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Intelligent Accounting Laboratory Empowers Cross-border Financial Governance and Collaborative Talent Cultivation Research in the Greater Bay Area

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Abstract

Amid ongoing corporate digital transformation and the rise of new quality productivity, capital flows within the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) are intensifying. However, the "One Country, Two Systems, Three Jurisdictions" framework introduces severe compliance risks and institutional frictions, exposing structural flaws in traditional business education, such as scenario disconnects and skill mismatches. This study examines how intelligent accounting laboratories serve as pivotal platforms for fostering new quality productivity and enhancing regional financial governance. Grounded in collaborative governance theory, it proposes practical pathways: constructing virtual cross-border scenarios, building interdisciplinary faculty teams, and implementing data-driven evaluation systems. Offering an industry-academia-research mechanism to optimize cross-border governance efficiency and provide empirical insights for reshaping the business education ecosystem.

Keywords

Guangdong-HongKong-Macao Greater Bay Area; Intelligent accounting lab; Cross-border financial governance; Collaborative training

1. Introduction

As a core arena of China's institutional openness, the GBA witnesses vibrant cross-border commercial collaboration and capital operations. Driven by comprehensive corporate digital transformation, new-generation productivity is fundamentally reshaping financial models. This paradigm shift demands that enterprises transcend conventional accounting frameworks to leverage data assets for intelligent value creation and risk management. Concurrently, a critical need

arises for professionals equipped with cross-jurisdictional data governance expertise.

However, the GBA's unique institutional framework exposes enterprises to significant compliance risks in cross-border asset restructuring. The current business education system structurally lags behind this industry demand, overemphasizing basic accounting skills while neglecting complex regional governance. To address this, intelligent accounting laboratories must evolve from closed skill-drill centers into micro-level infrastructures driving new productivity. They serve dual roles: as incubators for interdisciplinary talent and experimental platforms for cross-jurisdictional data governance solutions. This study aims to define the theoretical framework of these technology-driven laboratories and explore innovative approaches for scenario reconstruction and evaluation.

2. Real Challenges in Cross-border Governance and Talent Development

2.1. Institutional Barriers and Data Silos in Financial Governance

Cross-border capital operations face fundamental challenges due to disparities between mainland China's Accounting Standards for Business Enterprises (CAS) and Hong Kong's Financial Reporting Standards (HKFRS), compounded by conflicting regional tax systems. These differences significantly elevate corporate compliance costs[1].Although financial shared service centers are widely adopted, heterogeneous business systems create "data silos," hindering the seamless deployment of cutting-edge digital technologies. Consequently, cross-border transactions remain heavily reliant on manual intermediary verification, leaving compliance risks unresolved at the data source level[2].

2.2. Supply-Demand Mismatch and Scenario Disconnection in Talent Cultivation

The labor market currently exhibits a structural contradiction: an oversupply of low-skilled accounting professionals alongside a severe shortage of digital innovation talents. Traditional business education remains entrenched in the mechanical drilling of single-jurisdiction rules, ill-equipping students for complex, ambiguous business environments[3]. Furthermore, university platforms lack the anonymized data and game-theoretic scenarios necessary to reflect real GBA capital flows, widening the disconnect between educational frameworks and the actual demands of regional financial governance.

3. Connotation and Empowerment Mechanism of Intelligent Accounting Laboratory

3.1. Definition of Laboratory Core Connotation

The Intelligent Accounting Laboratory leverages digital technology to redefine

modern experimental teaching paradigms[4]. Its essence lies in deconstructing new productive forces: utilizing heterogeneous cross-border fiscal data as novel labor objects; employing AI, RPA, and blockchain as innovative tools; and cultivating elite professionals adept in data governance. It functions as an integrated decision-making simulation platform, embedding professional ethical judgments into algorithmic logic to organically merge technological implementation with compliance reviews.

3.2. Bidirectional Empowerment Value Mechanism

For regional financial governance, the laboratory's data infrastructure addresses critical pain points in cross-border capital operations. Through university-enterprise validated process automation models, businesses can enhance cross-system accounting coordination and proactively prevent transaction risks[5]. For talent development, virtual reality environments allow institutions to dynamically track students' decision-making under regulatory conflicts. Scientific models objectively assess practical competencies, ensuring a continuous supply of professionals with dual expertise in technology and cross-border business operations.

4. Laboratory Empowerment Scenarios for Cross-border Financial Governance

4.1. Blockchain Reshaping Cross-border Capital Operations

Capital integration in the GBA heavily relies on costly intermediary endorsements. The laboratory introduces decentralized blockchain architectures—embedded throughout the capital operation lifecycle—to eliminate information asymmetry. By applying smart contracts to simulate regional digital bond trading systems[6], the laboratory demonstrates blockchain's efficacy in mitigating liquidity risks stemming from time zone and settlement discrepancies across jurisdictions.

4.2. Intelligent Technology Reconstructs Financial Shared Services Efficiency

To overcome data silos in GBA enterprises, the laboratory incubates intelligent risk control algorithms. Utilizing RPA to connect external tax interfaces directly resolves heterogeneous invoice extraction challenges[7]. Furthermore, cross-jurisdictional audit models powered by natural language processing (NLP) and machine learning automatically map logical differences between CAS and HKFRS. Integrating human review into algorithmic decisions enables the precise identification of hidden tax risks and abnormal related-party transactions.

5. Pathways for Laboratory Empowerment in Collaborative Talent Cultivation

5.1. Reconstructing Cross-border Commercial Virtual Teaching Scenarios

Universities should implement task-driven, project-based teaching, integrating jurisdictional rule differences into virtual data sandboxes[8]. In GBA capital market courses, the teaching paradigm must shift from theoretical rote memorization to practical engagement with real-world intelligent financial derivatives platforms. Instructors should guide students to simulate blockchain-based distributed storage, reconstruct data transmission models, and conduct compliance reviews on underlying assets in simulated cross-border securitization environments.

5.2. Building Cross-disciplinary Faculty Teams

Effective cross-border financial governance requires breaking down personnel barriers to integrate government, enterprise, and academic expertise. Universities should adopt a "dual-track" strategy: externally recruiting financial executives to co-develop compliance training modules, and internally incentivizing faculty to conduct empirical case studies within digital transformation enterprises. This collaborative approach fundamentally enhances faculty members' data governance competencies and bridges the industry-education divide.

5.3. Improving the Data-Driven Empirical Evaluation System

Transitioning from static subjective scoring, institutions must establish data-driven evaluation networks focused on complex cross-jurisdictional problem-solving. Simulation assessments should require students to utilize econometric modeling and data analysis platforms to quantitatively assess corporate financial distress. The ability to produce rigorous analytical reports based on multi-regional rule integration serves as a core quantitative competency indicator[9]. Additionally, intelligent algorithms can cross-verify students' decision-making paths, forming a scientific closed-loop system to continuously optimize training programs.

6. Conclusion and Prospects

Under the GBA's institutional openness framework, intelligent accounting laboratories serve as critical technological validation hubs for new productivity factors. They empower enterprises to overcome institutional frictions and data silos through collaborative algorithmic R&D. This bidirectional model transcends traditional accounting education by deeply integrating digital technologies, business regulations, and compliance ethics. Moving forward, leveraging large-scale AI models within these ecosystems will establish boundaryless financial risk early-warning networks and dynamic capability evaluations, providing robust intellectual support for the high-quality development of the regional digital economy.

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Public Disclaimer

The authors declare no conflict of interest.

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