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A Study on Building an Employment Adaptation Mechanism for Higher and Vocational Education Graduates in the Collaborative Development of the Guangdong-Hong Kong-Macao Greater Bay Area

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Abstract: Under the backdrop of coordinated development in the Guangdong-Hong Kong-Macao Greater Bay Area, industrial structures are accelerating their upgrade toward high-end manufacturing, the digital economy, and other emerging sectors, driving a sustained surge in demand for high-quality technical and skilled professionals. However, current challenges remain in higher vocational education graduates' employment, including an imbalance between supply and demand, insufficient regional collaboration, gaps in talent-development systems, and weak support services. To address these issues, this study proposes a four-dimensional employment adaptation mechanism-integrating "supply-demand alignment, policy coordination, industry-university talent cultivation, and service support." By dynamically responding to industry needs, breaking down cross-regional institutional barriers, deepening industry-education integration, and enhancing comprehensive employment services across the entire lifecycle, the mechanism aims to resolve the structural mismatch between talent supply and industrial demand. This research not only offers practical pathways to improve the employment quality of higher vocational graduates in the Greater Bay Area and strengthen regional talent support but also enriches the theoretical framework for studies on regional collaborative development and employment in higher vocational education.

Keywords: Guangdong-Hong Kong-Macao Greater Bay Area; higher vocational graduates; employment matching mechanism; collaborative development; industry-education integration

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1. Introduction

1.1. Research Background

The "Outline of the Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area" explicitly calls for "building an international center for technological innovation," driving the accelerated upgrading of industrial structures toward high-end manufacturing, the digital economy, and cross-border services [1]. According to data from the Guangdong Provincial Department of Human Resources and Social Security, in 2023, the Greater Bay Area faced a talent gap exceeding 1.2 million in strategic emerging industries, with highly skilled technical and vocational professionals accounting for as much as 65% of this shortfall [2]. As the core platform for cultivating technical and vocational talent, higher vocational education directly influences the precision of talent supply in the Bay Area-and, by extension, the sustainability of its industrial growth-through the employment readiness of its graduates. Yet today, higher vocational graduates in the Greater Bay Area still encounter significant challenges: fewer than 5% pursue employment across regional boundaries, and their alignment with emerging

industry roles remains at just 48% [3]. These issues-such as "insufficient regional adaptability" and "imprecise job-match capabilities"-clearly highlight a growing mismatch between the region's talent needs and its collaborative development goals.

1.2. Significance of the Study

Practical Significance: This study focuses on the structural mismatch between industrial upgrading in the Greater Bay Area and the supply of vocational college talent. By developing an employment alignment mechanism, it can effectively enhance the regional employment competitiveness and job-fit levels of vocational graduates, providing targeted talent support for key sectors such as high-end manufacturing and cross-border e-commerce in the Greater Bay Area. This, in turn, helps address the dual challenges of labor shortages and difficulty in finding suitable jobs, ultimately boosting the region's overall efficiency in collaborative development [4].
Theoretical Significance: While existing research often concentrates on employment issues at the undergraduate level or focuses narrowly on vocational education within a single region, this study takes a unique approach by examining the specific context of the Greater Bay Area-characterized by "One Country, Two Systems, Three Customs Territories." It explores cross-regional collaboration perspectives to identify effective pathways for aligning vocational education with employment needs across borders [5]. This work not only enriches the theoretical framework for regional collaborative development and vocational education employment studies but also offers valuable insights and strategies for similar regions such as the Yangtze River Delta and the Beijing-Tianjin-Hebei area.

2. Challenges in Employment Matching for Higher and Vocational Education Graduates in the Collaborative Development of the Guangdong-Hong Kong-Macao Greater Bay Area

2.1. Supply and Demand Are Out of Balance, with a Mismatch between Talent Supply and Industry Needs

The adjustment of higher vocational education programs often lags by 2 to 3 years, making it difficult for these programs to keep pace with the rapid pace of industrial evolution in the Greater Bay Area [6]. Data reveals that among graduates from traditional manufacturing and finance-related vocational programs in the Greater Bay Area, the supply surplus rate has reached as high as 23%, while there is a growing talent shortage-exceeding 400,000 positions annually-in strategic emerging industries such as intelligent manufacturing, cross-border e-commerce, and green/low-carbon technologies [7]. Meanwhile, there is a significant mismatch between the skills cultivated in vocational training and the specific demands of industry roles: over 60% of companies in the region report that higher vocational graduates lack the core technical competencies required for real-world production settings. Additionally, essential professional attributes like innovative thinking and cross-border business communication fail to align with the diverse employment needs of the region's booming sectors, including cross-border services and the digital economy [8]. As a result, the job-matching rate for emerging industry positions stands at just 41.2%, creating a stark structural contradiction characterized by both oversupply and critical shortages in key areas.

2.2. Regional Collaboration Is Insufficient, and There Are Barriers to Integrating Policies and Resources

The unique characteristics of the Guangdong-Hong Kong-Macao Greater Bay Area-specifically its "One Country, Two Systems, Three Customs Territories" framework-have led to challenges in seamlessly aligning employment policies and systems [9]. In Hong Kong, China and Macao, China, the recognition rate for mainland China's "1+X Certificate" program as a valid professional qualification remains below 30%, while transferring and continuing social insurance coverage requires more than 10 separate administrative

procedures, taking an average of over two months [10]. These barriers directly hinder cross-regional labor mobility. Moreover, there is a noticeable lack of consistent collaborative mechanisms among government bodies, higher vocational colleges, businesses, and industry associations, resulting in fragmented talent-development planning. For instance, out of the 42 higher vocational institutions in the Greater Bay Area, only 17 actively participate in assessing regional industry needs for skilled professionals [11]. As a result, employment-service resources remain largely confined to individual cities, failing to establish a comprehensive, cross-regional support system that spans the entire "training-to-employment-to-development" continuum. Consequently, the potential for coordinated policy effectiveness remains underutilized.

2.3. Weaknesses in the Education System, with Insufficient Focus on Developing Students' Employability Skills

The issue of rigid talent development models in higher vocational education is particularly prominent. Over 80% of industry-university collaborations remain at the superficial level of "companies providing internship opportunities," while deep, collaborative efforts such as co-building training facilities and jointly developing curricula account for less than 25% [11]. As highlighted in the "Several Opinions of the General Office of the State Council on Deepening Industry-Education Integration," some universities still face challenges in insufficient corporate involvement in the educational process and the failure to effectively establish a "dual-subject" approach to fostering talent [12]. This disconnects practical training programs from the rapid technological advancements occurring in Bay Area enterprises. Additionally, some higher vocational institutions take more than five years to update their training equipment, making it difficult to keep pace with the fast-evolving technology demands in high-end manufacturing sectors [13]. Meanwhile, employment guidance courses often lack specificity; only 32% of higher vocational colleges in the Greater Bay Area offer specialized content like industry-specific insights into the region's economy, thereby limiting graduates' ability to better adapt to local job market needs.

2.4. Service Support Is Weak, and Employment Adaptation Guarantees Are Insufficient

Currently, the Greater Bay Area has 27 fragmented employment information platforms for higher vocational college graduates, with data interoperability and sharing rates falling short of 40% [10]. These platforms suffer from high duplication of job postings and low accuracy, lacking advanced, big-data-driven intelligent matching and personalized recommendation features. Moreover, cross-regional employment support policies remain incomplete-only core cities like Guangzhou and Shenzhen have introduced specific subsidies, while non-core cities and regions such as Hong Kong, China and Macao, China largely lack comprehensive services, including employment assistance, innovation and entrepreneurship incubation, and career development tracking [14]. As a result, graduates face significant gaps in protecting their employment rights and receiving adequate support for long-term career growth.

3. Building an Employment Adaptation Mechanism for Higher and Vocational Education Graduates in the Collaborative Development of the Guangdong-Hong Kong-Macao Greater Bay Area

3.1. Supply-And-Demand Precision Matching Mechanism: Aligning with Industry Needs to Optimize Talent Supply

Guided by industry needs, establish a dynamic response mechanism and collaborate with industry associations in the Guangdong-Hong Kong-Macao Greater Bay Area-such as the Guangdong Provincial Electronic Information Industry Association-as well as leading enterprises like Huawei and Gree Electric Appliances-to form a regional talent development steering committee. This committee will issue the "Greater Bay Area

Vocational College Talent Demand Dynamic Report" quarterly, providing precise insights into industry upgrade trends and evolving job market requirements [15]. Additionally, vocational colleges will be encouraged to adjust their program structures based on the principle of "developing emerging fields, enhancing traditional ones, and strengthening distinctive specialties." For instance, they may reduce enrollment in overabundant traditional finance-related programs while prioritizing the addition of new programs in areas such as intelligent manufacturing, cross-border e-commerce, and green energy, ensuring that curriculum design aligns seamlessly with industry demands [16]. Finally, an integrated "post-course-competition-certification" education model will be implemented, incorporating Bay Area companies' job standards-such as industrial robot operation guidelines and cross-border e-commerce workflow protocols-and industry-specific technical benchmarks into the curriculum framework. This approach will reinforce core skills through skill competitions and professional certifications, including initiatives like the "1+X" Cross-Border E-Commerce Operation Certificate, thereby bridging the gap between education and real-world industry needs. Cultivating professional competencies such as collaboration and innovative thinking [17]. Establishing a cross-regional talent supply-and-demand matching platform for the Greater Bay Area, integrating the "Yue Employment" platform with employment service resources from Hong Kong, China and Macao, China. The platform will host more than four industry-specific talent matchmaking events annually and develop an advanced online intelligent matching system. This system will leverage graduates' skills and strengths alongside employers' job requirements to deliver highly targeted recommendations, thereby reducing the costs associated with talent recruitment and matching.

3.2. Regional Policy Coordination Mechanism: Breaking Down Institutional Barriers, Strengthening Support and Safeguards

Promote coordinated employment policies among Guangdong, Hong Kong, China, and Macao, China by aligning occupational qualification recognition standards and streamlining academic credential verification processes. Simplify cross-regional employment procedures such as household registration transfers and social security integration to remove institutional barriers [9]. Establish a government-led, cross-regional employment coordination body to clearly define responsibilities among stakeholders, ensuring unified planning for higher vocational talent development, efficient allocation of employment services, and effective implementation of relevant policies-thus fostering collaborative synergy [18]. In line with the requirements of the "Guangdong-Hong Kong-Macao Greater Bay Area Talent Collaboration Development Plan (2023-2025)," introduce targeted support policies: Provide a one-time employment subsidy of 5,000 yuan per graduate to strategic emerging industry enterprises in the Greater Bay Area that hire higher vocational graduates; offer a monthly living allowance of 800 yuan for up to one year to higher vocational graduates employed across regions (including Hong Kong, China and Macao, China); and extend comprehensive policy support, including entrepreneurship guarantee loans of up to 200,000 yuan and tax incentives, to graduates pursuing grassroots-level employment or engaging in innovation and entrepreneurship initiatives-thereby strengthening policy safeguards across the board [19].

3.3. School-Enterprise Collaborative Education Mechanism: Deepening Industry-Education Integration to Enhance Adaptability

Following the requirements of the "Implementation Plan for Empowering and Enhancing Industry-Education Integration in Vocational Education (2023-2025)," we are building deeply integrated school-enterprise collaboration models, promoting training formats such as "order-based classes," "industry colleges," and the "modern apprenticeship system." This initiative encourages higher vocational colleges to jointly establish practical training bases, co-create teaching teams, and collaboratively develop

curriculum frameworks with core enterprises in the Greater Bay Area's industrial chains [20]. For instance, Guangzhou Nansha Cross-Border E-commerce Industrial Park has partnered with a higher vocational college to co-establish the "Cross-Border E-commerce Industry College," enabling a seamless transition from enrollment to employment—students are hired upon admission and graduate ready for immediate placement [21]. To foster two-way knowledge exchange, we mandate that technical experts from partner companies make up at least 30% of the teaching faculty in vocational programs, actively participating in curriculum design and assessment processes. Additionally, we encourage vocational educators to spend at least two months annually immersed in industry settings, engaging in technological research and contributing to production process improvements [12]. Furthermore, we have introduced the "Greater Bay Area Industry Practice Project," integrating real-world enterprise production tasks into hands-on training curricula. Graduates are also encouraged to participate in internships focused on key projects within the Greater Bay Area, helping them gain early exposure to industry culture and job-specific demands [22]. Finally, we've established a collaborative evaluation system for industry-education partnerships, using graduates' job fit rates and employer satisfaction as primary benchmarks to ensure that educational outcomes align precisely with industry needs [23].

3.4. Employment Service Support Mechanism: Precise Empowerment, Optimized Adaptation and Assurance

Develop an integrated employment information service platform for higher vocational graduates in the Greater Bay Area by consolidating job resources from Guangdong's "Yue Employment" platform, the Labour Department of Hong Kong, China (Interactive Employment Service), and the Employment and Vocational Training Information Network of Macao, China. The platform will feature functional modules such as corporate recruitment postings, policy updates, industry insights, and career assessments [10]. Leveraging big data and AI technologies, we'll build a supply-and-demand matching model that analyzes graduates' majors, skills, and job preferences alongside employers' specific role requirements, enabling precise job recommendations. Our goal is to reduce the average graduate job search timeline to within 1.5 months [3]. To further enhance employment support services, we'll implement a "general + specialized" curriculum model: general courses will cover essential topics like resume writing and interview techniques, while specialized courses will focus on key areas such as understanding the Greater Bay Area's industrial landscape, interpreting cross-border employment policies, and guiding career planning and development [24]. Additionally, we'll establish a personalized "one-on-one" counseling and mentoring system, offering graduates tailored advice on Hong Kong, China and Macao, China employment policies, career positioning, and more-reaching over 80,000 students annually [25]. Finally, we'll set up a robust graduate career tracking mechanism, conducting regular follow-up surveys with graduates who have been employed for 1-3 years. This initiative will provide ongoing support, including guidance on safeguarding cross-regional employment rights, access to skills-enhancement training, and opportunities for innovation and entrepreneurship, creating a comprehensive, full-cycle support system spanning employment, career growth, and continuous professional development.

4. Closing Remarks

4.1. Research Summary

The coordinated development of the Guangdong-Hong Kong-Macao Greater Bay Area has created vast opportunities for employment opportunities for higher vocational graduates. However, at its core, the issue of employment mismatch stems from several key challenges: an asynchronous alignment between talent supply and industry demand, insufficient regional collaboration and resource integration, a misalignment between

educational systems and job market needs, and inadequate support services and development safeguard-these issues collectively highlight deep-rooted contradictions. This study, grounded in the unique context of the Greater Bay Area's "One Country, Two Systems, Three Customs Territories," addresses critical concerns such as imbalances in supply-demand matching, weak regional coordination, gaps in the education system, and limited service support. To tackle these challenges, we have developed a four-dimensional employment adaptation mechanism encompassing "Supply-Demand Alignment, Policy Coordination, Industry-Education Collaboration, and Service Support." Anchored by industry needs, underpinned by policy synergy, driven by integrated industry-education partnerships, and fortified by precise service delivery, this mechanism clearly defines the collaborative responsibilities of government, higher vocational institutions, enterprises, and industry associations, offering a systematic solution to address the structural employment challenges faced by higher vocational graduates.

4.2. Practical Outlook

Moving forward, it is essential to continuously deepen policy coordination among Guangdong, Hong Kong, China, and Macao, China, accelerating the implementation of initiatives such as mutual recognition of professional qualifications and seamless social security integration-measures that will enhance the practicality and adaptability of these mechanisms. Vocational colleges should leverage these mechanisms as a guiding framework to further refine their program structures, deepen the integrated "post-course-competition-certification" reform, and strengthen the development of industry-focused institutes, while fostering even closer partnerships with enterprises in the Greater Bay Area. Additionally, by relying on an integrated employment information platform, institutions must continually enhance their comprehensive, full-cycle employment services and robust career-development tracking system. We look forward to collaborative efforts from all stakeholders to drive up the proportion of vocational graduates securing cross-regional employment to over 10%, while boosting the job-market alignment rate for emerging industry roles beyond 80%. This will empower graduates to thrive and contribute meaningfully within the vibrant economic landscape of the Greater Bay Area. Now, higher-quality and more sustainable jobs will fully unlock the value of technically skilled talent, injecting lasting momentum into the region's high-quality economic and social development.

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