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Research on the Paradigm Shift of Finance and Economics Talent Cultivation in Application-Oriented Universities in the Digital-Intelligent Era

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ABSTRACT

In the era of digital intelligence, the accelerating pace of industrial transformation poses new challenges to finance and economics talent cultivation at application-oriented universities. Existing research has largely followed a demand-driven logic, focusing on the passive adjustment of talent cultivation programs while paying insufficient attention to the proactive role of universities' own resource endowments. Grounded in Resource-Based View (RBV), this study systematically constructs a supply-demand alignment mechanism for finance and economics talent cultivation at application-oriented universities across four dimensions: knowledge, scenarios, training, and prediction. The knowledge supply-demand alignment mechanism achieves cognitive alignment through four pathways: knowledge transformation, technological empowerment, institutional adaptation, and ecosystem collaboration. The scenario supply-demand alignment mechanism promotes competency development through four types of scenarios: teaching, practice, evaluation, and development. The training supply-demand alignment mechanism cultivates composite competencies through a logical chain encompassing cognitive advancement, competency development, organizational adaptation, and value guidance. The prediction supply-demand alignment mechanism enables the forward-looking optimization of talent cultivation programs through four types of forecasts: demand, competency, pathway, and outcome forecasting. The synergistic operation of these four mechanisms provides a theoretical framework and practical reference for transforming the paradigm of finance and economics talent cultivation in the era of digital intelligence.

KEYWORDS: *era of digital intelligence; application-oriented universities; finance and economics talent cultivation; supply-demand alignment mechanism; Resource-Based View (RBV).*

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1. INTRODUCTION

The accelerating penetration of the digital economy and artificial intelligence (AI) technologies into the real sector is driving a fundamental reshaping of the knowledge structure, practical competencies, and innovation literacy required of finance and economics talent. As the main providers of finance and economics talent cultivation, application-oriented universities have long faced the practical challenge of structural imbalances between talent supply and demand. On the one hand, the digital transformation of industries has generated strong demand for composite talent to fill emerging positions in areas such as financial shared services, intelligent auditing, and digital taxation. On the other hand, traditional talent cultivation systems remain out of step with the pace of industrial transformation in terms of specialty structure, curriculum content, and training approaches. The longstanding problems of a "disconnect between learning and practice" and a "two-track divide between talent supply and industry demand" have yet to be fundamentally resolved (Li et al., 2026; Song, 2018).

Existing studies have largely followed a demand-driven analytical logic, viewing application-oriented

universities as passive actors that respond to industrial changes by continuously tracking external demand signals and adjusting talent cultivation programs accordingly. However, relatively insufficient attention has been paid to the proactive value of universities as agents of knowledge production and resource integration. Consequently, existing alignment mechanisms can easily fall into a passive cycle in which cultivation programs are adjusted whenever demand changes, making it difficult to establish a stable and forward-looking paradigm of talent cultivation (Chen et al., 2026). Against this backdrop, this study seeks to address two core research questions: How should application-oriented universities build on their own resource endowments in the era of digital intelligence? How can a supply-demand alignment mechanism for finance and economics talent cultivation be constructed to achieve both responsiveness and forward-looking capacity?

Addressing these two research questions has both theoretical and practical value. Theoretically, this study introduces the Resource-Based View (RBV) into research on supply-demand alignment in higher education. From the perspective of internal resources, it reveals the mechanisms through which university resource endowments are transformed into talent cultivation quality, thereby enriching the theoretical toolkit for research on educational supply-demand matching (Cao, 2016; Ma, 2016). Practically, the mechanism framework developed in this study provides an operational analytical framework for application-oriented universities to optimize pathways for specialty development and deepen reforms in industry-education integration. The potential marginal contributions of this study are twofold. First, it moves beyond the external-factor perspective that has dominated existing research. Drawing on the RBV, it systematically identifies the resource advantages of universities across four dimensions: knowledge, scenarios, training, and prediction. Second, it develops an integrated supply-demand alignment mechanism encompassing four dimensions: knowledge, scenarios, training, and prediction. This framework addresses the limitations of previous studies, which have largely focused on individual mechanism dimensions and have lacked systematic integration (Li et al., 2026).

2. Research Perspective

From both theoretical and practical perspectives, research on supply-demand alignment mechanisms for finance and economics talent cultivation in application-oriented universities has evolved from static correspondence to dynamic adaptation and from isolated breakthroughs to systematic restructuring. Specifically, this research can be divided into four stages: the Demand Identification and Specialty Initialization Stage (1999–2008), the Standard Construction and Systematic Development Stage (2009–2015), the Digital Transformation and Ecosystem Restructuring Stage (2016–2022), and the Intelligent Governance and Sustainable Development Stage (2023–present) (Dong & Liao, 2017).

During the Demand Identification and Specialty Development Stage, the large-scale entry of foreign-funded enterprises and the rapid growth in the internationalization needs of domestic enterprises exposed a structural mismatch in the prevailing academic-oriented model of finance and economics talent cultivation in higher education, particularly in terms of insufficient practical competencies. As a result, practical positions in areas such as foreign trade settlement and cross-border taxation, which finance and economics graduates lacked the competencies to undertake directly, were in severe shortage (Chi & Huang, 2026). In response, most universities established an “industry demand list” system and, through enterprise surveys, identified multiple areas facing acute shortages, including international accounting and customs declaration practice. These efforts facilitated the emergence of initial forms of university-enterprise cooperation in application-oriented universities, such as “order-based classes” and “named classes.” However, deep-seated supply-demand alignment problems remained, including delayed responses to demand, lengthy cycles for specialty adjustment, university-enterprise cooperation that remained largely limited to superficial internship arrangements without establishing mechanisms for joint curriculum development, and the absence of a scientific system for evaluating talent cultivation quality. In particular, the global financial crisis exposed the limited risk resilience of existing finance and economics talent, prompting the development of a systematic framework for talent cultivation standards. The issuance of the Ministry of Education’s Professional Teaching Standards for Higher Vocational Education marked an important step in addressing the ambiguity in talent cultivation requirements that had characterized the previous stage. Consequently, finance and economics talent cultivation in Chinese higher education institutions entered the Standards Development and Systematic Advancement Stage. Since then, most universities have established a “dual-certificate” framework combining academic credentials with vocational qualification certificates, developed curriculum standards for emerging areas such as financial shared services and intelligent

taxation, and introduced advanced international curriculum models. Nevertheless, new contradictions emerged: the excessive rigidity of the standards system made it difficult to accommodate regional differences, while the integration of industry and education remained insufficient (Xie et al., 2025).

The implementation of the national strategy for the digital economy has driven a revolutionary transformation in talent cultivation models, giving rise to the Digital Transformation and Ecosystem Restructuring Stage. This stage addressed the tensions between standardization and personalization, as well as between technological iteration and lagging curriculum development, that had emerged during the previous stage. It developed a "three-dimensional dynamic adjustment model" encompassing three dimensions: industrial demand, technological evolution, and regional characteristics. It also introduced new specialties such as financial robotics applications and digital currency management, established new training scenarios such as national-level virtual simulation training bases, and developed an integrated talent cultivation mechanism combining positions, courses, competitions, and certificates. However, new challenges also emerged. The substitution effects of artificial intelligence led to a sharp decline in demand for entry-level positions, rendering existing talent cultivation objectives increasingly misaligned with labor market needs. Data silos also persisted in university-enterprise cooperation, as learning behavior data and enterprise recruitment data remained disconnected. In addition, an efficiency paradox emerged between personalized talent cultivation and large-scale education. Against this backdrop, the Intelligent Governance and Sustainable Development Stage seeks to establish an intelligent supply-demand alignment mechanism with self-evolving capabilities. It aims to anticipate changes in specialty offerings by developing a regional talent demand forecasting system and to shift talent cultivation objectives from specific job skills toward clusters of competencies for sustainable career development. Nevertheless, the accelerating frequency of disruptive industrial transformations, the relative stability of educational principles, the barriers to integrating lifelong learning systems with formal academic education, and the new demands for the ethical literacy of finance and economics talent arising from the growing adoption of ESG principles all indicate that research on supply-demand alignment mechanisms needs to advance toward a theory of education-industry complex adaptive systems (Li et al., 2026).

The evolution of the supply-demand alignment mechanism for finance and economics talent cultivation in application-oriented universities indicates that existing research has largely focused on changes in demand, continuously adjusting specialty offerings and talent cultivation models in response to external requirements (Li, 2017; Zhang, 2026). This approach highlights the powerful influence of external factors while overlooking the fundamental role of universities' internal foundation. For application-oriented universities, this foundation is rooted in their original mission of talent cultivation: maintaining internal stability while adapting to changing external circumstances. In particular, insufficient attention has been paid to the resource advantages of application-oriented universities in the era of digital intelligence. The construction of a high-quality supply-demand alignment mechanism for finance and economics talent cultivation in application-oriented universities in the era of digital intelligence requires universities to account for external factors while leveraging their internal strengths. The distinctive internal strengths of application-oriented universities in this era derive from the resource advantages associated with the strengths of the socialist system. Accordingly, from the perspective of the RBV (Wernerfelt, 1984; Barney, 1991), this study systematically explores the construction of a supply-demand alignment mechanism for finance and economics talent cultivation in application-oriented universities in the era of digital intelligence.

3. Construction of the Supply-Demand Alignment Mechanism

The foregoing analysis indicates that the distinctive resource advantages of application-oriented universities lie in four domains: knowledge resources, scenario resources, training resources, and prediction resources. Accordingly, the supply-demand alignment mechanism for finance and economics talent cultivation in application-oriented universities in the era of digital intelligence focuses on developing four corresponding mechanisms: the knowledge supply-demand alignment mechanism, the scenario supply-demand alignment mechanism, the training supply-demand alignment mechanism, and the prediction supply-demand alignment mechanism.

3.1 Knowledge Supply-Demand Alignment Mechanism

Finance and economics education in application-oriented universities faces a structural tension between the lagging nature of knowledge supply and the dynamic nature of industrial demand (Li et al., 2026; Dong & Liao, 2017). To address this tension, a

knowledge supply-demand alignment mechanism should be developed across four dimensions: knowledge transformation, technological empowerment, institutional adaptation, and ecosystem collaboration. The mechanism follows a logical chain of "demand identification–knowledge reconstruction–competency transformation–value co-creation," with the aim of revealing the dynamic coupling patterns between the knowledge chain and the talent chain.

First, the knowledge transformation pathway serves as a mechanism for cognitive alignment between supply and demand actors. As the core link between the education supply side and the industrial demand side, knowledge transformation helps bridge cognitive gaps among different actors. Application-oriented universities should establish a knowledge "translation" system for transforming different forms of knowledge, converting declarative knowledge developed within academic disciplines into procedural knowledge applicable to professional contexts. Through approaches such as concretizing concepts, contextualizing theories, and operationalizing methods, this process addresses the problems of knowledge inertia and delayed market responsiveness in current finance and economics education. Accordingly, the role of teachers should shift from knowledge transmitters to knowledge engineers, who develop curriculum modules structured around systematic work processes. This approach enables knowledge supply to maintain academic rigor while enhancing its practical applicability.

Second, the technological empowerment pathway constitutes a technology-driven mechanism for pedagogical restructuring. Artificial intelligence and big data technologies serve as accelerators of supply-demand alignment, with their effects manifested at three levels. First, learning analytics technologies enable the real-time capture of demand signals and the dynamic updating of knowledge graphs. Second, virtual simulation technologies create high-fidelity business environments, helping bridge the experiential gap between the classroom and the workplace. Third, blockchain technology establishes a competency certification system that enables tacit competencies to be expressed in a verifiable form. Technological empowerment is not simply a matter of applying technological tools; rather, it fundamentally transforms the pedagogical paradigm, shifting from experience-oriented approaches to data-driven approaches and from standardized cultivation to personalized alignment, thereby fostering an intelligent education ecosystem characterized by self-evolving capabilities.

Third, the institutional adaptation pathway constitutes a mechanism for balancing the interests of multiple stakeholders. As a social institution that stabilizes expectations, institutional arrangements play a critical role in coordinating tensions between knowledge supply and demand. A "three-in-one" framework should be established encompassing dynamic adjustment of curriculum standards, complementary resource arrangements between universities and enterprises, and incentive arrangements for teachers' practical engagement. In particular, a flexible academic credit bank system should be designed to allow experiential knowledge acquired through industry practice to be converted into academic credits, thereby breaking down institutional barriers between the campus and the market. Institutional innovation, while safeguarding educational quality, should provide greater flexibility for knowledge flows, enabling talent cultivation to shift from a closed academic cycle to an open development cycle.

Fourth, the ecosystem collaboration pathway constitutes a co-evolution mechanism within a value network. Knowledge supply-demand alignment depends on the overall optimization of the education ecosystem. A four-dimensional collaborative network comprising universities, enterprises, industry associations, and technology platforms should be established. Through collaborative approaches such as knowledge co-creation, joint resource investment, shared risk-bearing, and outcome sharing, this network can generate a continuous cycle of value creation. Particular attention should be given to developing new organizational forms such as industry colleges and virtual teaching and research communities, enabling knowledge production to shift from a university-centered model to a networked structure with multiple nodes. In this way, the talent cultivation process can simultaneously become a process of knowledge innovation. Ecosystem-based alignment goes beyond a simple logic of supply-demand matching and instead moves toward a more dynamic relationship of collaborative co-evolution.

Knowledge transformation addresses the problem of "cognitive asymmetry," technological empowerment addresses the problem of "insufficient efficiency," institutional adaptation addresses the problem of "incompatible incentives," and ecosystem collaboration addresses the problem of "insufficient sustainability" (Li et al., 2026). The synergistic effects of these four mechanisms drive finance and economics education from passive adaptation toward proactive leadership, with the aim of establishing a

new paradigm of talent cultivation characterized by the distinctive features of the era of digital intelligence.

3.2 Scenario Supply-Demand Alignment Mechanism

The era of digital intelligence has placed new demands on finance and economics education in terms of contextualization, intelligent transformation, and integration (Zhou et al., 2025; Liu & Jiang, 2026). Application-oriented universities urgently need to overcome the temporal and spatial constraints of traditional talent cultivation models (Yang & Jin, 2025). Accordingly, attention should be focused on a four-dimensional framework encompassing teaching scenarios, practice scenarios, evaluation scenarios, and development scenarios. This framework seeks to reveal the dynamic patterns of knowledge flow and competency development in scenario-based talent cultivation and to establish a new paradigm of talent cultivation based on scenario resonance.

Through teaching scenarios, an integrated virtual-physical interface for knowledge transfer can be established. The restructuring of teaching scenarios requires breaking through the spatial and temporal constraints of physical classrooms and creating mixed-reality spaces that support immersive cognition. Intelligent technologies have given rise to three new types of teaching interfaces. First, augmented reality (AR) technology visualizes abstract finance and economics models as interactive three-dimensional objects. Second, multimodal learning systems enable complementary delivery of information through text, speech, and images. Third, adaptive recommendation engines dynamically adjust the presentation of knowledge according to learners' cognitive characteristics. The transformation of teaching scenarios shifts instruction from one-way knowledge transmission toward multisensory learning, resulting in a substantial improvement in the efficiency of knowledge acquisition. Accordingly, universities need to design cognitively responsive teaching environments for "digital natives," enabling technological tools and pedagogical principles to form an organically integrated whole.

Through practice scenarios, a competency development setting for industry-education co-evolution can be established. Practice scenarios constitute micro-environments that approximate real-world business ecosystems. A three-level practice system should be developed encompassing business simulation, the integration of authentic enterprise projects, and industry problem-solving initiatives. At the foundational level, digital twin technologies are used to replicate typical business processes. At the advanced level, unresolved problems faced by enterprises are introduced as teaching materials. At the innovation level, interdisciplinary teams are organized to develop business prototypes. Accordingly, scenario design should follow an incremental logic from "learning by doing" to "learning by creating," enabling students to internalize professional competencies through the process of solving real-world problems. Particular attention should be paid to the openness and iterative nature of these scenarios so that they can evolve in step with industrial development.

Through evaluation scenarios, a multidimensional and integrated competency assessment network can be established. Innovation in evaluation scenarios is reflected in the expansion of assessment dimensions and the transformation of evaluation methods. A three-dimensional radar-chart evaluation model should be developed encompassing cognitive competencies, operational skills, and professional competencies. The cognitive dimension focuses on students' ability to construct analytical frameworks for complex business problems; the operational dimension emphasizes proficiency in applying intelligent tools; and the professional competency dimension examines performance in business ethics and teamwork. Blockchain technology can enable traceable certification of learning outcomes, while natural language processing technologies can be used to analyze practical training reports and identify relevant competency characteristics. Such comprehensive evaluation can overcome the limitations of conventional examinations and establish a competency profile system covering the entire talent cultivation cycle.

Through development scenarios, a lifelong learning support system can be established to facilitate continuous career development. The design of development scenarios focuses on providing continuous support and empowerment throughout the career lifecycle. A lifelong learning platform can be developed across three dimensions: knowledge updating, skill expansion, and resource linkage. At the knowledge level, a micro-credential curriculum system can be provided to meet the needs of fragmented learning. At the skill level, an intelligent learning guidance system can be established for competency diagnosis and improvement. At the resource level, channels can be developed to connect alumni networks with industry resources. The essence of development scenarios lies in creating a positive feedback loop between individual development and industrial evolution. This enables university education to shift from stage-based provision to continuous

support and accompaniment, thereby becoming a sustained driver of human capital accumulation and value enhancement.

Teaching scenarios address the effective transmission of knowledge, practice scenarios address the transformation of knowledge into competencies, evaluation scenarios address quality monitoring, and development scenarios address sustainable career development. The synergistic operation of these four scenarios provides finance and economics talent cultivation with scenario-driven development momentum, enabling education supply and industrial demand to achieve precise alignment across temporal and spatial dimensions.

3.3 Training Supply-Demand Alignment Mechanism

The training supply-demand alignment mechanism for finance and economics talent cultivation in application-oriented universities in the era of digital intelligence is constructed through a logical chain of cognitive advancement, competency development, organizational adaptation, and value guidance. Specifically, the four dimensions are structured as follows: "paradigm classification–technological support–training pathways" for cognitive training; "level differentiation–training principles–system characteristics" for skills training; "competency elements–technological carriers–training objectives" for collaborative training; and "content system–methodological innovation–ultimate value" for ethical training.

Cognitive training facilitates the intelligent restructuring of cognitive frameworks. First, the ability to abstract business problems into computable models cultivates algorithmic thinking. Second, a holistic perspective on the nonlinear relationships among business elements cultivates systems thinking. Third, the ability to infer multiple possibilities from historical data and make corresponding decisions cultivates counterfactual thinking. Throughout this process, intelligent technologies serve as cognitive scaffolds by reducing cognitive complexity through visual analytics tools and providing decision-making reference frameworks through machine learning models. The key to cognitive training lies in designing progressive cognitive training pathways that enable trainees to achieve a cognitive shift from linear thinking to network thinking.

Skills training promotes the evolution of human–machine collaborative competencies. Training design should follow a progressive sequence of "imitation–proficiency–innovation." High-fidelity training environments can be created through digital twin technologies, while reinforcement learning algorithms can be used to dynamically adjust training difficulty, thereby generating personalized development trajectories with adaptive characteristics. At the foundational level, training focuses on hard skills such as operating financial robots and conducting business data analytics. At the advanced level, it emphasizes composite skills such as the further development of intelligent tools and multi-source data integration. At the innovation level, it focuses on creative skills such as the design of business intelligence systems and the optimization of algorithmic models. In this way, the complementary strengths of human intelligence and machine intelligence can be realized.

Collaborative training enhances the effectiveness of virtual organizations. Metaverse technologies provide an ideal experimental environment for this purpose by creating virtual business communities that simulate collaborative scenarios involving different cultural backgrounds, professional domains, and stakeholder interests, thereby cultivating students' ability to establish effective mechanisms for collaboration under conditions of uncertainty. Specifically, training should cultivate students' cross-cultural communication skills and enhance their cultural sensitivity in global virtual teams; develop their task-decomposition thinking and strengthen their capacity for modular collaboration in complex projects; and foster consensus-building thinking to achieve a balance between the efficiency and quality of distributed decision-making.

Ethical training promotes the intelligent calibration of value judgments. It focuses on developing moral decision-making capabilities in the digital economy. The training content should encompass three dimensions. First, data ethics training develops the ability to delineate the boundaries between privacy protection and data use. Second, algorithmic ethics training cultivates the ability to identify and eliminate bias in machine learning. Third, business ethics training develops the capacity to balance the benefits of technological advancement with social responsibility. This training can combine scenario simulation with role-playing to stimulate in-depth reflection through the design of moral dilemmas. Affective computing technologies can be used to assess the relative weight of ethical considerations in decision-making, thereby cultivating business leaders who are committed to ensuring that technology serves the common good.

Cognitive training establishes the cognitive foundation, skills training strengthens practical competencies, collaborative training enhances

organizational effectiveness, and ethical training safeguards the direction of development. Their synergistic effects provide finance and economics talent cultivation with sustained internal momentum for continuous evolution, enabling dynamic alignment between individual competencies and industry demand.

3.4 Prediction Supply-Demand Alignment Mechanism

First, demand forecasting enables situational awareness of industrial evolution. By constructing industry knowledge graphs, the patterns linking technological evolution with business model innovation can be identified. Complex network analysis can be used to identify the topological characteristics of competency requirements for key positions, while deep learning algorithms can simulate changes in the elasticity of talent demand under different economic scenarios. The scientific rigor of forecasting models lies in transforming qualitative judgments into quantitative representations (Qian et al., 2009). This process translates ambiguous market signals into clear competency indicators and supports the development of a forward-looking early-warning mechanism for talent demand.

Second, competency forecasting enables trajectory simulation for individual development. The essence of competency forecasting lies in probabilistically modeling learners' development pathways. Three technological bottlenecks need to be overcome. First, a multidimensional competency indicator system should be established to encompass latent dimensions such as cognitive styles, skill reserves, and psychological traits. Second, a lifelong learning profiling system should be developed to structurally represent fragmented learning behaviors. Third, personalized development forecasting models should be constructed to simulate competency growth trajectories under different talent cultivation programs based on Markov chains.

Third, pathway forecasting supports the optimization of talent cultivation program design. In curriculum design, association rule mining can be used to identify optimal combination sequences of knowledge modules. In instructional organization, queuing theory models can be employed to optimize the temporal and spatial distribution of resource allocation. In practical training, reinforcement learning algorithms can dynamically adjust the difficulty gradient of training projects. The reliability of forecasting results depends on the completeness of educational process data. Accordingly, an end-to-end data collection system should be established to cover instructional design, implementation, and feedback.

Fourth, outcome forecasting supports the long-term evaluation of educational value. At the micro level, individual career development premiums should be measured; at the meso level, the contribution to regional economic development should be analyzed; and at the macro level, the contribution to improvements in national competitiveness should be assessed. Causal inference methods can be employed to isolate the net effects of educational interventions (Ding et al., 2020; Wang et al., 2020), while system dynamics can be used to simulate the long-term effects of talent cultivation (Wang, 2014). Such forecasting goes beyond simple employment-rate indicators and enables a more rigorous assessment of the return on educational investment. The results can inform policy adjustment.

4. Conclusion

Grounded in the RBV (Wernerfelt, 1984; Barney, 1991), this study addresses the supply-demand alignment challenges facing finance and economics talent cultivation in application-oriented universities in the era of digital intelligence. A systematic supply-demand alignment mechanism framework is constructed across four dimensions: knowledge, scenarios, training, and prediction. The findings indicate that the knowledge supply-demand alignment mechanism alleviates cognitive asymmetry between knowledge supply and industrial demand through four pathways: knowledge transformation, technological empowerment, institutional adaptation, and ecosystem collaboration. The scenario supply-demand alignment mechanism achieves dynamic coupling between knowledge transfer and competency development through the synergistic operation of four types of scenarios: teaching, practice, evaluation, and development. The training supply-demand alignment mechanism shapes a composite competency structure suited to an era of human-machine collaboration through the logical chain of cognitive advancement, competency development, organizational adaptation, and value guidance. The prediction supply-demand alignment mechanism provides a basis for the forward-looking optimization of talent cultivation programs through four types of forecasting: demand, competency, pathway, and outcome forecasting. The four mechanisms are not independent of one another. Rather, they are interconnected through knowledge flows, scenario linkages, competency accumulation, and predictive feedback, jointly forming an organic whole for supply-demand alignment in finance and economics talent cultivation in the era of digital intelligence.

The theoretical contribution of this study lies in introducing the analytical framework of the RBV into research on supply-demand alignment in higher education (Ren, 2012). From the perspective of universities' internal factors, it reveals the pathways through which resource endowments are transformed into talent cultivation quality, thereby providing an analytical tool that differs from the traditional demand-driven logic. At the practical level, the mechanism framework developed in this study suggests that managers of application-oriented universities should not limit reforms in finance and economics talent cultivation models to the passive adjustment of specialty offerings in response to industrial demand. Instead, they should systematically activate and leverage four types of resource endowments—knowledge, scenarios, training, and prediction—and strengthen endogenous capabilities to enhance the stability and forward-looking capacity of supply-demand alignment mechanisms. For educational authorities, this study also provides reference dimensions for evaluating and guiding the efficiency of resource allocation in application-oriented universities.

Given the nature and scope of this study, several limitations remain to be addressed in future research. First, the construction of the mechanisms in this study is primarily based on theoretical reasoning. The specific measurement indicators and operational effectiveness of the four mechanisms have not yet been empirically tested using observational data, and their explanatory power and boundaries of applicability need to be validated through case studies or quantitative analysis. Second, the discussion of the synergistic relationships among the mechanisms remains primarily qualitative. The relative effects, interaction effects, and marginal contributions of the four mechanisms to talent cultivation performance require further quantitative identification using methods such as structural equation modeling. Third, the mechanism framework developed in this study has a relatively general orientation and does not fully account for heterogeneity in the resource endowments of application-oriented universities across different regions and institutional levels. Future research could draw on case studies of specific universities to examine the adaptability of the mechanism framework and the scope for its adjustment under differentiated contextual conditions.

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