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Research on Talent Training Model Innovation and Collaborative Education Mechanism of Cross-border E-commerce Specialty from the Perspective of Industry-Education Integration

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Abstract: As cross-border e-commerce rapidly enters the advanced phase of "brand globalization and digital intelligence-driven development," the global industry has witnessed an unprecedented surge in demand for highly skilled, interdisciplinary digital talent. However, contemporary higher education institutions frequently face significant supply-demand mismatches in their talent cultivation processes. These critical challenges include outdated educational objectives, highly fragmented curricula, unrealistic practical training environments, and persistent faculty shortages with relevant industry experience. To address these pressing issues, this comprehensive study examines cross-border e-commerce talent development challenges specifically through the strategic lens of industry-education integration, proposing a novel, highly adaptable training model centered on precise supply-demand alignment. Key strategic recommendations include: (1) comprehensive curriculum redesign based strictly on Outcome-Based Education (OBE) principles to establish authentic, immersive business practice platforms and innovative "two-way faculty mobility" standards, supported by robust value-added evaluation systems; and (2) profound mechanism innovation achieved through sustained value co-creation between academia and commercial enterprises. This involves the implementation of collaborative governance frameworks, dynamic resource sharing protocols, joint commercial training ecosystem management, and multidimensional risk isolation systems designed to seamlessly bridge the gap between higher education and professional employment. Ultimately, this research provides systematic, actionable solutions to effectively address persistent learning-application disconnects, aiming to achieve the organic integration of educational ecosystems, professional talent pipelines, and global industrial chains to significantly empower future digital trade development.

Keywords: industry-education integration; cross-border e-commerce; talent training; digital trade; outcome-based education; collaborative governance

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1. Introduction

With the rapid development of the digital economy, cross-border e-commerce has emerged as a significant force reshaping the international trade landscape. Under the full implementation of RCEP and the advancement of the Belt and Road Initiative, China's cross-border e-commerce is progressing towards a high-quality phase characterized by "brand globalization and digital intelligence-driven growth," with trade models diversifying into B2C, DTC, and other formats [1]. This evolution has led to a surge in demand for versatile talents skilled in cross-border operations, digital marketing, and supply chain management, making talent shortages a core bottleneck constraining industry development.

To address this, the Chinese government has actively introduced policy incentives at the national level. The Government Work Report has consistently emphasized promoting

cross-border e-commerce development, improving overseas warehouse infrastructure, and advancing digital trade. The Ministry of Commerce and other departments have issued specialized guidelines to expand cross-border e-commerce exports and overseas warehouse construction, explicitly encouraging universities to establish courses and majors related to cross-border e-commerce [2]. In terms of industry-education integration, the state has introduced reform proposals for modern vocational education system development and implementation actions to enhance collaboration between industries and educational institutions. These initiatives propose establishing "city-level industry-education consortia" and "sector-specific industry-education integration communities," providing fundamental guidelines for coordinated talent cultivation between schools and enterprises.

Grounded in the integration of industry and education, this study systematically analyzes the challenges in cross-border e-commerce talent cultivation and explores a new training model centered on precise supply-demand alignment [3]. The theoretical significance lies in enriching the applied business education system, while the practical implications provide reform pathways for universities to address the "disconnection between learning and application" and assist enterprises in overcoming "recruitment difficulties." Ultimately, it aims to achieve organic integration between educational systems, talent pipelines, industrial chains, and innovation networks, thereby supporting China's digital trade strategy.

2. Current Status and Problem Analysis of Talent Cultivation in Cross-Border E-Commerce

2.1. Talent Demand Analysis in Cross-Border E-Commerce Industry

With the deepening of global digital trade, China's cross-border e-commerce industry has transitioned from initial scale expansion to a new phase of high-quality development characterized by "precision cultivation" and "brand globalization," directly driving profound transformations in talent demand patterns. In terms of skill structure, traditional single-skilled professionals have become marginalized, while the market urgently requires interdisciplinary talents with expertise in foreign language communication, international trade, platform algorithm logic, digital marketing, and supply chain coordination. Regarding job hierarchy, the widespread adoption of automation technologies has accelerated the replacement of low-value-added positions like basic data processing and entry-level customer service, while mid-to-high-level strategic roles focusing on independent e-commerce ecosystem development, targeted overseas social media marketing, cross-border business data analysis, and global warehouse coordination face significant talent shortages. From a technological empowerment perspective, the deep integration of cutting-edge technologies such as generative AI into cross-border scenarios has made digital-intelligent professionals with human-machine collaboration capabilities, agile learning abilities, and innovative iterative thinking core competitive assets in the industry. Overall, the talent demand engine in cross-border e-commerce has evolved from traditional "labor-intensive models" to a dual-driven approach powered by intellectual capital and digital technologies.

2.2. Current Status of Cross-Border E-Commerce Talent Cultivation in Higher Education Institutions

In response to robust industry talent demands, China's higher education system has made proactive adjustments, achieving significant progress in both the scale and structure of cross-border e-commerce program development. Academically, numerous undergraduate and vocational colleges have actively established cross-border e-commerce programs or specialized tracks, with enrollment and training capacities expanding in a stepwise manner [3, 4]. Pedagogically, pioneering institutions are moving beyond traditional lecture-based teaching methods by incorporating business simulation software, operational modeling platforms, and even real-store accounts for experiential

learning [5]. In collaborative education, universities are forging partnerships with major platforms like Alibaba International Station and Amazon, as well as regional industrial parks, through initiatives such as establishing modern industry colleges and customized order-based classes to explore school-enterprise integration. Regarding curriculum development, some institutions are integrating authentic corporate case studies and creating regionally tailored textbooks. However, an objective assessment reveals that China's cross-border e-commerce education remains in a transitional phase, shifting from scale expansion to substantive development. While superficial awareness of industry-education integration has emerged, substantive deep integration frameworks and sustainable collaborative ecosystems have yet to take root.

2.3. Issues in Talent Training Models for Cross-Border E-Commerce

Despite accumulated experience from initial explorations, a significant structural mismatch persists between the supply side of cross-border e-commerce talent cultivation and industry demands. Specifically, at the macro-level goal orientation, the inherent periodicity of training programs contrasts sharply with the rapid iterations of cross-border e-commerce platform regulations, resulting in outdated target-setting that remains stuck in historical industry paradigms. At the meso-level curriculum design, existing courses exhibit fragmented characteristics through mechanical integration of traditional disciplines, failing to undergo deep decomposition based on job competency models [6]. Teaching content suffers from severe hollowing out, lacking integration of emerging business models like full-service outsourcing and cutting-edge technologies such as artificial intelligence. In practical training implementation, simulation software disconnected from real-world business environments compromises authenticity. Combined with insufficient mentorship from corporate experts and inadequate risk mitigation mechanisms, this disrupts commercial closed-loop operations, reducing hands-on training to superficial procedural exercises without tangible operational outcomes. At the foundational faculty level, university professors generally lack full-time practical experience and large-scale project management expertise, while frontline industry professionals face institutional barriers including staffing quotas and limited career advancement pathways. This creates severe structural gaps in cultivating dual-qualified educators, hindering their ability to provide sustained, in-depth support for university teaching systems.

3. Innovative Strategies for Talent Cultivation Model in Cross-Border E-Commerce Majors under the Background of Industry-Education Integration

This chapter focuses on the construction of the education supply side, addressing the core issues of "what kind of people to cultivate" and "through what standards and scenarios to cultivate them." By analyzing the intrinsic logic of pedagogy, it systematically reconstructs the professional elements of talent cultivation [6, 7].

3.1. Talent Cultivation Philosophy and Goal Orientation

Innovating talent cultivation models for cross-border e-commerce primarily requires reshaping educational philosophies and goal orientation. Universities must resolutely abandon traditional business education concepts such as "knowledge-centric" and "academic-style" approaches, fully establishing a learning outcomes-oriented educational philosophy that deeply integrates "competency-based" and "value-guided" principles [8]. In specific goal orientation, efforts should align closely with the latest trends in regional cross-border e-commerce industry development, precisely targeting the cultivation of high-quality, versatile technical and skilled professionals. Such talents must not only possess strong professional ethics and cross-cultural business communication skills but also master the fundamental logic of end-to-end cross-border e-commerce operations. Additionally, they must excel in practical skills for mainstream cross-border platforms or independent websites, adeptly utilizing digital technologies and AI tools to solve complex

operational challenges, while demonstrating a global perspective, innovative thinking, and a craftsman's spirit of excellence. Furthermore, guided by the fundamental mission of moral education, cross-border compliance management concepts and patriotic sentiments to support the high-quality international expansion of Chinese brands should be deeply integrated into training objectives, thereby elevating the ideological sophistication and social responsibility of cross-border e-commerce talents. This goal orientation serves not only as the starting point for program development but also as the fundamental criterion for subsequent curriculum design and evaluation system construction.

3.2. Modular Reconstruction of Curriculum System and Teaching Content

The curriculum system serves as the core framework for cultivating cross-border e-commerce professionals [9]. It requires breaking down traditional disciplinary barriers and implementing modular restructuring based on real-world workflows. A matrix-style curriculum structure is established, featuring "shared foundational knowledge, specialized intermediate modules, and elective advanced courses." The foundational tier builds students' core competencies in foreign language communication, computer applications, and economics fundamentals, creating a broad cognitive framework. Intermediate modules closely align with industry-specific demands, incorporating specialized modules such as visual marketing design, data-driven operations, and supply chain logistics management to achieve vertical knowledge depth. Advanced courses introduce cutting-edge industry resources for self-directed learning, catering to personalized development needs. Dynamic content updates are implemented through industry-academia integration platforms, adopting a "company-initiated projects, school-delivered learning" model. This transforms standardized operational procedures from partner enterprises into systematic teaching tasks, ensuring curriculum relevance to industry trends. AI-powered elements are integrated by adding interdisciplinary courses like generative AI applications in cross-border marketing and data-driven product selection with business analytics. These innovations maintain real-time synchronization between academic content and evolving industry practices, preventing knowledge obsolescence and structural hollowing out.

3.3. Scenario-Based Design of Practical Teaching Platforms and Models

The key to addressing current challenges in cross-border e-commerce professional training lies in establishing highly realistic commercial practice platforms. Universities should focus on developing high-standard production-oriented e-commerce training bases on campus, moving beyond reliance on simulation software. This involves actively integrating real corporate operations, authentic cross-border platform accounts, and genuine marketing startup funds, while promoting physical layouts that combine "store-front, school-back" or "school-in-enterprise" models. Students should be guided to independently complete the entire workflow—from product selection and listing to traffic promotion, customer service, and logistics fulfillment—through real market competition. This approach transforms classroom assignments into professional projects that evolve into commercially viable products, effectively addressing the lack of simulation authenticity in training [10, 11]. Additionally, innovative teaching methods must be prioritized, including comprehensive project-based learning and simulated business environment competitions. By forming student teams to directly undertake real outsourcing tasks such as store management for partner companies and overseas social media content distribution, coupled with rigorous evaluation based on corporate KPI systems, this scenario-based design enables students to learn through practice and accumulate valuable experience through trial-and-error. Ultimately, this ensures seamless transition from academic training to professional employment, bridging the gap in commercial ecosystem integration.

3.4. Structured Enhancement of Dual-Competency Qualifications in Faculty Teams

The faculty team serves as the key driver for implementing industry-education integration initiatives. Universities must overcome traditional personnel system barriers and establish structural standards aimed at enhancing teachers' practical competencies. In terms of individual qualifications, in-house professional instructors should not only possess solid academic theoretical foundations but also address gaps in industry understanding, including comprehension of the business logic and compliance requirements behind cross-border e-commerce platform algorithms. To achieve this, strict implementation of corporate practice systems is essential, requiring faculty members to complete at least six months of full-time internships at cross-border e-commerce enterprises every three years, deeply engaging in real-world project operations. Concurrently, a performance-linked mechanism should be established that strongly correlates internship outcomes with academic promotions, using tangible achievements such as store operation diagnostic reports and traffic conversion optimization strategies developed during internships as critical evaluation criteria. This approach incentivizes teachers to proactively enhance their dual-qualification expertise. Regarding team structure, universities should actively develop dual-qualified teaching teams by clearly defining complementary roles between theoretical instructors and industry practitioners. Implementing paired collaboration models for joint lesson planning and classroom instruction enables deep integration of theoretical knowledge with practical expertise, thereby significantly improving the industry relevance of professional teaching teams.

3.5. Value-Added Transformation of Quality Evaluation and Incentive Mechanisms

The traditional summative evaluation system, primarily based on paper test scores, fails to scientifically assess the practical competencies of cross-border e-commerce professionals. Establishing a diversified and collaborative value-added evaluation framework is essential. Diversifying evaluation entities overcomes the limitations of single-school assessments by incorporating corporate business mentors, industry association experts, and third-party data evaluation agencies into talent quality assessments, ensuring objective and multidimensional perspectives. Practical evaluation metrics transform conventional assessment standards, integrating core business performance indicators such as platform account management weightings during training sessions, total merchandise transaction volumes, traffic conversion rates, and return on investment into final course grades. This alignment bridges academic evaluation with commercial performance. Dynamic evaluation processes utilize big data technology to capture real-time student activity logs on training platforms, creating comprehensive learning profiles to accurately diagnose competency gaps. Regarding incentive mechanisms, schools should implement specialized achievement reward policies for faculty-student teams excelling in real-world commercial operations, such as developing overseas best-selling products or achieving stable store profitability. These policies should include preferential treatment in innovative credit recognition, excellence evaluation criteria, and special bonus allocations to fully motivate participation in industry-academia integration initiatives.

4. Exploration of Collaborative Education Mechanism for Supply-Demand Matching between Schools and Enterprises

As industry-education integration progresses into more advanced stages, innovation in professional content alone is insufficient to ensure effective implementation [7, 12]. The resolution of talent supply-demand contradictions hinges on evolving from mere "physical proximity between schools and enterprises" to achieving "chemical integration through collaborative synergy." Based on stakeholder collaboration theory and management governance principles, this chapter systematically examines coordinated operational mechanisms to achieve precise alignment between school and enterprise supply and demand.

4.1. Building a Collaborative Education Governance Mechanism between Schools and Enterprises: From "surface Cooperation" to "value Co-Creation"

The prerequisite for achieving precise employment is deep institutional integration. Both schools and enterprises must transcend the superficial "buy-sell relationship" of "schools producing graduates and enterprises providing positions" and establish a community of shared destiny for industry-education integration based on the "three-helix model," characterized by "value co-creation, risk sharing, and benefit distribution." In terms of organizational structure, a "Professional Development Advisory Committee" should be formed, comprising senior executives from both sides, HR directors, key business personnel, and professional faculty members. This committee will implement a "dual-chair system," establish regular consultation and agile response mechanisms, jointly develop talent cultivation plans, analyze industry trends, and translate corporate strategic plans into professional development guidelines. Regarding operational models, the "China-characteristic modern apprenticeship system" and "customized order classes" should be vigorously promoted [13, 14]. Traditional delayed employment models must be broken, with corporate recruitment cycles and talent screening criteria integrated into the early university years. Through a four-stage progressive training model of "students-apprentices-quasi-employees-employees," enrollment and recruitment can be synchronized, and classroom learning can be seamlessly combined with workplace experience. Additionally, a "talent demand forecasting and dynamic cultivation plan adjustment mechanism" based on industrial big data should be established. Cultivation objectives should be fine-tuned annually according to platform rule changes and corporate strategy adjustments to fundamentally eliminate supply-demand information gaps and ensure the "targeted orientation" and "high alignment" of talent cultivation.

4.2. School-Enterprise Co-Creation Path for Industry-Education Integrated Curriculum Resources

The development of educational resources requires transitioning from schools' isolated efforts to collaborative innovation between institutions and enterprises. Guided by Outcome-Based Education (OBE) principles, an inverse design approach should be implemented through three stages: job competency mapping, knowledge skill decomposition, and curriculum module restructuring. Jointly formed curriculum development teams should conduct in-depth research on core cross-border e-commerce positions to identify typical work tasks and competency frameworks. Addressing challenges like rapidly evolving platform regulations and outdated textbooks, schools and enterprises should collaboratively develop innovative materials featuring modular layouts, task-oriented manuals, and multimedia integration. These materials function not as static knowledge repositories but as dynamic "task task lists" rooted in corporate Standard Operating Procedures (SOPs). For instance, when implementing Temu's "full-service management model" or TikTok Shop short video marketing strategies, industry experts provide real-time backend screenshots, anonymized data reports, and end-to-end content creation tools for viral products, while university faculty adapt materials for instructional refinement and theoretical enhancement. Seamless updates can be achieved by simply replacing relevant modular content when platform policies or marketing tactics change, establishing a responsive resource iteration mechanism. Additionally, institutions should explore micro-specialty programs and micro-certification systems, integrating corporate accreditation frameworks into academic education to achieve curriculum-certification alignment, ensuring course materials directly correspond to job skill requirements.

4.3. School-Enterprise Co-Management Model for Commercial Internship and Training Bases

The effective operation of internship and training bases relies on a scientific co-management model. For on-campus base co-management, it is essential to move beyond the traditional "simulated sandbox + computer lab software" approach and upgrade to a

"production-oriented cross-border e-commerce training center." Enterprises can integrate non-core business lines into campuses, establishing "enterprise-sponsored studios" or "project operation centers." By introducing authentic platform accounts, real supply chain systems, and genuine marketing budgets, companies can deploy key business personnel alongside school faculty as project managers to set clear commercial objectives and compliance benchmarks. This enables students to gain practical experience through authentic market competition, achieving the principle that "assignments become projects, and projects become products." For off-campus base co-management, partnerships with local cross-border e-commerce pilot zones or leading enterprises should establish stable "off-campus internship and employment incubation bases." Innovative "tiered, project-based" internship arrangements should be implemented: cognitive internships for freshmen, on-the-job training for sophomores, and full-time internships for juniors [15]. Both parties must jointly develop an "Internship Co-management Manual" specifying rights protection, skill evaluation standards, and disciplinary boundaries for students at each stage. Through comprehensive collaborative management throughout the internship cycle, this approach effectively reduces employment anxiety while significantly improving corporate retention rates of interns.

4.4. Appointment and Evaluation Mechanism for Bidirectional Mobility of "industry Mentors"

The quality of employment outcomes largely depends on the smoothness of personnel mobility between educational institutions and enterprises [16]. In collaborative development models, the focus should shift from individual dual-qualified teachers to building structured dual-teacher teaching teams. The primary approach involves implementing a rigorous dual-mentor system. During student internships, graduation projects, and innovation incubation phases, each student should be assigned a "campus academic advisor + corporate industry mentor." Campus mentors specialize in resolving theoretical challenges, academic writing standards, and psychological support, while corporate mentors focus on practical skills, workplace protocols, compliance risk management, and project management expertise. To eliminate nominal mentorship, a "Dual Mentor Selection Criteria and Performance Evaluation System" must be established, linking corporate mentors' performance to compensation and granting them substantive authority. Secondly, mechanisms for seamless personnel rotation between academia and industry should be implemented. This includes creating "industry professorship positions" or "industry mentorship programs" to flexibly engage corporate executives and technical experts in classroom instruction, alongside establishing "Faculty Enterprise Workstations" that require specialized instructors to undertake paid off-site assignments. Additionally, universities and enterprises should jointly establish interdisciplinary "Technical Service and Collaborative Innovation Centers" to address critical challenges such as cross-border e-commerce product algorithm optimization, private domain traffic pool development for standalone websites, and cross-border compliance and data security. By solving real-world technical problems, these initiatives can enhance teaching quality and ultimately achieve the goal of "research-driven education and education-enhanced employment."

4.5. Multidimensional Safeguards and Risk Isolation System for Employment-Oriented Education

The collaborative education system integrating supply-demand alignment constitutes a complex systemic project requiring robust institutional frameworks, financial mechanisms, cultural alignment, and risk management systems as foundational support. Institutional safeguards and closed-loop management are essential. Schools and enterprises must establish legally binding in-depth cooperation agreements, implement "School-Enterprise Collaborative Talent Development Management Measures" to clarify responsibilities across talent cultivation stages, adopt PDCA (Plan-Do-Check-Act) cycles, and establish annual tracking mechanisms for "Graduate Employment Adaptability and

Employer Satisfaction." Feedback data should serve as core references for annual curriculum adjustments to create dynamic supply-demand feedback loops. Financial support and property rights clarification are also critical. Diversified financing channels and mixed-ownership reforms should be explored. In addition to securing national industry-education integration subsidies, enterprises should be guided to contribute equipment, technologies, and faculty resources. Ownership structures and profit-sharing mechanisms for campus production training bases must be defined, while "Corporate-Sponsored Scholarships" and "Cross-border E-commerce Micro-Entrepreneurship Funds" should be established to motivate faculty and students. Cultural reinforcement and value alignment are vital. Core values of successful overseas enterprises should be incorporated into campus and academic cultures through organizational behavior studies. Corporate-sponsored operational skill competitions, cross-border e-commerce innovation weeks, and executive networking events should be organized to cultivate workplace culture early, enhancing students' organizational identity and corporate value recognition. Risk control and compliance isolation are indispensable. Given the cross-border e-commerce industry's characteristics of frequent capital flows, high account security risks, and stringent data compliance requirements, specialized "Training/Internship Compliance and Risk Management Manual" must be developed. The student internship liability insurance and accidental injury insurance system should be improved, a data firewall for corporate core trade secrets established, and students' legitimate rights and interests effectively protected through measures such as signing confidentiality agreements and implementing operational permission isolation. These measures will alleviate enterprises' concerns after accepting interns, thereby creating a safe, compliant, and sustainable development ecosystem for the employment-oriented education system.

5. Conclusion

From the perspective of industry-education integration, innovating talent cultivation models for cross-border e-commerce majors and establishing collaborative education mechanisms are critical strategies to address the structural imbalances in the supply and demand of cross-border e-commerce talent. These efforts also play a pivotal role in supporting the high-quality global expansion of domestic brands. This study systematically examines industry demands and current training practices, proposing comprehensive innovations in key professional dimensions, including conceptual goals, curriculum design, practical platforms, faculty development, and evaluation systems. Additionally, it explores collaborative operational pathways between universities and enterprises, focusing on governance mechanisms, resource co-creation, shared management of training bases, mentorship exchanges, and risk mitigation. Looking ahead, as advanced technologies such as artificial intelligence, big data, and the metaverse increasingly permeate cross-border trade, the cultivation of cross-border e-commerce talent will encounter growing uncertainties. The integration of industry and education will transcend physical and temporal boundaries, evolving into concepts such as "digital twin campuses," "boundaryless organizations," and "lifelong learning." By maintaining sharp industry insights, deepening the scope of industry-education integration, and fostering a dynamically adaptive education ecosystem, it will be possible to consistently produce globally competitive, innovative cross-border e-commerce professionals aligned with the national digital trade strategy.

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