Original Research Article

Research on the construction of practical teaching system for logistics management based on the enhancement of employment competitiveness

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Abstract: The rapid development of the logistics industry demands higher practical competencies, yet the practical teaching system in logistics management education still faces challenges such as misalignment with industry needs, insufficient faculty expertise, and inadequate industry-education collaboration. This paper analyzes curriculum structures, industry-academia cooperation, and skill transformation, proposing countermeasures including a hierarchical practical curriculum, cultivating "dual-qualified" teachers, enhancing industry-education platforms, and improving employment-oriented evaluation. These strategies aim to bridge the gap between education and employment, offering pathways for optimizing talent cultivation.

Keywords: Logistics management; Practical teaching system; Employment competitiveness; Industry-education integration

1. Introduction

Amid global industrial chain restructuring and the deepening of the digital economy, the logistics industry is rapidly transitioning toward intelligence and sustainability, driving a surge in demand for high-skilled, application-oriented professionals. However, higher education institutions still grapple with a "supply-demand mismatch" in logistics management talent cultivation: enterprises consistently report that graduates lack practical competencies to adapt to emerging fields such as smart warehousing and cross-border supply chains, while traditional practical teaching systems remain theory-centric, with curricula lagging behind technological advancements and superficial industry-academia collaboration. This contradiction intensifies against the backdrop of coexisting "employment challenges" and "labor shortages," compelling reforms in education to prioritize vocational capability. Consequently, reconstructing a practical teaching system oriented toward employment competitiveness is both an urgent need to enhance talent supply quality and a critical pathway to deepen industry-education integration and support regional economic development[1].

2. Analysis of the current situation of the practical teaching system of logistics management

The practical teaching system in logistics management has evolved unevenly over the past two decades, struggling to align with the industry's rapid technological and operational shifts. In the early 2000s, logistics programs globally focused on foundational theories, with practical training accounting for less than 20% of curricula, as reported by OECD. By 2015, industry surveys revealed a growing disconnect: only 35% of employers rated graduates' operational skills as adequate, highlighting deficiencies in emerging areas like data analytics. Despite increased emphasis on practical modules post-2010, progress remained sluggish. By 2023, hands-on training hours rose to 34% in Western programs but stagnated at 28% in Asia, with developing regions further lagging due to infrastructure gaps—e. g., African institutions reported just 15% access to automated warehouse labs versus 65% in the U. S[2].

Technological adoption in teaching has also lagged. While IoT, AI, and blockchain revolutionized logistics

post-2015, academic simulations remained anchored in traditional models until the late 2010s. A 2022 MIT study found that 70% of university case studies failed to incorporate real-time supply chain analytics or digital twin technologies, critical for modern roles. Industry-academia collaboration, though expanding by 40% globally since 2015, often lacked depth: only 30% involved technical co-development, per World Bank data, with most partnerships limited to superficial internships. The COVID-19 pandemic exacerbated gaps, as logistics digitization accelerated, yet 60% of programs in 2021 lacked modules on crisis-responsive supply chains, leaving graduates unprepared for disruptions[3].

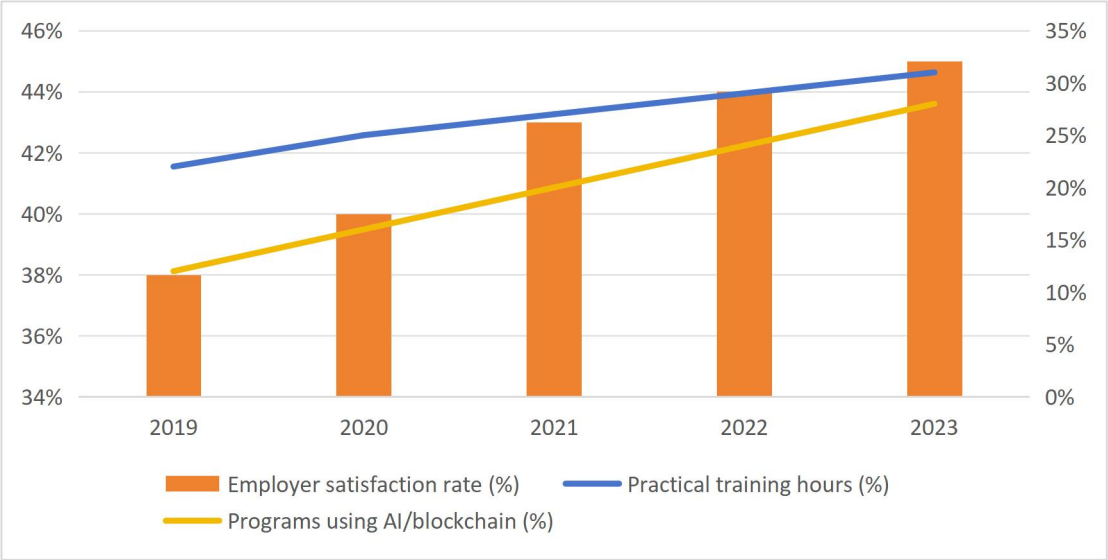

Figure 1. Annual trends in logistics management education (2019–2023).

3. The main problems of logistics management practice teaching system

3.1. Disconnection between practical teaching and industry demands

Practical teaching in logistics management often fails to reflect the evolving needs of the modern logistics industry. Curricula remain heavily reliant on outdated operational frameworks, neglecting emerging areas such as smart warehousing, sustainable supply chains, and digitalized inventory systems. Many programs emphasize theoretical models over hands-on training in technologies like AI-driven logistics optimization or blockchain-enabled transparency, which are now critical in industry settings. This misalignment leaves graduates unfamiliar with real-world tools and workflows, reducing their readiness to address complex challenges such as supply chain disruptions or cross-border coordination. Additionally, collaboration with industry stakeholders in curriculum design is often superficial, resulting in training scenarios that oversimplify dynamic market demands[4].

3.2. Insufficient practical expertise among faculty

A significant portion of logistics management educators lack direct industry experience, limiting their ability to bridge theoretical concepts with practical applications. Many instructors prioritize textbook-based instruction over teaching operational strategies derived from real logistics environments, such as automation integration or risk mitigation in global supply chains. This disconnect is compounded by limited opportunities for faculty to engage in industry projects or upskill in cutting-edge technologies. Consequently, students are seldom exposed to problem-solving approaches used in contemporary logistics roles, such as data-driven decision-making or lean logistics practices, which are essential for career readiness.

3.3. Underdeveloped practical bases and weak industry-Academia collaboration

Practical training infrastructure in logistics programs frequently lags behind industry standards, with outdated equipment and insufficient access to simulation tools for modern warehouse management or transportation optimization. Many institutions lack dedicated labs replicating real-world logistics ecosystems, such as IoT-enabled distribution centers or last-mile delivery networks. Furthermore, partnerships with enterprises often remain transactional—limited to sporadic internships or guest lectures—rather than fostering deep collaboration in curriculum co-development or joint research. Without immersive, technology-augmented practice environments and sustained industry input, students struggle to cultivate the technical proficiency and adaptability required in today's logistics sector.

4. Solutions to optimize the practical teaching system of logistics management

4.1. Building a "Demand-driven, tiered progressive" practical curriculum system

A three-phase curriculum system should align closely with industry demands. The introductory phase focuses on foundational skills through simulated logistics scenarios (e. g., warehouse management, transportation scheduling), using standard tools like WMS and TMS to enhance operational proficiency. The intermediate phase integrates real enterprise projects, such as designing logistics strategies for e-commerce sales events or optimizing supply chain nodes for manufacturers, requiring students to participate in end-to-end problem-solving. The advanced phase emphasizes complex challenges, such as designing carbon-neutral logistics networks or restructuring global supply chains under trade regulations, fostering interdisciplinary systemic thinking. Curriculum updates must be guided by a joint industry-academic committee, annually revising content to reflect technological advancements and integrating enterprise certification standards for assessment[5].

4.2. Developing "Dual-qualified" faculty and strengthening practical teaching competence

Enhance faculty expertise through dual theoretical and practical capacity building. First, implement a "faculty immersion" program, requiring teachers to work in logistics enterprises for 1-2 months annually, engaging in projects like smart warehouse optimization or digital supply chain transformation. Second, establish a "industry mentor" system, inviting senior professionals (e. g., logistics directors) as adjunct faculty to co-develop case studies and supervise capstone projects. Third, create continuous training partnerships with industry associations to update teachers' skills in tools like digital twins or RPA automation. Additionally, institutionalize incentives by linking practical achievements (e. g., enterprise project outcomes) to promotion criteria, driving the transition toward application-oriented teaching.

4.3. Deepening industry-education integration to build multidimensional collaborative platforms

Develop an ecosystem of industry-academia collaborative platforms. First, co-establish "productive training bases" on campus, replicating enterprise smart warehouse environments with AGVs and RFID systems for hands-on operations. Second, launch "virtual simulation platforms" using real-time enterprise data to simulate crisis scenarios like supply chain disruptions. Third, form "regional logistics innovation hubs" with governments and enterprises to tackle industry cha·llenges, such as designing automated customs systems for ports or low-waste solutions for agriculture. Sustainable collaboration requires mechanisms like equipment donations from enterprises in exchange for academic R&D support, managed by joint teams to ensure alignment with industrial needs.

5. Conclusion

This study highlights systemic gaps in logistics management education, notably the disconnect between practical training and industry evolution, faculty expertise shortages, and weak school-run enterprise collaboration. Proposed solutions—demand-driven curricula, dual-qualified faculty programs, and technology-enhanced school-run enterprise platforms—prioritize aligning skills with real-world needs through tools like IoT and collaborative innovation.

Future success hinges on integrating AI-driven training simulations and policy frameworks that incentivize school-run enterprise co-development. Establishing measurable outcomes for graduate employability and industry impact will further validate these reforms. Ultimately, collaboration between educators, enterprises, and policymakers is essential to transform logistics education into a driver of workforce and economic resilience.

Project

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