



Original Research Article

The Influencing Factors on the Effectiveness of Talent Training in China's Modern Industrial Colleges

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ABSTRACT

The purposes of this research were: 1) to study the levels of influencing factors of China's modern industrial colleges; 2) to study the levels of effectiveness of talent training of China's modern industrial colleges; and 3) to analyze to the effect of influencing factors on the effectiveness of talent training of China's modern industrial colleges. This research employed a quantitative research methodology. The samples used in this study consisted of 268 participants working at the selected modern industrial colleges in China. The questionnaire was used the instrument to collect data. The research results showed that: 1) Influencing factors, in total, were perceived at high level ($M = 3.71$, $SD = 0.70$). 2) The effectiveness of talent training, in total, was perceived at high level ($M = 3.75$, $SD = 0.72$). 3) The results of Multiple Regression Analysis showed that influencing factors had an effect on talent training with statistical significance at the .01 ($F=52.37$, $p=.000$). The forecasting equation from multiple regression analysis can predict the effect of influencing factors on talent training at 76 percent (Adjusted $R^2 = .76$), whereas, the rest 24 percent was the result of other factors, which were not taken into account in this study. In particular, student demand matching had the highest effect on talent training ($Beta = 0.28$, $p < .01$), followed by teachers' industry participation ($Beta = 0.25$, $p < .01$), depth of school-enterprise cooperation ($Beta = 0.23$, $p < .01$), resource integration capability ($Beta = 0.21$, $p < .01$) and inter-organizational trust ($Beta = 0.18$, $p < .01$).



Introduction

Against the backdrop of profound restructuring in the global economic landscape and the rapid advancement of new technological and industrial revolutions, the integration of higher education and industrial development has emerged as a critical determinant of national strategic competitiveness (Etzkowitz & Leydesdorff, 2000). As the world's second-largest economy and the largest manufacturing nation, China is currently undergoing a pivotal transition from a "manufacturing giant" to a "manufacturing powerhouse." Although China's manufacturing sector accounted for approximately 30% of global value added by 2024, its dependence on foreign high-end manufacturing technologies remains above 50%, revealing structural weaknesses in independent innovation capacity and high-level technical talent cultivation (National Bureau of Statistics, 2024).

This transformation underscores an urgent demand for high-quality, application-oriented, and interdisciplinary talents who possess not only solid theoretical foundations but also strong practical and innovative capabilities. However, existing higher education systems face persistent challenges in aligning talent cultivation with rapidly evolving industrial needs. Modern industrial colleges have therefore been proposed as an institutional innovation to deepen industry–education integration, aiming to systematically align the educational chain with the industrial, talent, and innovation chains (Zhou & Li, 2021).

From a policy perspective, the Chinese government has continuously promoted the strategic integration of industry and education. In 2017, the General Office of the State Council issued the *Several Opinions on Deepening the Integration of Industry and Education*, establishing a policy framework to guide collaborative talent cultivation. Subsequently, in 2020, the Ministry of Education, together with the Ministry of Industry and Information Technology and other departments, released the *Guidelines for the Construction of Modern Industrial Colleges (Trial)*, marking the transition from exploratory initiatives to systematic national implementation. By 2025, more than 300 national-level and over 1,000 provincial-level modern industrial colleges are expected to be established across all provincial administrative regions, indicating the strategic importance of this reform pathway (Ministry of Education, 2024).

From the perspective of industrial development, the accelerating pace of technological innovation and industrial upgrading has further exposed the mismatch between graduate competencies and enterprise demands. According to the 2024 Graduate Employment Quality Report released by the Ministry of Education, the alignment rate between graduates' skill structures and enterprise requirements is only 62.3%, while enterprise satisfaction with graduates' practical abilities stands at merely 48.7%. In sectors such as automobile manufacturing, new graduates typically require 6–8 months of pre-job training to meet basic technical position requirements, significantly increasing enterprise training costs and reducing labor efficiency (Ministry of Education, 2024).

Similarly, from the standpoint of higher education reform, structural shortcomings remain prominent. Traditional undergraduate institutions generally exhibit slow discipline adjustment mechanisms, prolonged curriculum update cycles, and insufficient practical teaching components. Statistical data show that practical teaching credits in ordinary undergraduate institutions account for only 28% on average, far below the 45% standard commonly observed in German universities of applied sciences (Grollmann & Rauner, 2007). To address these challenges, China has actively promoted the classified development of higher



education, encouraging the transformation of local undergraduate institutions into application-oriented universities, with industry–education integration identified as the core reform pathway.

Modern industrial colleges, as innovative organizational carriers of this reform, have formed a new paradigm of deep integration between industry and education through a “four co-construction model,” namely co-developing curriculum systems, sharing faculty teams, jointly building practical platforms, and collaboratively undertaking scientific research projects (Wang et al., 2022). For instance, the New Energy Vehicle Industry College jointly established by Zhejiang University’s Haining International Campus and Geely Group integrates the enterprise’s vehicle research and development processes into the curriculum, enabling students to participate directly in real-world battery management system development. This model effectively bridges the gap between theoretical learning and engineering practice and enhances graduates’ job readiness.

Despite these phased achievements, the development of modern industrial colleges continues to face deep-seated constraints. A 2024 special survey conducted by the Ministry of Education indicates that 76.3% of modern industrial colleges suffer from underdeveloped school–enterprise cooperation mechanisms, largely due to insufficient incentives for enterprises to participate deeply in talent cultivation beyond providing internship placements. In terms of faculty construction, less than 35% of teachers possess dual qualifications combining academic and industry experience, limiting the effectiveness of practice-oriented teaching. Moreover, 58.6% of colleges lack stable off-campus training bases, while some on-campus laboratories rely on equipment that has not been updated for over five years. Most critically, only 12.7% of modern industrial colleges have established joint quality evaluation mechanisms with enterprises, making it difficult to scientifically assess and continuously improve talent cultivation outcomes.

These issues collectively hinder the sustainable and high-quality development of modern industrial colleges and reveal a significant research gap: existing studies often focus on policy interpretation or case descriptions, while systematic empirical analyses of the key factors influencing talent cultivation effectiveness remain limited. To address this gap, this study adopts structural equation modeling combined with case-based grounded analysis, drawing on collaborative innovation theory and human capital theory. It examines the impact of critical dimensions—such as the depth of school–enterprise cooperation, faculty team construction, the completeness of practical teaching systems, and the scientific nature of quality evaluation mechanisms—on talent cultivation effectiveness. The findings aim to provide theoretical support and practical strategies for establishing more efficient, systematic, and sustainable talent cultivation mechanisms within modern industrial colleges.

Literature Review and Theoretical Framework

In the context of deepening the integration of industry and education in higher education, modern industrial colleges, as platforms for cultivating innovative talents, have become the focus of academic research on their construction and operation mechanisms (Wang & Zhang, 2024). This review combines interdisciplinary theories such as resource dependence and social capital to sort out relevant achievements at home and abroad, analyze the relationship between key variables such as the depth of school enterprise cooperation and



inter organizational trust and the effectiveness of talent cultivation, and point out research gaps (Bills & Gimenez, 2013).

Modern Industrial College does not have independent legal personality and relies on secondary colleges or professional groups of universities. It is jointly built and shared by the government, universities, enterprises and other parties. Its core role is reflected in talent cultivation, integration of industry and education, scientific research and innovation, and serving regional economy (Channuwong et al., 2025). There are currently four operating models, including government led and enterprise participation. At present, its construction has achieved significant results in the sharing of school enterprise resources, the transformation of scientific research achievements, and the optimization of industrial structure. However, it faces problems such as incomplete cooperation mechanisms, lack of targeted policy support, and weak teaching staff (Butler & Chowdhury, 2011).

Among the core variables, the depth of school enterprise cooperation affects talent cultivation through the completeness of mechanisms, investment of enterprise resources, and depth of curriculum co construction; Inter organizational trust relies on information sharing, risk sharing, and emotional identification to reduce cooperation uncertainty; Teacher industry participation, resource integration ability, and student demand matching also enhance the quality of talent cultivation from different dimensions (Cui & Jiang, 2012; Chen & Li, 2023).

On the theoretical level, the integration of resource dependence theory, social capital theory, and demand hierarchy theory is used to construct an analytical framework of “resource input relationship governance demand response”, providing multidimensional explanations for variable relationships (Kuh et al., 2017; Hillman et al., 2009).

Domestic and foreign research shows that there are integration models of industry and education such as the German dual system abroad, and domestic development is divided into three stages: theoretical exploration, policy driven, and quality improvement (Damrongsiri et al., 2022; Liu and Zhao, 2022). There are gaps in existing research, such as a lack of localized models, insufficient research on variable interactions, neglect of regional industrial heterogeneity, and methodological limitations. In the future, it is necessary to construct an adaptive theoretical framework based on China’s national conditions and conduct multidimensional empirical research.

Theoretical Framework

At the theoretical level, this study integrates resource dependence theory, social capital theory, and demand hierarchy theory to construct an analytical framework characterized as “resource input – relationship governance – demand response.” Resource dependence theory explains how universities and enterprises rely on each other for critical resources, thereby shaping cooperation depth and stability (Hillman et al., 2009). Social capital theory highlights the role of trust, norms, and networks in facilitating inter-organizational collaboration and reducing transaction costs (Kuh et al., 2017). Demand hierarchy theory provides insights into how talent cultivation must respond to diverse and evolving stakeholder needs.

By synthesizing these theories, the proposed framework offers a multidimensional explanation of the relationships among influencing factors and talent cultivation effectiveness.



Objectives

1. To study the levels of influencing factors of China's modern industrial colleges
2. To study the levels of effectiveness of talent training of China's modern industrial colleges
3. To analyze the effect of influencing factors on the effectiveness of talent training of China's modern industrial colleges

Methodology**Populations and Samples**

The populations used in this study were students and employees of Chinese modern industrial colleges in the Eastern region, Central region and Western region of China. Since a number of populations are about 1,410 people, the researchers calculated the sample sizes using the formula of Taro Yamane, and 310 samples were obtained.

Variables Used in This Study

The variables used in this research included independent and dependent variable. Independent variable included the depth of school-enterprise cooperation, trust between organizations, teacher industry participation, resource integration capability and student demand matching; and dependent variable was the effectiveness of talent training of students in China's modern industrial colleges.

Research Instrument

The questionnaire was used as an instrument for collecting data in this study. The questionnaire consisted of the following parts: Part 1 included 6 questions regarding demographic profiles of participants in the form of a check mark. Part 2 included 16 questions regarding the influencing factors of the selected Chinese colleges in the form of a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." Part 3 included 16 questions regarding the effectiveness of talent training of the selected public companies in Bangkok in the form of a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." The research questionnaire was checked by five research experts in order to find the content validity using Item Objective Congruence Index (IOC), and the IOC value of 0.93 was obtained. The questionnaire was used to try out with 30 people who were not the samples in this study in order to find the reliability value using alpha coefficient of Cronbach. The reliability coefficient was 0.93, which means that the questionnaire was reliable enough for conducting this study.

Criteria Used to Interpret Data

The researchers analyzed the collected data using Statistical Package for the Social Sciences for Windows (SPSS). The criteria used to interpret data are as follows:

- 1 = strongly disagree
- 2 = disagree
- 3 = neutral
- 4 = agree
- 5 = strongly agree

The criteria used to interpret the mean score are as follows:

- 1.00-1.80 = strongly disagree
- 1.81-2.60 = disagree
- 2.61-3.40 = neutral
- 3.41-4.20 = agree
- 4.21-5.00 = strongly agree.

Data Collection and Analysis

Data were collected during January 10 to March 20, 2025. The researchers distributed 310 questionnaires to the selected Thai Universities in Bangkok and 268 questionnaires were returned, which can be calculated as 97percent. Both descriptive and inferential statistics were used to analyze data in this research. Descriptive statistics consisting of frequency and percentage were used to analyze demographic profiles of respondents; and mean and standard deviation were used to analyze the influencing factors and the effectiveness of talent training in the selected Chinese modern industrial colleges. Inferential statistics consisting of Multiple Regression Analysis were used to analyze the effect influencing factors on the effectiveness of talent training of the selected Chinese modern industrial colleges. The Statistical Package for The Social Sciences (SPSS) was used to analyze the collected data.

Results

Mean and Standard Deviation of Influencing Factors of China's Modern Industrial Colleges

In this part, the researchers analyzed mean and standard deviation of influencing factors consisting of the depth of school-enterprise cooperation, trust between organizations, teacher industry participation, resource integration capability and student demand matching. The research results showed that influencing factors, in total, were perceived at high level ($M = 3.71$, $SD = 0.70$). In particular, the depth of school-enterprise cooperation had the highest mean value ($M = 3.82$, $SD = 0.74$), followed by student demand matching ($M = 3.79$, $SD = 0.65$), teacher industry participation ($M = 3.72$, $SD = 0.72$), trust between organizations ($M = 3.65$, $SD = 0.68$) and resource integration capability ($M = 3.58$, $SD = 0.70$) respectively (Table 1).



Table 1 Mean and Standard Deviation of Influencing Factors of China's Industrial Colleges

Variables	<i>M</i>	<i>SD</i>	Interpretation	Ranking
1. The depth of school-enterprise cooperation	3.82	0.74	High	1
2. Trust between organizations	3.65	0.68	High	4
3. Teacher industry participation	3.72	0.72	High	3
4. Resource integration capability	3.58	0.70	High	5
5. Student demand matching	3.79	0.65	High	2
Total	3.71	0.70	High	

Mean and Standard Deviation of the Effectiveness of Talent Training in China's Modern Industrial Colleges

In this part, the researchers analyzed mean and standard deviation of effectiveness of talent training consisting of employment competitiveness, innovation ability, professional adaptability, knowledge application ability and employer satisfaction. The research results showed that the effectiveness of talent training, in total, was perceived at high level ($M = 3.75$, $SD = 0.72$). In particular, knowledge application ability had the highest mean value ($M = 3.81$, $SD = 0.73$), followed by employment competitiveness ($M = 3.80$, $SD = 0.70$), innovation ability ($M = 3.75$, $SD = 0.74$), professional adaptability ($M = 3.72$, $SD = 0.71$) and employer satisfaction ($M = 3.70$, $SD = 0.75$) respectively (Table 2).

Table 2 Mean and Standard Deviation of Effectiveness of Talent Training in China's Industry Colleges

Variables	<i>M</i>	<i>SD</i>	Interpretation	Ranking
1. Employment competitiveness	3.80	0.70	High	2
2. Innovation ability	3.75	0.74	High	3
3. Professional adaptability	3.72	0.71	High	4
4. Knowledge application ability	3.81	0.73	High	1
5. Employer satisfaction	3.70	0.75	High	5
Total	3.75	0.72	High	

The Results of Linear Multiple Regression Analysis of Influencing Factors on Talent Training

In this part, the researchers analyzed the effect of influencing factors consisting of the depth of school-enterprise cooperation, trust between organizations, teacher industry participation, resource integration capability and student demand matching on talent training. The results of Multiple Regression Analysis showed that influencing factors had an effect on talent training with statistical significance at the .01 ($F=52.37$, $p=.000$). The forecasting equation from multiple regression analysis can predict the effect of influencing factors on talent training at 76 percent (Adjusted $R^2 = .76$), whereas, the rest 24 percent was the result of other factors, which were not taken into account in this study. In particular, student demand matching had the highest effect on talent training (Beta = 0.28, $p < .01$), followed by teachers' industry participation (Beta = 0.25, $p < .01$), depth of school-enterprise cooperation (Beta = 0.23, $p < .01$), resource integration capability (Beta = 0.21, $p < .01$) and inter-organizational trust (Beta = 0.18, $p < .01$) (Table 3).

Table 3 The Results of Linear Multiple Regression Analysis of Factors Influencing Effectiveness of Talent Training

Independent Variables and Dimensions	Standardized Coefficient (β)	t-value	p-value
Depth of School-Enterprise Cooperation	0.23**	3.89	<0.001
Inter-organizational Trust	0.18*	2.76	0.006
Teachers' Industry Participation	0.25**	4.21	<0.001
Resource Integration Capability	0.21**	3.38	<0.001
Student Demand Matching	0.28**	4.62	<0.001
	Adjusted $R^2=0.76$, $F=52.37$ ($p<0.001$)		

Discussion

The research findings regarding the effect of influencing factors on the effectiveness of talent training in China's modern industrial colleges can be discussed as follows:

The research results showed that student demand matching had the strongest direct positive impact on talent development ($\beta=0.28$), supporting hypothesis H5, which states that the alignment between student needs and talent development outcomes has a significant positive impact. The results of this study are relevant to the studies of Bills & Gimenez (2013) and Damrongsiri et al. (2022) who found that aligning students' career planning, willingness to participate in practical activities, and innovation and entrepreneurship needs is crucial for



enhancing the quality of education. This conclusion aligns well with the educational philosophy of student-centeredness as it involves dynamically optimizing course settings and practical components to form a closed loop of 'need identification: ability enhancement and effectiveness feedback, which can significantly enhance students' career adaptability and innovation capabilities.

The impact of teacher industry participation ($\beta=0.25$) is the second most significant, supporting Hypothesis H3 that teacher industry participation has a significant positive impact on talent cultivation effectiveness. This indicates that teachers' deep involvement in corporate projects and industry-university-research collaborations can effectively transform cutting-edge industry knowledge into teaching resources. The results of this study align with the study of Lui and Zhao (2022) who found that teacher industry participation allows students to engage with real-world industrial scenarios, enhancing their ability to apply knowledge and innovate. This further confirms the critical role of 'dual-qualified' faculty in promoting the integration of industry and education; this effect is being more promoted in regions with abundant industrial resources in the eastern part of China.

The depth of school-enterprise cooperation ($\beta=0.23$) is demonstrated through mechanisms such as joint course development, shared practical training bases, and the involvement of enterprise mentors. These measures establish a collaborative education system that integrates industry and education, enhancing the connection between theory and practice. This confirms Hypothesis H1, which posits that the depth of school-enterprise cooperation has a significant positive impact on talent cultivation effectiveness. Siripap et al. (2021) found that deep cooperation not only provides students with industry resources but also enhances their employability by shaping them through real-world work scenarios, particularly in co-built colleges by government, enterprises, and schools. The depth of school-enterprise cooperation is a key measure of the integration level of industry and education in modern industrial colleges. This depth involves multiple aspects, including cooperation mechanisms, resource investment, and joint course development. Achieving deep cooperation requires a dual drive from theoretical support and practical innovation. In terms of the completeness of cooperation mechanisms, standardized cooperation agreements are essential for protecting the rights and interests of both parties and clarifying responsibilities, rights, and benefits. Venkatesh et al. (2003) proposed that cooperation agreements with specific quantifiable goals (such as indicators for improving graduates' job competencies) can effectively reduce opportunistic behavior in cooperation and enhance its stability. Luo and Park (2004) further noted that agreements with clear breach compensation clauses and dispute resolution procedures can reduce cooperation risks and enhance predictability through legal constraints and institutional guarantees.

The impact of the resource integration capability ($\beta=0.21$) is the third most significant to the effectiveness of talent training through the collaborative allocation of technology, talent, and capital among multiple stakeholders, including government, schools, enterprises, and industry. This improves the alignment between technology and talent and the efficiency of resource utilization, thus validating the hypothesis H4 that 'resource integration capability has a significant positive impact on the effectiveness of talent training.' The results of this study align with the findings of Butler and Chowdhury (2011) which stated that the central and western regions of China can strengthen resource aggregation through policy guidance, thereby narrowing the gap in targeted talent cultivation with the eastern regions.



Although the impact of inter-organizational trust ($\beta=0.18$) is relatively weak, it still significantly supports Hypothesis H2, which posits that inter-organizational trust has a significant positive effect on talent development. This suggests that mechanisms such as information sharing and emotional recognition between schools and enterprises can reduce cooperation costs and enhance collaborative stability, highlighting the practical role of 'relational trust' in industry-education collaboration in China. In this matter, Channuwong et al. (2022) and Siripap et al. (2021) stated that trust building still needs to shift towards 'institutional-driven' approaches, improving mechanisms for shared risk and benefit distribution to enhance the long-term effectiveness of cooperation, especially in the policy-driven central and western regions, where cultivating institutional trust is particularly crucial.

New Body of Knowledge

The results of this study confirm the synergy mechanism between core variables, such as the improvement of teachers' industry participation can strengthen the effectiveness of the depth of school enterprise cooperation, and inter organizational trust has a significant regulatory effect on resource integration ability and training effectiveness. This discovery breaks through the limitations of the existing research on the independent role of single variable, and provides a dynamic collaborative perspective for understanding the complex system of industrial college. The empirical results show that the impact intensity of student demand matching on training effectiveness is significantly higher than other variables, which verifies the scientific study of the "student-centered" model. When the training program is highly consistent with students' career planning and practice willingness, graduates' employment competitiveness is significantly improved. Teachers' industry participation affects the quality of training through two paths: on the one hand, teachers who participate in enterprise practice can convert real project cases into teaching content, significantly improving students' ability to solve practical problems; On the other hand, teachers' participation in the formulation of industry standards can promote the synchronization of curriculum system and industrial technology iteration, and shorten the adaptation cycle of graduates. This confirms the key role of "double qualified" teachers in the integration of theory and practice. The resource integration efficiency of industrial colleges in the eastern region is significantly higher than that in the central and western regions, which is due to the synergy difference between policy resources and industrial clusters. This reveals the moderating effect of regional economic gradient on variable effect, and provides a basis for the design of differentiated policies. This paper proposes a "quarterly training program adjustment" model based on big data, and dynamically optimizes the curriculum module by analyzing the enterprise recruitment data and students' career assessment results, so as to significantly improve the employment rate of graduates of related majors compared with the traditional training mode. Through the multidimensional linkage of theoretical innovation, empirical verification and practical guidance, the above new findings not only enrich the academic connotation of the field of integration of industry and education, but also provide an operable scientific path for the high-quality development of the Institute of modern industry, and promote the relevant research from experience summary to theoretical construction.



Conclusion

The research results showed that influencing factors, in total, were perceived at high level. In particular, the depth of school-enterprise cooperation had the highest mean value, followed by student demand matching, teacher industry participation, trust between organizations and resource integration capability. The effectiveness of talent training, in total, was perceived at high level. In particular, knowledge application ability had the highest mean value, by employment competitiveness, innovation ability, professional adaptability and employer satisfaction. The results of Multiple Regression Analysis showed that influencing factors had an effect on talent training with statistical significance at the .01 ($F=52.37$, $p=.000$). The forecasting equation from multiple regression analysis can predict the effect of influencing factors on talent training at 76 percent (Adjusted $R^2 = .76$), whereas, the rest 24 percent was the result of other factors, which were not taken into account in this study. In particular, student demand matching had the highest effect on talent training, followed by teachers' industry participation, depth of school-enterprise cooperation, resource integration capability and inter-organizational trust.

Recommendations

Practical Recommendations

Based on the empirical findings, several practical recommendations can be proposed:

1. For policymakers Government agencies should design differentiated support policies that account for heterogeneity among industrial colleges and enterprise partners. Targeted policy incentives and regulatory frameworks can enhance trust-building mechanisms and promote sustainable school–enterprise collaboration, especially in regions undergoing rapid industrial transformation.
2. For higher education institutions Industrial colleges should strengthen their internal resource integration capabilities by optimizing organizational coordination mechanisms and aligning curricula more closely with evolving industry demands. Particular attention should be paid to fostering long-term cooperative relationships rather than short-term project-based collaborations.
3. For enterprises and the public sector enterprises, especially small and medium-sized enterprises (SMEs) are encouraged to actively participate in industry–education integration initiatives by engaging in joint talent cultivation, technology transfer, and curriculum co-design. Public awareness of the social value of industry–education integration should also be enhanced to promote broader participation and trust among stakeholders.

Limitations of the Study

Despite its contributions, this study has several limitations. First, the analysis relies solely on cross-sectional data from 2025, which limits the ability to capture the long-term effects of policy adjustments or technological change on the relationships among the six variables, potentially resulting in static estimation bias. Second, the research focuses on industrial colleges at or above the provincial level, which may overlook the distinctive characteristics of cooperation between local colleges and SMEs. Such forms of “embedded cooperation” may



involve different trust-building paths and variable weight structures. Third, the study assumes linear relationships among variables and does not account for potential nonlinear effects or mediating mechanisms, which warrants further methodological verification.

Future Research Directions

Future research can be extended in several meaningful directions:

1. Dynamic and longitudinal analysis Panel data and event study methods can be employed to dynamically examine the moderating effects of policy shocks and technological change on variable relationships, thereby assessing their long-term impact on school–enterprise synergy and resource integration efficiency.

2. Qualitative and mixed-methods research In-depth interviews and case studies can be conducted to explore trust-building mechanisms among SMEs within the context of industry–education integration, uncovering nuanced interaction paths that may not be fully captured through quantitative models.

3. Model expansion and contextual enrichment Future studies may introduce moderating variables such as the level of digital technology application and policy support intensity to expand the theoretical model. In particular, research could explore the evolving connotation of student demand fit in the era of generative AI and examine its reshaping effects on other core variables.

Through these extensions, future research can further refine the interaction mechanisms among the six core variables and provide more precise theoretical and practical guidance for advancing industry–education integration.

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