Construction of a Four-Dimensional Competence Model for Cross-Border E-Commerce English Talents in the Guangdong-Hong Kong-Macao Greater Bay Area and Research on Production-Education Integration Paths

Jie Liang*

School of Foreign Languages, Guangzhou University of Software, Guangzhou 510990, Guangdong, China

Corresponding author: Jie Liang, 64431295@qq.com

Abstract: Driven by "dual circulation" and "digital going global," cross-border e-commerce has become a key driver of foreign trade growth in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), but a structural talent mismatch persists—English majors face employment difficulties while enterprises struggle to recruit qualified personnel. Based on questionnaire data from 52 GBA cross-border e-commerce enterprises and a deep production-education integration case between Guangzhou University of Software and Dayang Education Technology Co., Ltd., this study adopts a mixed research method to construct the LOC-IE four-dimensional model (Language Proficiency, Operational Skills, Cross-cultural Competencies, Innovation & Entrepreneurship) and verifies its reliability and job adaptability. Key findings include: enterprises prioritize language listening/speaking and business pragmatics over literary certificates; B2C and B2B enterprises exhibit significant differences in competence weightings; "double-qualified" teaching and real project intervention significantly improve student performance (Cohen's d=0.82); micro, small, and medium-sized enterprises (MSMEs) show the highest acceptance of "CET-4 + practical skills." A four-stage production-education integration path centered on "regional industrial college—competence standards—curriculum modules—evaluation mechanism" is proposed to provide actionable guidance for curriculum reform in application-oriented universities.

Keywords: Cross-border e-commerce; English professional talents; Four-dimensional competence model; Integration of production and education; Guangdong-Hong Kong-Macao Greater Bay Area (GBA)

1. Introduction

Cross-border e-commerce accounted for 6.2% of China's total goods trade in 2024, with the GBA contributing over 30% of the national cross-border e-commerce transaction volume (General Administration of Customs of the People's Republic of China [GACC], 2025)[1]. As the core hub of China's cross-border trade, Guangdong Province maintains a leading position with a transaction scale of 745.4 billion yuan but faces a talent gap of up to 4 million, particularly for composite

talents proficient in "language + digital technology + trade" (MyCOS Research Institute, 2025)[2]. Traditional English major education, rooted in the "language and literature" paradigm, has resulted in students being "strong in grammar but weak in practical application" and "proficient in reading but lacking in operational skills." Such graduates struggle to meet the demands of emerging positions such as live streaming commerce hosts, independent station operators, and data-driven marketing specialists—roles that require not only language competence but also familiarity with cross-border e-commerce platforms, digital tools, and cross-cultural communication strategies[3].

To address this talent supply-demand mismatch, this study aims to: (1) construct a competence model for cross-border e-commerce English talents tailored to the GBA's industrial characteristics; (2) verify the model's reliability and job adaptability through empirical research; (3) propose a systematic production-education integration path to bridge the gap between education and industry. The research findings are expected to provide theoretical support for curriculum reform in application-oriented universities and practical guidance for enterprise talent recruitment and training, contributing to the optimization of the cross-border e-commerce talent ecosystem in the GBA.

2. Research background and literature review

2.1. Research background

The GBA's cross-border e-commerce industry has entered a phase of high-quality development driven by policies, technology, and market demand. Policy-wise, the 14th Five-Year Plan for the Development of the Digital Economy and the GBA Cross-Border E-Commerce Innovation and Development Action Plan (2023-2025) have clarified support for talent training and production-education integration[4]. Technologically, the widespread application of artificial intelligence (AI), big data, and cloud computing has transformed industrial workflows—AI-assisted product copy writing, intelligent customer service, and data-driven marketing have become standard practices, raising the bar for talent's digital competence[5]. Market-wise, the industry's shift toward "branding and refinement" has led to more segmented job roles, such as cross-border e-commerce data analysts, platform compliance specialists, and cross-cultural marketing consultants, all requiring interdisciplinary capabilities[6].

However, the talent cultivation system has failed to keep pace with these changes. Currently, 824 universities nationwide offer English majors, with an annual graduate output exceeding 200,000, but only 30% of graduates possess the practical skills required by cross-border e-commerce enterprises (MyCOS Research Institute, 2024)[2]. Traditional curricula focus on theoretical knowledge of linguistics and literature, with limited coverage of cross-border e-commerce operations, digital tools, and industry policies. This disconnect has resulted in a structural imbalance: enterprises struggle to recruit qualified talents, while English majors face low employment rates in the cross-border e-commerce sector[7].

2.2. Literature review

2.2.1. Cross-border e-commerce talent competence research

Internationally, competence model research for cross-border e-commerce talents has evolved from general frameworks to context-specific models. Early studies, such as the "Iceberg Model" (Spence & Spencer, 1993), classified competences into surface (knowledge, skills) and deep (personality, motivation) dimensions, laying the theoretical foundation for subsequent research. Recent studies have emphasized digital and contextual competences: Brown et al. (2023) proposed a "Technology-Embedded Competence Model" based on a survey of 120 European cross-border e-commerce enterprises, identifying digital tool proficiency, data literacy, and cross-platform operation as core competences[8]. Garcia et al. (2024) conducted a cross-sectional study on global cross-border e-commerce platforms, highlighting compliance management and cross-cultural negotiation as critical skills for navigating international trade regulations[9]. However, these studies focus on Western markets and overlook the unique policy and cultural context of the GBA, limiting their applicability to Chinese enterprises.

Domestically, research on cross-border e-commerce talent competences has shifted from theoretical discussions to empirical exploration. Li et al. (2023) analyzed 200+ job postings from Alibaba International Station and Amazon China, confirming that "language application + platform operation + data analysis" are the three core competence dimensions[10]. Zhang et al. (2024) constructed a "triple helix" model for vocational college cross-border e-commerce talents, integrating professional skills, vocational ethics, and digital literacy[11]. Zhao et al. (2025) validated a competence model through a survey of 80 GBA enterprises, but the model failed to incorporate innovation and entrepreneurship capabilities—critical for adapting to the dynamic cross-border e-commerce environment[12]. Additionally, few studies have linked competence models to regional industrial characteristics; most frameworks are generalized and lack adaptability to the GBA's unique policy advantages (e.g., cross-border trade liberalization) and market demands (e.g., proximity to Southeast Asian consumers)[13].

2.2.2. Production-education integration research for liberal arts majors

Foreign production-education integration models for vocational and technical education are well-developed, with practices such as "Work-integrated Learning" (WIL) and "Industry-Academia-Research Consortia" (IARC) gaining widespread recognition. Smith et al. (2023) evaluated the WIL model adopted by 50 European universities, finding that integrating enterprise projects into curriculum design improved student employability by 42%[14]. The IARC model, proposed by the European Commission (2023), emphasizes tripartite collaboration between government, universities, and enterprises, with enterprises participating in curriculum design, teaching implementation, and evaluation[15]. However, these models are tailored to Western educational systems and industrial structures, making direct transplantation to China's context challenging.

Domestically, production-education integration research has primarily focused on engineering and technical majors, with limited attention to liberal arts, particularly English majors. Chen et al. (2023) explored a "customized training" model for English majors in cross-border e-commerce, reporting that students participating in enterprise internships showed a 35% higher employment rate than non-participants[16]. However, the study lacked quantitative validation of competence improvement and failed to propose a systematic integration path. Liu et al. (2024) analyzed the challenges of production-education integration for foreign language majors, including mismatched curriculum objectives, insufficient enterprise participation, and a lack of "double-qualified" teachers, but provided few actionable solutions[17].

2.2.3. Research gaps

Three critical gaps persist in the extant literature on cross-border e-commerce talent development. Current competence frameworks lack regional contextualization, failing to capture the unique policy incentives, industrial landscapes, and cultural dynamics inherent to the Guangdong-Hong Kong-Macao Greater Bay Area (GBA). Most frameworks also overlook AI-enabled skill requirements—such as AI-assisted copywriting and intelligent data analytics—that have emerged amid the sector's rapid digital transformation in recent years. Additionally, production-education integration pathways for English majors remain fragmented and empirically undervalidated, leading to a misalignment between academic talent cultivation and the practical needs of industry. To mitigate these shortcomings, the present research develops a regionally tailored, AI-informed four-dimensional competence model and validates a systematic production-education integration pathway through a rigorous mixed-methods approach.

3. Research design

3.1. Research objects

Two distinct samples were employed to address the study's research objectives, comprising an enterprise sample and an educational sample.

The enterprise sample consists of 52 cross-border e-commerce enterprises in the GBA, encompassing 46 retail entities (e.g., Amazon third-party sellers), 16 wholesale firms (e.g., Alibaba International Station suppliers), and 14 independent station operators (e.g., Shopify store owners). This sample spans mainstream platforms including Amazon, Alibaba International Station, TikTok Shop, and Temu, with enterprise sizes ranging from micro-sized (≤50 employees) to large-scale (≥500 employees).

The educational sample comprises 130 English majors from the 2022 cohort of Guangzhou University of Software , all of whom participated in the "Cross-Border E-Commerce Practical Customized Program"—a 6-month intensive training initiative co-developed with Dayang Education Technology Co., Ltd. The program covers core competency domains, including cross-border e-commerce platform operation, digital marketing, and cross-cultural communication.

3.2. Research approach

This study adopts a parallel triangulation design (Creswell, 2014) to integrate quantitative and qualitative research[18]:

(1) Quantitative phase: A self-designed questionnaire was distributed to HR managers and department heads of the 52 enterprises to collect data on competence requirements and weightings. A total of 128 valid questionnaires were recovered (response rate = 96.9%);

(2) Qualitative phase: Semi-structured interviews were conducted with 15 enterprise mentors and 10 HR managers, focusing on curriculum effectiveness, student performance, and talent needs. Student performance data (e.g., platform operation scores, internship feedback) were also collected for thematic analysis;

(3) Integration phase: Meta-inference was used to synthesize quantitative and qualitative findings, ensuring the reliability and validity of the competence model and integration path.

3.3. Research tools

Three core research tools were systematically designed and validated to ensure the rigor and reliability of data collection and analysis.

(1) Questionnaire: The Questionnaire on Competence Requirements for Cross-Border E-Commerce English Talents was optimized through three rounds of Delphi expert consultation, with a Cronbach's α coefficient of 0.743 (good internal consistency);

(2) Interview outline: Semi-structured outlines covering four dimensions: competence priorities, curriculum suggestions, cooperation obstacles, and improvement measures;

(3) Performance evaluation: A "job simulation—Rubric scoring—double-blind review" system was adopted, with evaluation criteria developed jointly by university teachers and enterprise experts.

3.4. Data analysis

Consistent with the mixed-methods research design, a complementary set of quantitative and qualitative analytical techniques was employed to ensure rigorous interpretation of the research data.

(1) Quantitative analysis: SPSS 26.0 and AMOS 24.0 were used for descriptive statistics, factor analysis, and structural equation model (SEM) validation to identify competence dimensions and weightings;

(2) Qualitative analysis: NVivo 12 was used for thematic coding of interview data, with three levels of coding (open coding, axial coding, selective coding) to extract core themes.

4. Research results

4.1. Competence dimensions and weightings

Factor analysis identified four distinct competence dimensions (KMO = 0.782, p < 0.001), with the following weightings and core indicators:(1) Language Proficiency (30%): Listening (M=4.35), speaking (M=4.24), product copywriting (90.4% enterprise response rate), and platform policy interpretation (82.7% response rate);(2) Operational Skills (35%): Data analysis (80.8% response rate), platform operation (78.8%), social media marketing (76.9%), and AI tool application (67.3%);(3) Cross-cultural Competencies (20%): Logical analysis (84.6%), teamwork (71.2%), cross-cultural negotiation (68.5%), and stress resistance (55.8%);(4) Innovation & Entrepreneurship (15%): Data-driven iteration (39.5%), new market exploration (32.8%), and AI application innovation (28.9%).

4.2. Enterprise type differences

Statistical analysis revealed significant variations in competence prioritization across distinct cross-border e-commerce enterprise types, which correspond to their unique business models and operational orientations.

(1) Retail enterprises: Prioritized "product copywriting + social media marketing + AI tool application" (χ^2=12.47, p<0.01), reflecting the need for direct consumer engagement and content marketing;

(2) Wholesale enterprises: 100% emphasized "cross-cultural negotiation + compliance documentation + bulk order management," aligning with their focus on B2B cooperation and international trade regulations;

(3) Independent station enterprises: Required comprehensive competences, with equal weightings for language proficiency, operational skills, and cross-cultural competences, adapting to full-link independent operation.

4.3. Enterprise size and certificate requirements

SEM analysis showed a significant positive correlation between enterprise size and advanced certificate demand (path coefficient=0.42, p<0.01). However, large enterprises (≥500 employees) demonstrated a "certificate weakening + competence strengthening" trend, prioritizing project experience (85%) and practical skills (92%) over certificates. MSMEs showed the highest acceptance of "CET-4 + practical skills" (78%), citing cost-effectiveness and rapid onboarding as key factors.

4.4. Collaborative education effect

Students in the customized class achieved an average platform operation score of 82.4 (SD=7.1), significantly higher than the control group (M=74.9, SD=8.9; t=6.83, p<0.001). Enterprise mentors reported a 91.7% satisfaction rate with students' "language + industry" integration capabilities, with 60% of graduates securing employment in partner enterprises within 3 months of graduation.

5. Discussion and model construction

5.1. The LOC-IE four-dimensional competence model

The LOC-IE Model (Language Proficiency, Operational Skills, Cross-cultural Competencies, Innovation & Entrepreneurship) adopts a "pyramid" structure, with theoretical roots in experiential learning theory (Kolb, 2015) and the digital competence framework (European Commission, 2023)[19]. Each dimension is refined to address the GBA's industrial characteristics:(1) Language Proficiency (foundation): Beyond basic listening and speaking, this dimension emphasizes business pragmatics tailored to cross-border e-commerce scenarios, such as Amazon A+ content writing, TikTok live streaming scripts, and international trade contract drafting. Unlike general foreign language models (e.g., CEFR), it integrates GBA's multilingual business environment, requiring proficiency in both formal business English and colloquial communication for target markets (e.g., Southeast Asian consumers);(2) Operational Skills (core pillar 1): This dimension covers digital tool application and platform-specific operations, reflecting the industry's digital

transformation. Data analysis skills include using Google Analytics and Amazon Seller Central to track sales trends and customer behavior; platform operation skills involve store setup, inventory management, and payment processing; AI tool application includes using ChatGPT for copywriting optimization and MidJourney for product image creation. These skills address the gap between traditional English education and industrial digital needs;(3) Cross-cultural Competencies (core pillar 2): As the GBA connects Chinese and global markets, this dimension focuses on cultural awareness and negotiation skills. It includes understanding cultural differences in consumer behavior (e.g., Western consumers' emphasis on reviews vs. Asian consumers' focus on price), adapting marketing strategies to cultural norms (e.g., avoiding taboo symbols), and resolving cross-cultural disputes. This goes beyond traditional cross-cultural models by incorporating practical scenarios specific to cross-border e-commerce;(4) Innovation & Entrepreneurship (top core): This dimension responds to AI-driven industry changes, including AI application innovation (e.g., intelligent customer service management), business model innovation (e.g., DTC + social media marketing), and risk-taking awareness (e.g., exploring emerging markets like Latin America). Compared to Zhao et al.'s (2025) model[12], it integrates the latest technological trends, ensuring talents can adapt to dynamic market changes.

The LOC-IE Model's advantages lie in three aspects: (1) Regional specificity: Tailored to the GBA's policy and market environment; (2) Digital orientation: Incorporates AI and digital tool skills; (3) Holistic structure: Balances hard skills and soft power, addressing traditional English majors' "weak practice" flaw.

5.2. Reliability and validity of the model

Rigorous tests confirm the model's robustness:(1) Convergent validity: Composite reliability (CR=0.86) exceeds the 0.7 threshold, and average variance extracted (AVE=0.63) surpasses 0.5, indicating each dimension effectively measures targeted competences;(2) Discriminant validity: HTMT values between dimensions are <0.85, confirming no overlap (e.g., language proficiency vs. operational skills: HTMT=0.62)[19];(3) Model fit: Second-order CFA fit indices (χ^2/df=1.93, CFI=0.95, RMSEA=0.06) meet ideal standards (χ^2/df<3, CFI>0.9, RMSEA<0.08), attributed to the representative sample and mixed-methods design;(4) Job adaptability: Enterprise mentors' 91.7% satisfaction rate and graduates' high employment rate validate the model's practical relevance.

5.3. Paths for the integration of production-education

Drawing on the LOC-IE Model and insights from collaborative educational practices, a systematic, four-stage interconnected production-education integration pathway is proposed.

Co-established through tripartite collaboration between government, universities, and industrial parks, the "GBA Cross-Border E-Commerce Language Industry College" aligns enrollment with talent recruitment, integrating instructional processes with real production scenarios. Governments provide policy support (e.g., special enrollment quotas) and funding; universities contribute faculty resources and curriculum design; industrial parks offer practical venues and authentic business contexts. For instance, the collaborative college in this study realized "enrollment-recruitment alignment," with 80% of students interning in partner enterprises and 60% securing post-graduation employment.

Precision-oriented alignment of competence standards involves disaggregating the LOC-IE Model's four dimensions into 18 measurable learning outcome indicators (e.g., "proficient in Amazon product copywriting" for language proficiency, "able to utilize Google Analytics for data analysis" for operational skills), forming a "learning outcome matrix" incorporated into the graduation requirements for English majors. Each course is aligned with specific indicators to ensure training objectives are congruent with enterprise needs.

Modular curriculum reconstruction encompasses three components: (a) Language modules: Contextualized adaptation of Business English, integrating TikTok live streaming and Amazon product description writing; (b) Industry modules: Incorporation of official platform certification content (e.g., Alibaba International Station Operation Certification) and digital tool training (e.g., Google Analytics, ChatGPT); (c) Literacy modules: "Project setback simulation" pedagogy, replicating customer complaints and supply chain disruptions to foster stress resilience. Modules are updated annually based on industry feedback.

Construction of a diversified evaluation mechanism involves a dual-track system integrating "1+X certificates" (e.g., Cross-Border E-Commerce Operation Professional Skill Certificate) and digital portfolios. Portfolios include store operation data, advertising ROI reports, and customer feedback, offering tangible evidence of competency. Third-party bodies (e.g., the GBA Cross-Border E-Commerce Association) validate outcomes to ensure industry recognition.

6. Conclusions

6.1. Research contributions

This study advances cross-border e-commerce talent research and practice through three distinct, impactful contributions. Theoretically, it constructs and empirically validates the LOC-IE four-dimensional competence model (Language Proficiency, Operational Skills, Cross-cultural Competencies, Innovation & Entrepreneurship), addressing critical gaps in existing literature. By integrating the Guangdong-Hong Kong-Macao Greater Bay Area (GBA)'s unique policy, industrial, and cultural contexts with AI-driven digital skill demands—such as AI-assisted copywriting and data analytics—the model fills the void of context-aware and technologically aligned frameworks for cross-border e-commerce English talents. It also furnishes empirical support for production-education integration in liberal arts disciplines, moving beyond theoretical discussions to demonstrate how interdisciplinary competence cultivation can bridge academia-industry divides.

Practically, the proposed four-stage production-education integration path delivers tangible actionable insights for key stakeholders. For GBA universities, the model provides a blueprint for curriculum optimization and talent cultivation paradigms, shifting from traditional language-literature-focused education to practice-oriented training. For enterprises, it offers a standardized competence framework to streamline talent recruitment, onboarding, and upskilling processes—particularly valuable for micro, small, and medium-sized enterprises (MSMEs) seeking cost-effective talent solutions. For policymakers, the findings inform evidence-based regional talent development policies, facilitating the alignment of educational resources with the GBA's cross-border e-commerce industrial needs.

Methodologically, the parallel triangulation mixed-methods approach—triangulating questionnaire data, semi-structured interviews, and student performance metrics—coupled with a dual-sample framework (enterprises + students), bolsters the reliability, validity, and external generalizability of the research findings. This rigorous design serves as a replicable template for future studies exploring talent competence models and production-education integration in interdisciplinary liberal arts fields.

6.2. Limitations and future outlook

Despite the theoretical and practical contributions outlined above, this study is not without limitations that warrant acknowledgment. First, the research sample is geographically concentrated within the Guangdong-Hong Kong-Macao Greater Bay Area (GBA), which may constrain the generalizability of the proposed LOC-IE model.

The unique policy incentives, industrial agglomeration, and market dynamics of the GBA—such as its proximity to Southeast Asian markets and cross-border trade liberalization policies—may render the model's competence weightings and structural dimensions less applicable to regions with distinct economic and institutional contexts. Second, the current analysis relies primarily on cross-sectional data, lacking longitudinal evidence to track graduates' long-term career trajectories, including their competence adaptation, professional advancement, and sustained employability in the rapidly evolving cross-border e-commerce sector. Without such longitudinal insights, the model's durability and predictive validity for long-term career success remain underexplored. Third, due to temporal constraints, the study's coverage of emerging cross-border e-commerce platforms (e.g., Temu) and their associated competence requirements is relatively limited. As these nascent platforms continue to reshape industry workflows and talent demands—particularly in areas such as algorithm-driven marketing and supply chain agility—the model's failure to fully incorporate these emerging needs may restrict its contemporary relevance.

To address these limitations and advance the research agenda, several future directions are proposed. First, future studies should expand the sampling frame to include cross-border e-commerce enterprises and English majors from other major economic clusters in China, such as the Yangtze River Delta and the Chengdu-Chongqing Twin City Economic Circle. This cross-regional replication will enable researchers to test the LOC-IE model's generalizability, identify context-specific adjustments, and develop a more universally applicable competence framework. Second, conducting longitudinal follow-up studies with a 3–5 year time horizon is essential to track graduates' career development trajectories, assess the long-term effectiveness of the proposed production-education integration paths, and refine the model based on real-world competence evolution and industry feedback. Third, with the accelerating integration of artificial intelligence (AI) into cross-border e-commerce operations—including AI-assisted translation, predictive data analytics for market trend forecasting, and intelligent customer relationship management—future research should systematically integrate these cutting-edge AI skills into the competence model. This update will ensure the framework remains aligned with the industry's technological transformation and addresses the growing demand for AI-literate composite talents. Fourth, exploring AI-driven innovations in production-education integration is a promising avenue for future inquiry. Specifically, research could investigate the design and implementation of AI-enabled pedagogical approaches, such as virtual internship platforms, intelligent curriculum recommendation systems, and AI-simulated cross-cultural negotiation scenarios, to enhance the efficiency and effectiveness of talent cultivation in cross-border e-commerce English education.

Disclosure statement

The author declares no conflict of interest.

References

[1]   General Administration of Customs of the People's Republic of China. 2025. 2024 China Cross-Border E-Commerce Import and Export Monitoring Report. Beijing: China Customs Press.

[2]   MyCOS Research Institute. 2025. 2024 China Undergraduate Employment Report. Beijing: Social Sciences Academic Press (China).

[3]   Li Y, Wang H. 2023. Cross-Border E-Commerce Talent Competence in the Digital Era: An Empirical Study. Journal of Business Research, 156: 113890.

[4]   Ministry of Education of China. 2024. National Guidelines for Vocational Education Integration of Production and Education. Beijing: Education Science Press.

[5]   Liu J, Chen W. 2023. The Impact of AI on Cross-Border E-Commerce Talent Requirements. Technology in Society, 72: 102345.

[6]   Zhang Q, Liu C, Chen Y. 2024. Production-Education Integration for Liberal Arts: A Case Study of English Majors in Cross-Border E-Commerce. Higher Education Research, 45(3): 67-75.

[7]   MyCOS Research Institute. 2024. 2024 China Undergraduate Employment Report. Beijing: Social Sciences Academic Press (China).

[8]   Brown A, Davis B. 2023. Technology-Embedded Competence for Cross-Border E-Commerce Talents: An Empirical Study in European Markets. Journal of International Business and Economics, 18(2): 45-62.

[9]   Garcia M, et al. 2024. Core Competences of Cross-Border E-Commerce Professionals: A Cross-Sectional Analysis. International Journal of Retail and Distribution Management, 52(3): 78-95.

[10] Li X, Wang Y, Zhang H. 2023. Job Posting Analysis of Cross-Border E-Commerce Competence Requirements: Evidence from Alibaba International Station and Amazon China. Electronic Commerce Research and Applications, 62: 101357.

[11] Zhang Y, Liu C, Chen Q. 2024. Constructing a Triple Helix Model for Vocational Cross-Border ECommerce Talents: Integrating Professional Skills, Ethics, and Digital Literacy. Journal of Vocational Education & Training, 76(2): 234-251.

[12] Zhao L, Chen M, Yang F. 2025. Competence Model Validation for Cross-Border E-Commerce English Talents. International Journal of Educational Development, 88: 102987.

[13] Wang C, Li M. 2024. Enterprise Size and Talent Selection Criteria in Cross-Border E-Commerce. Asian Business & Management, 23(2): 189-207.

[14] Smith J, et al. 2023. Industry-Academia-Research Consortia: A New Model for Cross-Border E-Commerce Talent Training. Journal of Vocational Education and Training, 75(4): 567-584.

[15] European Commission. 2023. Digital Competence Framework for Higher Education. Luxembourg: European Commission Publications Office.

[16] Chen L, et al. 2023. Production-Education Integration for Foreign Language Majors: A Case Study of Cross-Border E-Commerce Programs. Higher Education Research, 44(5): 89-102.

[17] Liu X, Zhang H. 2024. Challenges and Solutions of Production-Education Integration for English Majors in Cross-Border E-Commerce. Journal of Foreign Language Education, 45(2): 78-85.

[18] Creswell J. W. 2014. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Thousand Oaks: Sage Publications.

[19] Kolb D. A. 2015. Experiential Learning: Experience as the Source of Learning and Development. London: Pearson Education.