ISSN: 2710-0170

A Study on the Pathways for Teaching Reform in the "Supply Chain Management" Course in the Context of New-Quality Productive Forces

Libo Li [1], Xudong Zhang [2]

[1]Department of Tourism Management, The Graduate School of Pai Chai University, Daejeon, Korea

[2]School of Economics, Sichuan University of Science & Engineering, Yibin644000, China.

Abstract

The new quality of productive forces presents entirely new challenges to the competency structure of supply chain professionals. This paper systematically analyzes the prominent issues currently present in university "Supply Chain Management" courses across teaching philosophy, content, methods, assessment, ideological and political education, and industry-education integration. Guided by the concept of "new-quality education," this paper constructs a systematic reform pathway encompassing six dimensions: shifting teaching objectives toward the integration of competencies and values; incorporating cutting-edge technologies into course content and ensuring dynamic updates; innovating teaching methods through a "human-machine collaboration + blended learning" model; implementing a value-added assessment system empowered by digital technology; naturally integrating ideological and political education throughout the course by focusing on the central theme of "supply chain security and responsibility"; and establishing a "government-university-enterprise" value co-creation platform through industry-education integration. Concurrently, this paper designs a collaborative support mechanism across four dimensions—organization, faculty, resources, and institutional frameworks—aiming to provide an operational theoretical framework and practical guide for the systematic reform of the "Supply Chain Management" course in the context of new-quality productive forces.

Keywords

New-quality productive forces; supply chain management; curriculum reform; human-machine collaboration; value-added assessment; integration of industry and education.

1. Introduction

1.1. Research Background

New-quality productive forces are a form of contemporary advanced productive forces characterized by digitalization, intelligentization, and networking, and driven by revolutionary technological breakthroughs, innovative allocation of production factors, and in-depth industrial transformation and upgrading. Since 2023, China has explicitly called for accelerating the development of new-quality productive forces to drive high-quality economic development. Against this backdrop, supply chains—as the critical link connecting production, distribution, and consumption—are rapidly evolving toward smart, green, and resilient supply chains. This evolution places new demands on supply chain professionals in terms of digital literacy, systems thinking, collaborative innovation capabilities, and human-machine collaboration skills.

ISSN: 2710-0170

"Supply Chain Management" is a core course for majors in logistics management and business administration, playing a vital role in cultivating versatile professionals capable of meeting the demands of modern industry. However, the course still lags significantly in terms of teaching philosophy, curriculum structure, teaching methods, and assessment mechanisms. Specifically: the course content places too much emphasis on traditional theory and does not sufficiently cover emerging technologies such as AI forecasting, digital twins, and blockchain-based traceability; Teaching methods are primarily lecture-based, resulting in low student engagement, while blended learning remains largely superficial; assessment emphasizes outcomes over the learning process, making it difficult to accurately reflect students' actual skill development; the integration of ideological and political education elements feels forced, and the depth of industry-academia collaboration is insufficient, with a widespread disconnect where "universities are enthusiastic but enterprises are lukewarm." These issues have led to a growing mismatch between course offerings and industry demands, creating an urgent need to systematically advance the reform of the "Supply Chain Management" curriculum guided by new-quality productive forces.

1.2. Current State of Research at Home and Abroad

In terms of international research, developed countries began exploring reforms in supply chain management curricula relatively early. The Council of Supply Chain Management Professionals (CSCMP) in the United States continuously updates its competency standards, emphasizing modules such as data analysis, risk management, and sustainability. European universities generally adopt case-based teaching and project-based learning, bringing real-world supply chain challenges from businesses into the classroom. Regarding teaching methods, blended learning and the flipped classroom have been widely proven to enhance students' self-directed learning abilities. Zheng et al. (2022) found that ICT-supported flipped classroom interactions help enhance students' cognitive regulation abilities[1]. Lai et al. (2022) noted that integrating mobile technology into the classroom can effectively trigger students' self-directed learning behaviors[2]. In the field of assessment, value-added assessment has been applied in vocational education in the UK and the US, measuring the "net effect" of instruction on student competency growth by controlling for initial student differences. Furthermore, regarding industry-education integration, Germany's "dual system" and the UK's "degree apprenticeship" provide mature models for collaborative talent development between schools and enterprises. Overall, foreign research places greater emphasis on competency-based approaches, data-driven methodologies, and industry alignment; however, systematic research on educational reform targeting the China-specific concept of "new-quality productive forces" remains a gap in the literature.

In terms of domestic research, scholars have explored reforms to the "Supply Chain Management" course from multiple perspectives in recent years. In the field of ideological and political education in the curriculum, Gao Qiuping (2023) used this course as a case study to explore specific pathways for integrating ideological and political elements into key knowledge points, practical training, case studies, and assessments, emphasizing the importance of enhancing instructors' ability to implement ideological and political education and of striking the right balance in the curriculum[3]. Regarding blended learning, Li Yang et al. (2025) developed a teaching design based on self-regulation theory, comprising "pre-class guided learning—in-class interaction—post-class assessment." Empirical evidence indicates that this model significantly improved students' learning performance[4]. Regarding digital technology-enabled assessment, Wang Yifang (2026), using "Digital Supply Chain Operations" as a case study, proposed a four-in-one value-added assessment framework comprising "philosophy, network, technology, and standards. [5]" At the industry-education integration level, Chen You (2024) analyzed the challenges and countermeasures for vocational education to drive supply

ISSN: 2710-0170

chain innovation and value chain upgrading from the perspective of new-quality productive forces, pointing out issues such as the disconnect between course content and corporate needs, as well as insufficient faculty resources[6]. Furthermore, Pan Jingjing et al. (2024) found through their research that traditional culture education in higher education institutions suffers from issues such as a low number of courses offered and students' superficial understanding[3]. Although not directly related to supply chain courses, these findings reflect common obstacles in higher education curriculum reform. Zhai Meirong (2023), on the other hand, explored the mission of vocational education in industrial and supply chains and the pathways for Party-building leadership from a macro perspective[8].

Overall, domestic research has covered several hot topics, including ideological and political education in the curriculum, blended learning, value-added assessment, and industry-education integration; however, the following shortcomings remain: First, most studies focus on a single dimension and lack systematic reform designs that treat the new quality of productive forces as an overarching framework; second, research on the competency profile of the "new workers" required by the new quality of productive forces and its translation into course instruction has not yet been sufficiently in-depth; third, a comprehensive reform pathway—spanning conceptual renewal, content restructuring, methodological innovation, evaluation reform, integration of ideological and political education, and industry-education collaboration—has yet to be established. Therefore, this paper aims to construct a systematic pathway for the reform of the "Supply Chain Management" course within the context of new-quality productive forces, thereby addressing the aforementioned research gaps.

1.3. Research Objectives and Significance

The study aims to systematically analyze the primary issues currently facing the teaching of the "Supply Chain Management" course, guided by the theory of new-quality productive forces. It seeks to establish a reform framework encompassing six dimensions—philosophy, content, methodology, assessment, ideological and political education, and industry-education integration—and proposes corresponding support mechanisms and approaches for evaluating the effectiveness of these reforms.

Theoretical Significance: Introducing the theory of new-quality productive forces into the field of curriculum reform research enriches the research perspectives on curriculum theory in vocational and higher education; it integrates disparate topics such as curriculum-based ideological and political education, blended learning, value-added assessment, and industry-education integration to form a theoretical framework for coordinated reform.

Practical Significance: To provide replicable and actionable pathways for the reform of the "Supply Chain Management" course in higher education institutions, helping instructors update their teaching philosophies, optimize instructional design, and enhance educational outcomes; to provide curricular support for cultivating supply chain professionals capable of meeting the demands of new-quality productive forces, thereby serving the national strategy for the security and high-quality development of industrial and supply chains.

2. The Practical Implications of New-Quality Productive Forces for the Reform of the "Supply Chain Management" Course

2.1. The Essence and Characteristics of New-Quality Productive Forces

New-quality productive forces represent an advanced form of productive capacity driven primarily by technological innovation, characterized by digitalization, intelligence, and networking, and breaking away from traditional models of economic growth and pathways of productive force development. Chen You (2024) points out that the "new" in new-quality productive forces is primarily manifested in four dimensions[6]: first, new workers—that is, a

ISSN: 2710-0170

new type of talent capable of fully utilizing modern technology, adapting to high-end intelligent equipment, and possessing the ability to rapidly update their knowledge—distinct from traditional technical workers who primarily engage in simple, repetitive labor; second, new objects of labor, which include not only high-end intelligent equipment in physical form but also new factors of production such as data; third, new tools of labor, such as artificial intelligence, virtual reality and augmented reality devices, and automated manufacturing equipment; and fourth, new infrastructure, including large-scale scientific facilities, computing power centers, and the Industrial Internet—an infrastructure system adapted to the paradigm shift in scientific and technological innovation. These four dimensions are interrelated and together constitute the complete framework of new-quality productive forces.

From an industrial perspective, new-quality productive forces are accelerating the transformation of supply chains toward greater intelligence, sustainability, and resilience. Technologies such as the Internet of Things, big data, blockchain, and digital twins are deeply integrated into every stage of the supply chain, enabling data-driven and intelligent decision-making in areas such as demand forecasting, inventory optimization, route planning, and risk early warning. This transformation not only reshapes the operational model of supply chains but also places new demands on the knowledge base, skill sets, and mindset of industry professionals.

2.2. New Competency Requirements for Supply Chain Professionals Driven by New-Quality Productive Forces

Against the backdrop of new-quality productive forces, the competency requirements for supply chain management professionals are undergoing a clear trend of iterative upgrading. Based on a review of relevant literature and industry practices, these requirements can be summarized into the following four core competencies:

(1) Data-Driven Decision-Making. The core of a smart supply chain lies in replacing experience with data and optimizing decisions through algorithms. Practitioners must possess foundational skills in data collection, cleansing, analysis, and visualization, and be able to use business intelligence tools or machine learning models for demand forecasting, inventory optimization, and transportation scheduling, thereby transitioning from “intuitive judgment” to “data-driven management.”

(2) Human-machine collaboration and intelligent tool application capabilities. With the widespread adoption of intelligent equipment such as AI forecasting, digital twins, automated sorting robots, and autonomous delivery vehicles, supply chain professionals must understand the working principles of these tools, their operational boundaries, and how to interpret their outputs. They must be able to efficiently complete tasks in human-machine collaborative environments and possess the ability to communicate and collaborate with technical staff.

(3) Systemic Thinking and Collaborative Innovation. The supply chain itself is a quintessential complex system, characterized by intricate nonlinear interactions among its constituent enterprises. New-quality productive forces require practitioners to possess a holistic perspective, enabling them to identify bottlenecks, risks, and opportunities for collaboration within the supply chain, and to drive integrated optimization across enterprises and processes. Simultaneously, in the face of rapid technological iteration and a volatile market environment, innovative thinking has become the key to overcoming critical bottlenecks.

(4) Awareness of Green Supply Chains and Sustainable Development. New-quality productive forces emphasize high-quality development, and green and low-carbon practices are an inherent part of this. Practitioners need to understand concepts and methods such as carbon footprint accounting, circular logistics, and green procurement, and be able to balance economic benefits with environmental responsibility in supply chain design.

ISSN: 2710-0170

2.3. Analysis of the Current State and Issues in the Teaching of the "Supply Chain Management" Course

In light of these new competency requirements, there is a significant gap in the current teaching of "Supply Chain Management" courses in universities, with issues primarily concentrated in the following five areas.

(1) Teaching content is out of step with cutting-edge developments. Most textbooks and classrooms still focus primarily on traditional supply chain theory, with insufficient coverage of new concepts such as AI forecasting, digital twin simulation, blockchain traceability, and green supply chains. Chen You (2024) points out that course updates have failed to keep pace with technological advancements, resulting in a disconnect between educational content and cutting-edge technology, which creates a "skills gap" between what students learn and what enterprises require[6].

(2) Teaching methods are lecture-based, resulting in low student engagement. In traditional classrooms, instructors deliver knowledge unidirectionally while students passively absorb it, with a lack of interactive components such as case studies, project-based training, and simulation exercises. Research by Pan Jingjing et al. (2024) found that students often lack focus during classes, and their motivation for taking courses is primarily to earn credits rather than driven by interest. Even when blended learning is adopted, issues persist, such as low utilization of online resources and in-person activities that are merely perfunctory[7].

(3) Teaching evaluations prioritize outcomes over processes and lack value-added feedback. Current course evaluations primarily rely on final exams, supplemented by regular assignments and attendance, making it difficult to capture students' competency growth in areas such as data analysis, systematic decision-making, and team collaboration. Wang Yifang (2026) points out that traditional evaluation models struggle to reflect the "net increase" in students' competencies; feedback is delayed, preventing the realization of a real-time closed-loop cycle of "evaluation-diagnosis-optimization[5]."

(4) The integration of ideological and political education into courses is forced and lacks alignment with the discipline. Some instructors simply pile ideological and political content into the classroom, disconnecting it from supply chain expertise. Gao Qiuping (2023) notes that the "timing" of integrating ideological and political education with professional knowledge is crucial; if forced, it fails to achieve educational objectives. Ideological and political elements inherent in the supply chain—such as patriotism, a sense of the bigger picture, respect for the rule of law, and environmental responsibility—are not sufficiently explored[3].

(5) Industry-education integration lacks depth, with a widespread "university-enthusiastic, enterprise-indifferent" phenomenon. University-enterprise cooperation often remains at a superficial level, such as the unveiling of internship base plaques or company visits, while enterprises show low enthusiasm for participating in curriculum development, joint project construction, and mutual faculty appointments. A survey by Chen You (2024) revealed that 64.41% of corporate respondents considered the joint construction of practical training bases to be the most successful form of industry-education integration at present, while modern apprenticeship programs and order-based training received lower approval ratings, indicating that diversified cooperation models have yet to take shape[6].

In summary, new-quality productive forces have imposed urgent new competency requirements on supply chain talent development, yet current curriculum instruction exhibits significant shortcomings in the five aspects mentioned above. Therefore, systematically advancing the reform of the "Supply Chain Management" course guided by new-quality productive forces has become a practical and urgent task.

ISSN: 2710-0170

3. Pathways for Reforming the "Supply Chain Management" Course in the Context of New-Quality Productive Forces

3.1. Updating Our Philosophy: Establishing "New-Quality Education"

Educational philosophy serves as the driving force behind curriculum reform. The traditional "Supply Chain Management" course centers on knowledge transmission, with teaching objectives focused on students' mastery of basic supply chain concepts, classic models, and common strategies. Against the backdrop of "new-quality productive forces," this philosophy is no longer sufficient to meet the industry's demand for versatile, innovative, and development-oriented talent. Therefore, it is necessary to establish the educational objective of "new-quality talent development" and achieve a transformative shift from a "knowledge-centered" approach to an integrated "competency-centered + value-centered" model.

"New-quality education" encompasses three dimensions: First, it is competency-based, prioritizing the development of new-quality competencies such as data-driven decision-making, human-machine collaboration, and systemic innovation, while emphasizing students' ability to solve complex problems in real or simulated supply chain scenarios; Second, it is value-driven, integrating personal development into national strategies for supply chain security and high-quality development, and fostering students' sense of national identity, social responsibility, and professional ethics; Third, development as the priority, focusing on students' potential for continuous growth and emphasizing the cultivation of learning abilities, adaptability, and innovative thinking, enabling them to navigate future technological and industrial transformations.

At the operational level, course objectives documents should be redesigned to clearly define the three categories of objectives—knowledge, competencies, and literacy—and their interrelationships. For example, the knowledge objectives should include "understanding the principles of applying digital twins and blockchain in supply chains"; the competency objectives should include "the ability to use data analysis tools to make inventory optimization decisions"; and the competency objectives should include "possessing a holistic awareness of supply chain risk prevention and a commitment to environmental responsibility." By restructuring the objectives, we provide a roadmap for subsequent reforms in content, methodology, and assessment.

3.2. Content Restructuring: Building a Dynamically Updated Curriculum System

Course content serves as the vehicle for educational reform. Currently, textbooks generally suffer from long update cycles and a disconnect from industry practices. Against the backdrop of new-quality productive forces, new technologies, models, and business formats are constantly emerging in the supply chain sector, necessitating the ability to dynamically update course content.

First, incorporate knowledge points related to new-quality productive forces. Building upon the core modules of traditional supply chain management (procurement, inventory, transportation, distribution, information, etc.), the following cutting-edge topics should be added: First, data-driven demand forecasting, introducing the application of time series analysis and machine learning in forecasting; second, digital twins and supply chain simulation, explaining how to construct virtual supply chain models for strategy testing and optimization; third, blockchain and supply chain traceability, analyzing its value in anti-counterfeiting, compliance, and enhancing transparency; fourth, green supply chains and low-carbon logistics, covering carbon footprint accounting, reverse logistics, and the circular economy; and fifth, supply chain risk management and resilience building, exploring strategies for addressing supply chain disruptions in the context of geopolitical tensions and natural disasters.

ISSN: 2710-0170

Second, we will develop content modules that integrate "job roles, courses, competitions, and certifications." Aligning with the vocational skill level standards for supply chain operations, we will transform typical job tasks into learning projects. For example, we will establish role-based practical training modules such as "Supply Chain Data Analyst," "Inventory Control Specialist," and "Logistics Dispatcher." At the same time, we will incorporate case studies and competition questions from the National Supply Chain Management Competition and Innovation and Entrepreneurship Competitions to promote learning through competition. Furthermore, students are encouraged to obtain professional certifications such as the Supply Chain Management Professional and CPIM, with course content organically aligned with certification exam requirements.

Third, a dynamic content update mechanism co-developed by the school and industry partners is established. Leading enterprises in the sector are invited to participate in curriculum review, and a "Content Update Workshop" is held each semester to adjust the structure of learning objectives based on technological advancements and evolving job market demands. Outdated materials are replaced with real, de-identified corporate data and the latest case studies to ensure that course content remains aligned with the cutting edge of the industry.

3.3. nnovative Approach: Developing a "Human-Machine Collaboration + Blended Learning" Model

Teaching methods are the key to curriculum reform. Traditional lecture-based classrooms struggle to stimulate student initiative and higher-order thinking. We should establish a student-centered, technology-enabled, and blended online-offline "human-machine collaboration + hybrid teaching" model.

During the pre-class preparation phase, instructors use platforms such as Yu Classroom, MOOCs, and Wisdom Tree to assign preparatory tasks, including micro-lecture videos, literature reviews, and preliminary case analysis. Students complete pre-class assessments through these platforms, and instructors adjust the focus of the class based on student performance data. Research by Li Yang et al. (2025) indicates that pre-class preparation helps students clarify learning objectives, stimulates interest in tasks, and lays the foundation for self-regulated learning.

During the in-class interaction phase, a diverse combination of "lecture + discussion + hands-on practice" is employed. The lecture segment focuses on core concepts and common pitfalls, utilizing tools such as Yu Classroom's random roll call, real-time comments, and in-class quizzes to maintain student engagement. The discussion segment organizes group debates around real-world corporate cases or controversial issues (e.g., "How to restructure supply chains amid chip shortages" or "How to balance cost and timeliness in cross-border e-commerce supply chains"). The practical session utilizes supply chain simulation software (such as Logistics Simulator or AnyLogistix) or digital twin platforms, allowing students to compare inventory strategies, optimize transportation routes, and experience the consequences of their decisions in a virtual environment. Human-machine collaboration is manifested through AI-assisted generation of personalized case studies, automated grading of multiple-choice questions, and the delivery of learning resources; instructors, meanwhile, focus on in-depth guidance, addressing questions, and providing value-driven direction.

During the post-class assessment phase, the platform automatically generates student performance reports, including mastery of key concepts, classroom participation, and group contribution. Instructors use these reports to provide individualized tutoring and identify areas for improvement in future sessions. At the same time, students are encouraged to use the platform to review live-stream recordings and access explanations for incorrect answers, enabling self-directed review and the identification and correction of knowledge gaps.

ISSN: 2710-0170

It is important to note that blended learning is not a simple combination of online and offline elements, but rather an organic integration. We should avoid the disconnect between "offline lectures and online practice exercises," ensuring that online and offline content complement each other, share common objectives, and employ coordinated assessment methods.

3.4. Assessment Reform: Implementing Value-Added Assessment Empowered by Digital Technology

Educational assessment serves as the guiding principle for curriculum reform. Traditional assessment, which primarily relies on end-of-term exam scores, focuses on students' absolute performance rather than relative progress, making it difficult to reflect the "net effect" of teaching on students' skill development. Against the backdrop of new-quality productive forces, we should implement value-added assessment empowered by digital technology.

A three-dimensional value-added indicator system covering "cognition, skills, and competencies" should be established. Drawing on the research of Wang Yifang (2026), the first-level dimensions include digital cognition and theoretical value-added, operational skills and decision-making value-added, and professional competencies and ethical value-added. Second-level indicators are further refined; for example, the "skills" dimension includes "supply chain data visualization and analysis capabilities," "digital twin modeling and simulation optimization capabilities," and "multi-stakeholder collaborative decision-making capabilities." The third-level observation points consist of quantifiable behavioral indicators, such as "KPI improvement rate before and after optimizing solutions on the simulation platform" and "frequency and quality of contributions during team collaboration."

Multi-scenario data collection. The Learning Management System (LMS) is used to record online learning behaviors (video viewing duration, quiz scores, discussion participation); operation logs and decision sequences are automatically collected via the simulation platform's API interface; IoT devices in smart classrooms can record behaviors such as attendance and interactions; and the industry-education integration platform interfaces with corporate project management systems to obtain data on student performance during corporate internships.

Value-Added Calculation and Visualized Feedback. By employing a Hierarchical Linear Model (HLM) or a simple residual analysis method to account for differences in students' initial competencies, the system calculates "net value-added" for each competency dimension. It generates personalized growth profiles, including competency radar charts, growth curves, and alerts for areas of weakness. Evaluation results are presented visually to students, instructors, and administrators, forming a continuous improvement loop of "evaluation–diagnosis–optimization–reevaluation."

3.5. Integration of Ideological and Political Education: Running Through the Main Theme of "Supply Chain Security and Responsibility"

Integrating ideological and political education into the curriculum is a key measure for fulfilling the fundamental mission of fostering virtue through education. Supply chain management courses contain rich ideological and political elements; rather than forcing them in an artificial manner, we should use "supply chain security and responsibility" as the central theme to achieve an organic integration of knowledge transmission and value guidance.

Ideological and political touchpoints should naturally emerge from professional knowledge. When explaining the "bullwhip effect," guide students to develop a holistic perspective and systems thinking, helping them understand that local optimization can lead to overall instability; When analyzing cases such as chip supply disruptions and restrictions on lithography machines, explain the strategic significance of supply chain autonomy and control for national security, inspiring students' sense of mission to serve the nation through science and technology; when teaching green supply chains, reinforce values of sustainable

ISSN: 2710-0170

development and awareness of ecological civilization; and when discussing cases of procurement corruption, cultivate students' understanding of the rule of law, integrity, and professional ethics.

Integrating social hot topics and current events. Cases from the pandemic era, such as the "vegetable supply campaign" and "logistics heroes," vividly illustrate the social responsibility and sense of duty of supply chain professionals, inspiring students' respect for "logistics workers" and boosting their professional confidence. The supply chain stress tests behind the "Double Eleven" shopping festival can guide students to look beyond the surface and cultivate critical thinking.

Integrate ideological and political elements throughout the entire process. Embed ideological and political questions in classroom lectures; present ethical dilemmas in case studies; require students to write green supply chain design reports for practical training projects; and include open-ended ideological and political essay questions in assessments. Through this multi-faceted integration, we achieve the internalization of values.

3.6. Industry-Education Collaboration: Building a Platform for Value Co-creation Among Government, Schools, and Enterprises

The integration of industry and education is the fundamental path to high-quality development in vocational and higher education. Against the backdrop of new-quality productive forces, the reform of supply chain management curricula must extend beyond the campus walls and engage in deep interaction with industry.

Jointly establish industry colleges and city-wide industry-education consortia. Schools should collaborate with local governments, industry associations, and leading enterprises to establish supply chain industry colleges, implementing a council-based governance model. Enterprises should participate in the formulation of talent development plans, curriculum development, the construction of practical training bases, and the mutual appointment of faculty, thereby achieving full-chain coordination across "recruitment—training—employment."

Incorporate real-world corporate projects as the foundation for coursework. Transform corporate supply chain optimization challenges—such as warehouse layout optimization, delivery route planning, and safety stock determination—into practical training assignments. Under the joint guidance of faculty and corporate mentors, students will design solutions, with outstanding proposals potentially adopted and implemented by the companies. This "real-world problem-solving" model can greatly stimulate students' motivation to learn and enhance their practical skills.

Implement a two-way exchange mechanism. On one hand, corporate mentors regularly enter the classroom to deliver specialized lectures, guide project-based training, and participate in thesis defense evaluations; on the other hand, full-time faculty members visit enterprises for on-the-job training to gain frontline experience and apply these insights to teaching. Chen You (2024) points out that it is common for faculty to lack strong training capabilities and sufficient motivation for professional development; therefore, it is necessary to establish institutionalized mechanisms for corporate practice and incentive policies.

Through the systematic implementation of the above six pathways, the "Supply Chain Management" course can achieve a comprehensive transformation from theory to practice, effectively responding to the contemporary demands of new-quality productive forces for talent development.

4. Safeguards for the Implementation of Reforms

To ensure that the reform plan for the "Supply Chain Management" course is effectively implemented and sustained, it is necessary to establish a systematic support mechanism across

ISSN: 2710-0170

four dimensions: organization, faculty, resources, and institutional frameworks. These four elements are mutually supportive and indispensable, collectively forming a solid foundation for the implementation of the reform.

4.1. Organizational Support: Establishing a Sound Leadership and Coordination Mechanism for Curriculum Reform

Organizational support is a prerequisite for the smooth implementation of the reform. First, a "Leadership Group for Supply Chain Management Curriculum Reform" should be established, led by the dean or the vice dean for academic affairs. Members should include the program director, lead instructors, representatives from corporate partners, teaching supervisors, and student representatives. The Leadership Group will be responsible for coordinating the design, implementation, monitoring, and evaluation of the reform plan, holding regular progress meetings, and coordinating solutions to cross-departmental and cross-disciplinary issues encountered during the reform.

Second, a collaborative working mechanism should be established both within and outside the university. Internally, communication with functional departments such as the Academic Affairs Office, the Information Technology Center, and the Laboratory Equipment Office should be strengthened to ensure that conditions such as course scheduling, platform integration, and practical training facilities are in place. Externally, a regular communication mechanism should be established with supply chain industry associations and leading enterprises to promptly obtain information on cutting-edge industry trends and changes in talent demand, and to incorporate this into the curriculum reform process.

Furthermore, a dedicated task force for curriculum reform will be established, comprising sub-groups for content development, technical platforms, evaluation reform, and ideological and political education design. The responsibilities and milestones of each sub-group will be clearly defined, and project-based management will be implemented to ensure that every reform task has designated personnel, clear oversight, and effective implementation.

4.2. Faculty Development: Enhancing Teachers' Digital Literacy and Capacity for Industry-Education Integration

Teachers are the key implementers of curriculum reform, and their alignment with the reform's philosophy and their professional competence directly impact its effectiveness. To address the current challenges faced by some teachers—such as limited proficiency in using digital tools, insufficient industry experience, and limited ability to integrate ideological and political education into teaching—it is necessary to strengthen faculty support in the following three areas.

(1) Implement systematic training. Develop a full-cycle training plan for curriculum teams, covering topics such as the theory of new-quality productive forces, smart teaching tools (Yu Classroom, MOOC platforms, simulation software), data analysis methods, value-added assessment techniques, and the design of ideological and political education within courses. Training should adopt a combined approach of "on-campus professional development + off-campus study visits + corporate internships," with at least one specialized workshop organized each semester.

(2) Establish an industry practice system. Require instructors to accumulate no less than one month of on-the-job training or project collaboration in enterprises every two years, immersing themselves in frontline supply chain operations to gather real-world case studies and data resources. Incorporate this practical experience into annual performance evaluations and professional title promotion criteria to create institutional constraints and incentives.

(3) Form a "dual-qualified" teaching team. Recruit industry experts with extensive practical experience to serve as adjunct professors or course advisors. These experts will collaborate

ISSN: 2710-0170

with faculty members on lesson planning, co-teach classes, and jointly supervise practical training. Through approaches such as "one course, two instructors" and "mentor-apprentice pairings," the theoretical strengths of faculty members will be complemented by the practical experience of industry mentors.

4.3. Resource Support: Developing a Smart Teaching Platform and a Digital Resource Repository

Resource support serves as the material foundation for implementing reforms. Curriculum reforms in the context of new-quality productive forces place higher demands on teaching resources, necessitating a focus on developing the following three types of resources.

(1) Smart teaching infrastructure. Upgrade multimedia classrooms into smart classrooms equipped with interactive whiteboards, multi-screen displays, high-definition recording and broadcasting systems, and IoT sensors to support blended online and offline teaching, as well as the collection of classroom behavior data and real-time feedback. At the same time, ensure sufficient campus network bandwidth to support high-concurrency access to platforms such as Yuketang and MOOCs.

(2) Supply Chain Simulation and Practical Training Platforms. Procure or collaboratively develop supply chain simulation software (such as Logistics Simulator, AnyLogistix, Supply Chain Guru, etc.) to provide a virtual enterprise environment that supports students in practical training operations such as inventory strategy comparison, transportation route optimization, and risk simulation. Universities with the necessary resources may establish digital twin laboratories that interface with real-world enterprise operational data.

(3) Digital Teaching Resource Repository. Following the principles of "modularity, granularity, and reusability," establish a digital resource platform that includes instructional videos, case studies, exercise banks, anonymized corporate data packages, and ideological and political education materials. The repository should operate under a mechanism of open sharing and dynamic updates, with the latest content reviewed and supplemented jointly by the university and industry partners each semester.

4.4. Institutional Safeguards: Improving Evaluation, Incentive, and Quality Monitoring Systems

Institutional safeguards serve as the cornerstone for the long-term success of reform. We must improve institutional frameworks across three key areas: evaluation, incentives, and monitoring.

In terms of evaluation, the implementation of curriculum reform should be incorporated into the performance evaluation system for faculty. Evaluation criteria will include: frequency and effectiveness of teaching platform usage, contributions to updating teaching resources, results of student growth assessments, and engagement in industry partnerships. Additionally, student growth data from these assessments will serve as a key indicator of teaching quality.

At the incentive level, a special teaching award fund for curriculum reform will be established to provide performance-based rewards and honorary recognition to teachers who make outstanding contributions in content innovation, methodological breakthroughs, and industry-education collaboration. Achievements in curriculum development will be recognized as performance outcomes of equal importance to research papers and will be considered in professional title evaluations and job promotions.

At the monitoring level, a three-tier quality monitoring mechanism covering "beginning, mid-term, and end-of-term" will be established. At the beginning of the term, the teaching calendar and reform task list will be reviewed; mid-term sessions will feature student focus groups, faculty self-assessments, and peer classroom observations; and end-of-term evaluations will include an analysis of course objective attainment and a summary of reform outcomes.

ISSN: 2710-0170

Monitoring results will be compiled into written reports to serve as the basis for the next round of reform iterations.

Through coordinated support across the four dimensions of organization, faculty, resources, and institutional frameworks, we can provide sustained, stable, and robust support for the teaching reform of the "Supply Chain Management" course, ensuring that the reform path progresses from design to implementation and from short-term experimentation to a long-term mechanism.

5. Conclusion

Based on the new competency requirements for supply chain professionals posed by the new-quality productive forces, this paper systematically analyzes the core issues currently facing the "Supply Chain Management" course and constructs a systematic solution comprising six major reform pathways and a four-dimensional support mechanism. The research indicates that traditional course models have fallen behind the demands of industrial intelligence and digitalization in terms of content, methodology, and assessment. To address this issue, it is essential to adopt the "new-quality education" philosophy as the guiding principle, driving a comprehensive transformation of course instruction from knowledge transmission to the cultivation of competencies and values.

Specifically, the reform pathways cover the entire process—from goal setting, content updates, methodological innovation, assessment reform, and the integration of ideological and political education to industry-education collaboration. Each component is interconnected and works synergistically to form an organic reform system. To ensure the smooth implementation of this system, a coordinated support mechanism encompassing four key areas—organization, faculty, resources, and institutional frameworks—is indispensable.

The reform framework developed in this paper not only provides a clear practical roadmap for the "Supply Chain Management" course to address the challenges posed by new-quality productive forces, but its integrated and systematic design approach also offers valuable insights for the reform and innovation of other courses in the fields of economics, management, and engineering. Future research and practice may further focus on the dynamic implementation of reform measures in specific teaching contexts, the precise evaluation of reform outcomes using multidimensional data, and the new requirements and opportunities for curriculum reform arising from the continuous evolution of new-quality productive forces.

Acknowledgments

The first author would like to express gratitude for the support from Sichuan Province 2011 Collaborative Innovation Center Yangtze River UpstreamShipping Logistics Collaborative Innovation Center Project (No. XTCX2024B05).

References

[1] Zheng, X. L., Kim, H. S., Lai, W. H., & Hwang, G. J. (2022). Cognitive regulation in ICT-supported flipped classroom interactions: An activity theory perspective. British Journal of Educational Technology, 51(1), 103–130. https://doi.org/10.1111/bjet.13122

[2] Lai, Y., Saab, N., & Admiraal, W. (2022). University students' use of mobile technology in self-directed language learning: using the integrative model of behavior prediction. Computers & Education, 179, 104413. https://doi.org/10.1016/j.compedu.2022.104413

[3] Gao, Q. P. (2023). Teaching reform and reflection on integrating ideological and political education into supply chain management courses. Logistics Engineering and Management, 45(2), 172–174.

ISSN: 2710-0170

[4] Li, Y., Zhao, J., & Wu, W. (2025). Practice and effectiveness evaluation of blended learning design under the background of smart education: taking the course "Logistics and Supply Chain Management" as an example. Logistics Engineering and Management, 47(4), 168–173.

[5] Wang, Y. F. (2026). Research on value added evaluation of vocational education curriculum empowered by digital technology: Taking "Digital Supply Chain Operations" as an Example. China Logistics and Purchasing, (7), 104–105.

[6] Chen, Y. (2024). The connotation explanation, practical challenges, and solution strategies of vocational education driving supply chain innovation and value chain leap from the perspective of new quality productivity. China Vocational and Technical Education, (12), 22–30.

[7] Pan, J. J., Jiang, C. R., & Yuan, Z. (2024). Analysis of the current situation of traditional culture education in universities under the background of supply chain industry model. China Storage and Transportation, (10), 144–145.

[8] Zhai, M. R. (2023). Research on the historical responsibility of comprehensive enhancing industrial chain and supply chain vocational education. Journal of Harbin Vocational and Technical College, (1), 1–5.