market. Addressing these deficiencies is critical to ensuring that educational programs remain relevant and capable of producing industry-ready graduates.

3. Innovative Strategies for Big Data and Accounting Education under the Background of Industry-Education Integration

3.1. Precisely Define Talent Cultivation Objectives and Establish an Integrated Curriculum System Encompassing "positions, Courses, Competitions, and Certifications"

Under the integration of industry and education, schools should actively engage in regular enterprise visits, conduct in-depth analyses of current recruitment trends, and collaborate closely with industry experts to gain a comprehensive understanding of the evolving core accounting talent demands of enterprises. This approach enables the precise definition of talent cultivation objectives tailored to both present and future industry needs [2, 7]. The curriculum system must achieve a seamless integration of "job positions, courses, competitions, and certifications." "Job positions" serve as the foundational starting point, requiring course content to be meticulously aligned with the skill sets demanded by emerging roles such as intelligent accounting, financial data analysis, and tax planning. For instance, courses like "Python Financial Data Analysis" and "Financial Robotics Applications" can be introduced to address these needs. "Courses" act as the primary carriers, breaking down job-specific skills into modular components while incorporating anonymized real-world financial data cases from corporate sources as practical teaching materials to enhance relevance and applicability. "Competitions" function as dynamic catalysts, necessitating the systematic integration of evaluation standards and scoring rules from initiatives such as the "Internet+" Innovation and Entrepreneurship Competition, Accounting Skills Competition, and Big Data Analysis Contest into both daily teaching and practical training. To further this goal, specialized training modules aligned with these competitions should be developed, establishing a tiered cultivation mechanism that spans "school-level competitions, provincial competitions, and national competitions." This structure ensures the dual objectives of learning through competition and enhancing teaching quality are achieved. "Certifications" serve as critical validation tools, requiring deep integration with "1+X" vocational skill certification standards, such as those for financial shared services and big data financial analysis. Key assessment points and skill requirements should be embedded into course syllabi and evaluation criteria to achieve "course-certification integration." This enables students to graduate with both academic diplomas and multiple vocational skill certifications, significantly enhancing their employability and competitiveness in the job market. By adopting these strategies, schools can effectively bridge the gap between academic training and industry requirements, fostering a new generation of accounting professionals equipped with the skills and certifications necessary to thrive in a rapidly evolving economic landscape.

3.2. Deepening School-Enterprise Collaboration to Build a "Real-World Scenario, Full-Chain" Industry-Education Integration Practice Platform

Schools and enterprises should engage in profound collaboration to establish industry-education integration platforms that simulate "real-world scenarios" and provide comprehensive business training across the entire operational chain. By adopting an "enterprise-in-school" model, institutions can jointly develop on-campus practice bases such as "Smart Finance Workshops" or "Financial Shared Service Centers." These bases would host enterprises that supply authentic business processes, operational datasets, and advanced financial software systems. Students, functioning as "quasi-employees," would undertake complete workflows, including invoice scanning and recognition, smart accounting, tax filing, and multidimensional financial data analysis. Their activities would be supervised by both corporate mentors and academic advisors, ensuring a balanced integration of theoretical knowledge and practical expertise. Additionally, the establishment of "industry academies" could provide a more stable framework for collaborative training programs. For example, industry mentors could introduce extensive datasets of financial statements into teaching systems, guiding students to utilize Python for tasks such as outlier detection, trend analysis, and generating visual reports. This approach would enable students to master data tools while solving real-world problems. The educational process should incorporate complementary "online + offline" platforms, including virtual simulation labs and cloud classrooms for risk-free repetitive skill training. These would be supplemented by immersive practical operations at shared training bases, allowing students to experience high-fidelity workflows [8, 9].

Such platforms should encompass the entire process, from data acquisition to decision support, ensuring students not only learn journal entries but also grasp the underlying business logic. Furthermore, they should be trained to apply data analysis results to provide actionable management recommendations. This comprehensive approach ensures that students develop both technical proficiency and strategic insight, preparing them to meet the demands of modern financial industries.

3.3. Implementation of a "project-Driven, Case-Based" Teaching Method

Implementing a "project-driven, case-guided" teaching approach bridges the gap between abstract theoretical knowledge and practical business applications. This method allows educators to design instructional projects that simulate real-world corporate tasks, fostering a deeper understanding of complex concepts. For example, a comprehensive project titled "Investment Value Analysis Based on Annual Report Data of a Listed Company" can be introduced. In this project, students are organized into teams and tasked with independently completing various stages, including data collection from public databases, data cleansing and organization, financial ratio calculations, industry benchmarking, and the application of visualization tools to create analytical dashboards. The final deliverable is a professional report that evaluates the financial health of the company and provides investment recommendations. During this process, instructors intervene only at critical points to provide guidance and address specific challenges, ensuring that students develop autonomy and critical thinking skills [10, 11].

The case-guided teaching methodology further enhances learning by transforming real-world challenges encountered during corporate digital transformation into instructional cases. These cases are designed to reflect authentic scenarios, incorporating complex contexts, conflicting information, and inherent uncertainties. For instance, a case study focusing on "sudden sales expense surges without corresponding profit growth" can be used to teach students how to apply advanced data analysis techniques. By employing methods such as customer segmentation and association rules, students can evaluate the effectiveness of expenditures and propose optimization strategies. This approach not only reinforces theoretical knowledge but also cultivates practical problem-solving abilities.

Through the sequential completion of progressively challenging projects and the analysis of cutting-edge cases, students systematically integrate accounting principles, data analysis techniques, and business insights. This comprehensive learning process fosters innovative thinking, enhances professional judgment, and equips students with the skills necessary to address complex problems in real-world settings. By emphasizing practical application and critical analysis, this teaching method prepares students to excel in dynamic and competitive professional environments.

3.4. Strengthen the Development of "dual-Qualified" Faculty Teams to Promote Mutual Integration between University and Enterprise Educators

Dual-qualified educators are essential for bridging the gap between academic instruction and industry practices. These professionals should possess substantial experience in real-world industry projects and maintain ongoing technical proficiency to ensure their teaching remains relevant and impactful. To achieve this, a mandatory "Faculty Enterprise Practice Rotation System" should be implemented [12]. This system would require professional instructors to dedicate 1-2 months annually or biennially to hands-on projects at partner enterprises or accounting firms. Such engagements could include optimizing processes within financial shared service centers or performing cost control analyses using advanced big data tools. The insights gained from these frontline experiences should be systematically transformed into teaching cases and practical training modules, enriching the curriculum with real-world applicability. Furthermore, an "Enterprise Mentor Pool" should be established to recruit seasoned corporate professionals, such as financial directors, data analysts, and audit project managers, as adjunct faculty or industry mentors. These experts would not only deliver specialized courses but also actively contribute to curriculum updates, standard-setting, and the

development of school-based textbooks, ensuring that educational content aligns seamlessly with current industry advancements. To foster continuous collaboration, a regular school-enterprise partnership mechanism should be instituted, including periodic "Faculty Workshops." These workshops would serve as platforms for joint lesson planning, project design discussions, and the creation of teaching resources. Such two-way integration enables faculty members to consistently update their expertise, thereby enhancing the relevance and foresight of their instruction. Concurrently, industry mentors would introduce cutting-edge technologies, standards, and case studies into the classroom, ensuring that educational practices remain aligned with production realities. This approach ultimately cultivates a high-caliber teaching team characterized by balanced expertise, complementary strengths, and collaborative efforts, thereby advancing the integration of academic and industry knowledge into a cohesive educational framework.

3.5. Establishing a "multi-Stakeholder Participation and Process-Oriented" Teaching Evaluation System

Traditional teaching evaluation methods have predominantly relied on examinations, which often fail to provide a holistic assessment of students' comprehensive professional competencies. To address this limitation, it is imperative to develop a new evaluation system characterized by "multi-stakeholder participation and process-oriented approaches." The concept of "multi-stakeholder participation" involves diversifying the evaluation process by incorporating feedback from various stakeholders, including corporate mentors, project clients (both simulated and real-world), competition judges, certification bodies, and peer evaluations among students. For example, in real-world corporate projects, the quality of deliverables and client satisfaction should be critically assessed by industry mentors and project stakeholders. Additionally, students' teamwork and communication skills can be evaluated through peer reviews within their teams, while achievements in skills competitions and professional certifications can serve as objective indicators of their technical proficiency [13].

The "process-oriented approach" emphasizes that evaluations should encompass the entire learning and practice process. This requires the establishment of clear, measurable metrics for key stages, such as project initiation, mid-term reviews, case discussions, practical exercises, and final presentations. In project-based teaching environments, evaluation criteria may include standards for data cleaning and completeness, the rationale behind model selection, the rigor of analytical logic, the quality of professional visualization reports, contributions to team collaboration, and the ability to iteratively improve outcomes. Evaluation methods should be diversified, combining observation records, work logs, phased reports, defense presentations, and practical assessments.

By leveraging these evaluation systems, it is possible to generate "competency profiles" or "professional competency maps" that not only document students' knowledge mastery but also provide detailed insights into their growth trajectories. These profiles can highlight areas for improvement in practical skills, innovative thinking, teamwork, and professional ethics. Furthermore, evaluation results should be translated into actionable developmental feedback to guide students in prioritizing their future learning and career planning. Evaluation data should also be utilized to inform teaching improvements, enabling educators to identify and address shortcomings in curriculum design and instructional methods. This creates a virtuous cycle of "evaluation-feedback-improvement," ensuring the continuous enhancement of talent cultivation quality and aligning educational outcomes with industry demands.

4. Conclusion

The integration of industry and education serves as a cornerstone for advancing teaching methodologies and fostering the development of highly skilled professionals. In the context of big data and accounting programs, this collaboration is pivotal for ensuring their sustainable growth and relevance in a rapidly evolving digital landscape. By actively

promoting partnerships between universities and industries, institutions can align their curriculum systems with real-world demands, thereby equipping students with practical skills that directly address contemporary challenges. Establishing authentic practical platforms, such as simulated accounting environments or big data analysis labs, further enhances experiential learning and bridges the gap between theoretical knowledge and industry application. Additionally, the cultivation of dual-qualified faculty teams—educators who possess both academic expertise and industry experience—ensures that teaching remains both rigorous and applicable. Implementing scientific teaching evaluation systems, which may include metrics such as student performance analytics or industry feedback mechanisms, provides a robust framework for continuous improvement. These measures collectively elevate the educational standards of big data and accounting programs, preparing professionals to meet the dynamic needs of the accounting industry. Furthermore, such advancements contribute to the broader goal of supporting the digital transformation of accounting practices, fostering innovation, and driving sustainable socio-economic development on a global scale.

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