



# Navigating Global Value Chain Restructuring: A Comparative Study of VET Internationalization Models and the "Embedded" Governance Strategy in Guangdong

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**Abstract:** Global value chains (GVCs) are shifting from efficiency-driven models to ones emphasizing security, resilience, and sustainability. This transition exacerbates structural mismatches in technical skill provision, hindering regional industrial upgrading. Through the lens of GVC restructuring and skill governance, this paper compares two internationalization pathways. Germany's "institutionalized export" model — based on its Dual System and institutional coupling — delivers standardized qualifications for transnational skill coherence. In contrast, U.S. community colleges pursue "elastic adaptation", using modular credits and micro-credentials for labor market agility. Given Guangdong's ambition to ascend the GVC as a global manufacturing hub, the paper proposes an "Embedded Internationalization" framework. It combines industry-led demand signals, co-developed standards, and digital twin pedagogy.

**Keywords:** GVC Reconstruction; Vocational Education Internationalization; Path Comparison; Guangdong Strategy; Skill Governance; Institutional Coupling

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## 1. Introduction: The Paradigm Shift in Global Value Chains and the Emergence of Skill Governance

The onset of the second decade of the 21st century represents a significant inflection point in the global industrial division of labor. The confluence of intensifying geopolitical hedging, the acceleration of Industry 4.0, and the rigid constraints of the "Green Deal" has forced a radical reconfiguration of Global Value Chains (GVC). We are witnessing a transition from traditional globalization toward "Regionalization", "Near-shoring", and "Friend-shoring" (Xiang, & Yu, 2021). In this structural transformation, the conventional "Smile Curve" is being redefined. The core competitive factor is no longer simply labor cost arbitrage but the accessibility of high - density Skill Capital, which acts as the foundation for supply chain resilience. Vocational Education and Training (VET) functions as a critical nexus between education and industry. It has moved beyond its traditional role. It now serves as a strategic lever for national engagement in global skills governance. For Guangdong Province — the vanguard of China's reform and an integral node in the global manufacturing network — the stakes are exceptionally high. Amid the restructuring of Global Value Chains (GVCs), Guangdong faces dual pressures. These include disengagement from low-end segments and strategic constraints in accessing high-end activities. Consequently, it is imperative to transform vocational education and training (VET) from a passive recipient of international standards into an active architect of global skill solutions to sustain the global preeminence of "Made in Guangdong".

## 2. Theoretical Framework and Global Benchmarking: Institutional–Market Logic Divergence

Identifying Guangdong's optimal pathway necessitates analyzing prevailing models of vocational education and training (VET) internationalization. These models are not mere policy choices; they are institutionally embedded in distinct "Varieties of Capitalism,(VoC)".

### 2.1 The German "Dual System": Institutionalized Export through Institutional Coupling

The German model exemplifies a "Collective Skill Formation" system. Its internationalization follows an institutionalized export pathway, transplanting the entire Vocational Education and Training (VET) ecosystem — not just curricula.

Mechanism of Institutional Coupling: The German model rests on a tripartite governance structure involving the state, chambers of commerce (AHK), and trade unions. This arrangement is codified in the Vocational Training Act, ensuring vocational training complies with stringent legal standards and aligns with industrial demands (Song, 2024). In

internationalization, Germany deploys the AHK's global network to accredit "German-standard" training centers worldwide. Consequently, mechatronics technicians in Foshan or Mexico City achieve proficiency equivalent to those in Stuttgart.

Advantages for Global Value Chain (GVC) Resilience: By emphasizing standard consistency, the German model reduces transaction costs for multinational corporations (MNCs). Amid GVC reconfiguration, this consistency functions as a "trust anchor" for complex industrial ecosystems. However, it often entails institutional rigidity and elevated implementation costs.

## **2.2 The American "Community College" Model: Market-Driven Elastic Adaptation**

Contrast with the German Model: The U.S. approach reflects a Liberal Market Economy (LME). Its internationalization emphasizes elastic adaptation and the commodification of education.

Mechanism of Market Responsiveness: American community colleges operate as autonomous entities, framing internationalization through an "Education-as-a-Service" (EaaS) lens. They prioritize short-term certificates, micro-credentials, and "2+2" articulation pathways (Li et al., 2022). This modular design facilitates rapid curriculum updates to meet sector-specific demands in emerging fields like FinTech and BioTech.

Logic of Service Trade: The U.S. treats vocational education and training (VET) as a tradable service. Its adaptability yields high efficiency in "efficiency-oriented" global value chain (GVC) segments marked by fast labor turnover and technological flux. However, the lack of a unified national standard often leads to fragmented skill recognition, particularly in traditional heavy industries.

## **3. Structural Obstacles: Assessing the "Bottleneck" in Guangdong's VTE Internationalization**

Despite Guangdong possessing the largest VET system in China, its ability to service the reconstructed GVC is hampered by deep-seated structural dilemmas.

### **3.1 The "Decoupling" of Industry-Education Integration in the Global Context**

Although "Industry-Education Integration" is a key domestic policy priority, its international implementation often falls short of intended outcomes. Many Guangdong vocational education and training (VET) institutions pursue "superficial internationalization" — importing foreign textbooks or organizing brief student exchanges — without aligning with the overseas operational needs of Guangdong's leading enterprises, such as Huawei, BYD, or Midea. As these firms shift production to Southeast Asia or Eastern Europe, they frequently encounter local VET systems incapable of delivering synchronized training. This mismatch generates a "skill vacuum" in overseas Chinese-funded industrial parks.

### **3.2 The "Glass Ceiling" of Standard Recognition**

Guangdong's VET standards are technically strong in sectors such as 5G and electronic manufacturing, yet they exhibit "international silence". A significant misalignment persists between Guangdong's vocational qualifications and global meta-frameworks like the European Qualifications Framework (EQF) and the ASEAN Qualifications Reference Framework (AQRf). The absence of mutual recognition constrains the global mobility of Guangdong-trained personnel and erodes the brand equity of its vocational credentials in international labor markets.

## **4. Strategic Reconfiguration: The "Embedded Internationalization" Approach for Guangdong**

To surmount these challenges, Guangdong is required to integrate the "Institutional Rigor" of Germany with the "Market Agility" of the United States, thereby formulating a "Third Way" for the internationalization of vocational education and training (VET).

### **4.1 Implementation of the "Industry-First" Overseas Campus Model**

Guangdong should move beyond the "School-to-School" cooperation model and adopt an "Enterprise-VET Institution-Industrial Park" trinity. The "Guangdong Academy" Strategy: Leveraging the "Luban Workshop" brand, Guangdong should establish "Skill Hubs" directly inside overseas industrial parks. These hubs should utilize the "Standard Export" model (Song, 2024), where the curriculum is co-developed with the lead enterprise and the certification is recognized by both the host country and the Chinese authorities. Digital Twin Pedagogies: Guangdong can harness its strengths in artificial intelligence (AI) and 5G to develop virtual simulation laboratories. These labs allow overseas students to perform hands-on operations on advanced equipment situated in Guangdong. This approach effectively mitigates hardware limitations

prevalent in developing countries.

## 4.2 Constructing a "Flexible and Reciprocal" Qualifications Interface

Drawing from the American experience, Guangdong must lead the construction of a regional "Credit Bank" and a "Skill Passport".

GBA Qualifications Framework (GBA-QF): Guangdong should first harmonize standards within the Greater Bay Area (linking with Hong Kong and Macau) as a "Beta Test" for international standards.

Micro-Credentialing for Global Chains: In response to the rapid shift in GVC technology, Guangdong should promote "One Test, Multiple Certificates" (Wang, 2024), allowing students to earn international industry-recognized certifications (e.g., AWS, Cisco, FANUC) alongside their local diplomas.

## 4.3 Enhancing the "Skill Governance" Ecosystem

Internationalization requires a shift from "Administration" to "Governance".

The Role of Trade Associations: Following the German example, Guangdong should empower industry associations (like the Guangdong Manufacturing Association) to act as the primary auditors of international vocational programs.

Policy Support: The government ought to offer fiscal incentives to enterprises participating in "Skill-for-Trade" programs, in which vocational training is integrated with infrastructure or machinery exports.

## 5. Conclusion: Advancing the "Guangdong Solution" for Global Skills Governance

The reconfiguration of global value chains signifies a structural transformation in the world economic order. In vocational education, this necessitates dismantling institutional–enterprise boundaries to enable value chain integration. Guangdong's VET internationalization must shift from follower to solution provider. This requires deep integration with global industrial systems, alignment of local standards with international qualifications, and strategic use of digital technologies. Such measures position Guangdong's VET as a pivotal enabler of the Belt and Road Initiative. By integrating Germany's institutional coherence with U.S.-style market responsiveness, Guangdong can enhance "Made in Guangdong" competitiveness and advance a robust "China Solution" for global technical skills governance under uncertainty.

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