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Synergistic Mechanism between Innovation and Entrepreneurship Education in Business Administration Majors in Universities and Regional Economic Development

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Abstract: High-quality development of the regional economy requires innovation and entrepreneurship as its core driving force, while innovation and entrepreneurship education in university Business Administration majors serves as a key vehicle for cultivating regional innovative talent and serving industrial upgrading. Currently, synergy between the two faces issues such as misaligned objectives, dispersed resources, and ineffective feedback, hindering the effective transformation of educational outcomes into momentum for regional economic development. This paper constructs four core modules: "Objective Synergy - Resource Integration - Practice Transformation - Feedback Optimization," designs a multi-dimensional evaluation system, and verifies the effectiveness of the synergistic mechanism through teaching cases.

Keywords: Business administration major; Innovation and entrepreneurship education; Regional economic development; Synergistic mechanism

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1. Introduction

As the regional economy rapidly advances towards transformation and upgrading, involving tasks such as industrial structure adjustment and cultivation of new business formats, the demand for innovative and entrepreneurial talent has become increasingly urgent. University Business Administration majors, as the primary sites for cultivating innovative and entrepreneurial talent in the field of economic management, have a direct impact on the quality of talent cultivation and regional innovation vitality through the alignment between their educational objectives, content, and the needs of regional economic development. Exploring the synergistic mechanism between innovation and entrepreneurship education in Business Administration majors and regional economic development can not only enhance the relevance and effectiveness of innovation and entrepreneurship education but also provide a continuous stream of innovative momentum for the regional economy. It is a key method to deeply integrate the education chain and talent chain with the industry chain and innovation chain.

2. Construction of core synergistic modules between innovation and entrepreneurship education in business administration majors and regional economic development

2.1. Objective synergy module

This module takes "regional demand orientation" as its core, achieving precise alignment between the objectives of university innovation and entrepreneurship education and the goals of regional economic development. Universities should collaborate with regional government departments, industry associations, and leading enterprises to conduct demand research, clarifying the needs of key regional development industries for innovative and entrepreneurial talent, including knowledge structure, competency literacy, and career development direction, thereby constructing a regional map of demand for innovative and entrepreneurial talent. Based on this demand map, the objective system for innovation and entrepreneurship education in Business Administration majors should be reconstructed: in terms of knowledge objectives, add content such as interpretation of regional industrial policies and analysis of local characteristic industries, enabling students to understand the laws of regional economic development and the logic of industrial layout; in terms of ability objectives, focus on skills urgently needed by regional enterprises, such as innovative thinking, project planning, resource integration, and risk management, designing targeted cultivation pathways; in terms of value objectives, enhance students' sense of responsibility for serving regional development, guiding them to align their entrepreneurial directions with the needs of regional industrial upgrading and livelihood improvement [1].

2.2. Resource integration module

This module leverages joint actions from the "university + government + enterprise + association" quartet to integrate resources related to innovation/entrepreneurship education and regional economic development, establishing a collaborative and shareable resource pool. At the university level, resources such as Business Administration laboratories, innovation/entrepreneurship incubation centers, and digital library resources are opened to provide technical consulting services and project R&D support for local enterprises, while incorporating real enterprise cases and industry-specific data into teaching. From the government perspective, policies supporting university-enterprise cooperation are enacted, such as establishing special funds for innovation/entrepreneurship education, offering tax incentives to enterprises participating in university practical teaching, building regional innovation/entrepreneurship service platforms, and coordinating resource matching among universities, enterprises, and associations. Enterprises provide internship positions, project resources, and mentor teams, accept students for practice and training, participate in curriculum design and teaching evaluation, and transform their own innovation needs into university teaching projects [2].

2.3. Practical transformation module

This module establishes a comprehensive full-chain transformation pathway of "Education-Practice-Incubation-Implementation", converting the achievements of innovation and entrepreneurship education in universities into tangible results for regional economic development.

In the teaching practice phase, a "project-based practice" model is adopted, where practical topics are designed under the guidance of the actual and specific needs of regional enterprises.

In the internship and training phase, an "order-based training" initiative is implemented: universities sign cooperation agreements with key regional enterprises, customize training programs according to the actual demands of enterprise positions, and graduates can directly enter key positions of enterprises or participate in the R&D of enterprise innovation projects upon graduation.

In the entrepreneurship incubation phase, relying on the resources of university innovation and entrepreneurship incubation centers, support such as venue provision, capital connection, and professional mentor guidance is offered to student startup projects, with priority given to incubating projects that align with regional industries.

In the achievement implementation phase, a project docking mechanism is established to recommend innovative technologies and management schemes developed by university teachers and students to regional enterprises, thereby

promoting the transformation of industry-university-research achievements.

2.4. Feedback optimization module

This module establishes a "two-way feedback" mechanism to promptly collect data on the impact of university innovation and entrepreneurship education on regional economic development, as well as feedback from regional economic development on university education needs, dynamically optimizing the synergistic mechanism. Regarding university-to-region feedback, regularly statistics such as the employment and entrepreneurship rate of graduates within the region, the survival rate of startup projects, the number and outcomes of services provided to regional enterprises, and deeply analyze the contribution of education to the regional economy; regarding region-to-university feedback, enterprises, government, and associations regularly evaluate the quality of university innovation and entrepreneurship education, such as the fit between graduates and positions, the practicality of practical projects, satisfaction with cooperative services, etc., and propose suggestions for educational improvement, such as adjusting course content and optimizing practical arrangements [3].

2.5. Culture cultivation module

This module is dedicated to cultivating a synergistic culture characterized by "innovation and entrepreneurship + regional characteristics," creating a favorable atmosphere for synergistic development between universities and the regional economy. At the university level, through activities such as innovation and entrepreneurship lectures, academic forums, and cultural festivals, disseminate the concepts of innovation and entrepreneurship while integrating cultural elements with regional characteristics, for example, inviting successful local entrepreneurs to share their experiences, or organizing "Regional Characteristic Industry Innovation and Entrepreneurship Competitions," thereby enhancing students' sense of identification with and enthusiasm for participating in the regional economy. At the regional level, enterprises, government, and associations collaborate to create innovation and entrepreneurship cultural brands with regional characteristics, such as hosting "Regional Innovation and Entrepreneurship Week" or "Local Entrepreneur Summit" events, publicizing the results of university-enterprise collaborative innovation, and recognizing outstanding innovative and entrepreneurial teams and individuals, thereby fostering a social environment that respects innovation and supports entrepreneurship.

3. Construction of a synergistic evaluation system for innovation and entrepreneurship education in business administration majors and regional economic development

The construction of the synergistic evaluation system for innovation and entrepreneurship education in Business Administration majors and regional economic development is primarily composed of the objective synergy evaluation system, practice synergy evaluation system, and feedback synergy evaluation system, as detailed in **Table 1**.

Table 1. Synergistic evaluation system for innovation and entrepreneurship education in business administration majors and regional economic development

Overall synergistic evaluation system	Sub-system	Core indicators & quantitative targets
Synergistic Evaluation System for Innovation and Entrepreneurship Education in Business Administration Majors and Regional Economic Development	Objective Synergy	1. **Alignment:** Course-Industry Fit ≥ 70%, Teaching-Talent Match ≥ 80% 2. **Satisfaction:** Enterprise Satisfaction ≥ 85%, Outcome Utilization Rate ≥ 30%
	Resource Synergy	1. **Integration Efficiency:** Resource Time ≤ 7 days, Resource Idle Rate ≤ 15% 2. **Utilization Effectiveness:** University Resource Utilization Rate ≥ 80%, Enterprise Resource Conversion Rate ≥ 40%

Table 1 (Continued)

Overall synergistic evaluation system	Sub-system	Core indicators & quantitative targets
	Practice Synergy	1. **Participation Rate:** Student Regional Practice Participation Rate ≥ 90%, Enterprise Participation in University Teaching ≥ 60% 2. **Conversion Rate:** Student Startup Project Regional Implementation Rate ≥ 50%, Industry-University-Research Outcome Regional Conversion Rate ≥ 35%
	Feedback Synergy	1. **Timeliness:** Feedback Data Collection Cycle ≤ 1 month, Feedback Response Time ≤ 15 days 2. **Effectiveness:** Problem Resolution Rate ≥ 80%, Post-Improvement Satisfaction Increase ≥ 10%

3.1. Objective synergy evaluation system

This system evaluates the achievement of synergistic objectives through the two dimensions of "Education Objective Alignment" and "Regional Demand Satisfaction." Education Objective Alignment is measured by the fit between course content and regional industries, and the match between teaching objectives and regional talent standards, using methods such as expert review and course analysis to assess the proportion of regional-related content in the innovation and entrepreneurship courses of Business Administration majors and the coverage of regional talent competency requirements by the teaching objectives. The targets are a course fit degree of no less than 70% and a match degree of no less than 80%. Regional Demand Satisfaction is measured by the recognition of university talent by regional enterprises and the utilization of educational outcomes by regional industries, using enterprise surveys and data statistics to assess enterprise satisfaction with graduates and the proportion of university innovation outcomes adopted by regional enterprises. The targets are enterprise satisfaction of no less than 85% and outcome utilization rate of no less than 30% [4].

3.2. Resource synergy evaluation system

This system assesses resource synergy in terms of "resource integration efficiency" and "resource utilization effectiveness."

Resource integration efficiency is measured by the time consumed in resource docking and the resource idleness rate. It calculates the average time from the proposal of needs to the completion of docking between university and regional resources, as well as the idleness ratio of document resources, equipment resources, and human resources in the resource pool. The targets are: the docking time shall not exceed 7 working days, and the resource idleness rate shall not exceed 15%.

Resource utilization effectiveness is evaluated based on the degree of university resource utilization and the enterprise resource conversion rate. It assesses the usage frequency of university laboratories and incubation centers, as well as the proportion of practical projects provided by enterprises that are converted into teaching cases and student startup projects. The targets are: the degree of university resource utilization shall not be less than 80%, and the enterprise resource conversion rate shall not be less than 40%.

3.3. Practical collaboration evaluation system

This system assesses the effectiveness of practical collaboration through "practical participation" and "achievement transformation rate."

Practical participation is measured by the proportion of students participating in regional practical projects and the proportion of enterprises participating in university teaching. Specifically, it calculates the percentage of students engaged in corporate practice and regional entrepreneurship projects among the total student population, as well as the percentage of enterprises involved in university curriculum design and mentor guidance among all cooperating enterprises. The set targets are: the student participation rate shall be no less than 90%, and the enterprise participation rate shall be no less than 60%.

Achievement transformation rate is evaluated based on the landing rate of student startup projects in the region and the transformation rate of industry-university-research achievements locally. It details the proportion of student startup projects incubated by the university that are registered and launched in the region, as well as the ratio of collaborative R&D achievements between universities and regional enterprises that are transformed and applied locally. The set targets are: the project landing rate shall be no less than 50%, and the achievement transformation rate shall be no less than 35%.

3.4. Feedback collaboration evaluation system

This system evaluates "feedback timeliness" and "improvement effectiveness" to ensure the dynamic optimization of the collaboration mechanism.

Feedback timeliness is measured by the feedback data collection cycle and feedback response time. Specifically, it tracks the time elapsed from the start of feedback data collection to its completion of aggregation, as well as the time taken to initiate improvement measures after receiving feedback suggestions. The targets are: the data collection cycle shall not exceed 1 month, and the feedback response time shall not exceed 15 working days.

Improvement effectiveness is assessed through the problem-solving rate and the extent of satisfaction improvement after implementation. It calculates the proportion of feedback issues that have been resolved, as well as the percentage increase in satisfaction among enterprises and students following the implementation of improvement measures. The targets are: the problem-solving rate shall be no less than 80%, and the satisfaction improvement shall be no less than 10%.

4. Case analysis of collaboration between innovation and entrepreneurship education in university business administration programs and regional economic development

The Business Administration program of a university has jointly launched a collaborative project titled the "Regional Small and Medium-sized Enterprise (SME) Empowerment Program" in cooperation with local government and the SME Association [5].

Initially, the three parties conducted joint research on the development pain points of SMEs in the region and identified common challenges such as low management levels, weak brand influence, and significant difficulties in digital transformation. Based on this, they established collaborative goals: cultivating innovative and entrepreneurial talents capable of serving SMEs, and helping enterprises enhance management efficiency and market competitiveness [6].

In terms of resource integration, the university opened its business administration laboratories to provide digital management training services for enterprises; the government set up a special fund dedicated to supporting SMEs; and the association organized more than 50 enterprises to participate in the project.

In the practical transformation phase, the university designed practical courses according to the specific needs of enterprises, such as the course "Digital Management Scheme Design for SMEs." Students conducted in-depth on-site research in enterprises in groups, first delivering customized solutions, and then assisting enterprises in the implementation of these solutions.

5. Conclusion

Achieving synergy between the innovation and entrepreneurship education conducted by university Business Administration majors and regional economic development is a key pathway to solving the problem of disconnection between education and industry and promoting regional innovative development. It is essential to enhance the initiative and synergistic mindset of the participating entities, improve policy guarantee systems and benefit-sharing mechanisms, promoting this synergy from "phased cooperation" to "normalized integration," and from "partial synergy" to "full-chain synergy," so that the innovation and entrepreneurship education in Business Administration majors truly becomes the "talent

cultivation base" and "innovation driving force" for regional economic development, adding continuous momentum for the high-quality development of the regional economy.

Disclosure statement

The author declares no conflict of interest.

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