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Article

Analysis on the Training Orientation of New Business Talents in the Digital Era

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Abstract: Against the backdrop of rapid development in the digital economy and the deepening implementation of education digitalization strategies, traditional business talent training models are facing practical challenges such as a single knowledge structure and insufficient adaptability in practice. In the digital era, characterized by the deep integration of digital technology into economic and social operations, new demands are placed on business talent for versatility, applicability, and innovation. "Business-Engineering Integration" (B-E integration) has emerged as an important pathway for cultivating new business talent, becoming an inevitable choice for universities to respond to industrial transformation and national strategic needs. Based on the development context of the digital era, this paper systematically analyzes the practical drivers behind cultivating new business talent through B-E integration, explaining its formation logic from three dimensions: national strategy, industrial digital transformation, and organizational reform in universities. On this basis, the paper further clarifies the training objectives for new business talent in the digital era, systematically positioning their core competencies in four areas: digital literacy and data-driven thinking ability, understanding of engineering technology and system thinking ability, business analysis and management decision-making ability, and cross-disciplinary collaboration and innovative practice ability. The study concludes that building a new business talent training system characterized by "deep business-engineering integration" is an important approach to improving the quality of talent cultivation in universities, enhancing graduates' adaptability to industry, and serving the high-quality development of the digital economy.

Keywords: Digital Age; Integration of Commerce and Industry; New Business; Personnel Training; Capability Positioning

1. Introduction

Under the background of the digital age, new generation information technologies such as big data, artificial intelligence and cloud computing are deeply embedded in the economic and social operation process, promoting the systematic reconstruction of industrial structure, business model and organizational form (Brynjolfsson & Mcafee, 2014). The new development pattern with data as the key production factor and digital technology innovation as the core driving force is profoundly changing the traditional industrial operation mode and business logic. This profound change has been summarized by scholars as the evolution process from "digital transformation" to "digital upgrading" to "digital transformation" (Vial, 2019). Its core is to use digital technology to create value and build new organizational and business models. This change is not a simple technological superposition, but involves the deep reconstruction of production organization, value creation and industrial ecology. The boundaries of traditional industries are increasingly blurred, giving birth to new business forms such as intelligent manufacturing, platform economy and digital services. The core of business competition has shifted from resource possession to data-driven and ecological construction. In this process, talents who understand both business laws and technical logic have become the key scarce resources to promote the transformation.

China has promoted the development of digital economy to the national strategic height and positioned digital talents as the basic force supporting the digital economy and the key element of new quality productivity. It can be seen that in the digital age, relying on emerging digital technology to enable the development of higher education has become the general trend. AACSB, the leading organization for global business education certification, also advocated in its vision report that business education must move towards a new paradigm that is more experiential, interdisciplinary and socially influential (AACSB, 2020). However, the current domestic research on the training orientation of "business industry integration" mostly focuses on the macro necessity elaboration or individual case introduction, and the deep-seated and structured analysis of the internal logic, systematic ability model and implementation path of integration is still insufficient. Under the dual background of education digitalization strategy and global education innovation trend, exploring a new business talent training paradigm with "business industry integration" as the core has become an important direction for colleges and universities to improve the quality of talent training. Previous studies have pointed out that under the background of digital economy, the ability structure of business talents is changing from "single management ability" to "compound ability structure". This compound ability is essentially to meet the urgent needs of the future job market for interdisciplinary skills and complex problem-solving ability (World Economic Forum, 2020). Based on this, this paper, based on the characteristics and needs of the digital age, focuses on the training orientation of "business industry integration" new business talents, and attempts to make a systematic analysis from four dimensions: driving factors, training objectives, ability model, and specific practice, in order to provide theoretical reference and practical guidance for China's colleges and universities, especially application-oriented colleges and universities to carry out relevant education reform.

2. Driving Factors of New Business Talent Cultivation of "Business Industry Integration" in the Digital Era

The rise of the new business talent cultivation of "business industry integration" is the inevitable result of the joint action of national strategy, industrial evolution, technological development and the internal logic of education. The research shows that the "digital" transformation of the new business talent training mode is essentially a systematic change driven by policy guidance, technological innovation and social needs. The driving factors can be analyzed from the macro, meso and micro levels.

2.1 Macro Level: National Strategy and Policy Driven Transformation of Digital Education

The strategic planning and policy deployment at the national level is the fundamental guidance and powerful driving force to promote the reform of higher education, especially the reform of talent training mode. In recent years, a series of intensive policy documents have jointly constituted a macro policy environment to promote the "integration of Commerce and industry" in the cultivation of new business talents. Specifically, the national policy drive is reflected in three dimensions: first, the goal traction. For example, the "14th five

year plan for the development of digital economy" defines the total demand and structural direction of digital talents, and provides macro guidance for the scale and type of talent cultivation in colleges and universities; Second, project promotion. In the "four new" construction projects (new engineering, new medical, new agricultural and new liberal arts) launched by the Ministry of education, the "new liberal arts" construction clearly encourages interdisciplinary, providing special support and resource platform for the integration of new business and engineering; The third is standard guidance, such as the digital technology engineer training project proposed in the action plan for accelerating the cultivation of digital talents to support the development of digital economy. Its ability standard essentially integrates the engineering technology ability and industrial application ability, forcing the reform of the curriculum system of related majors. From an international perspective, cultivating managers and entrepreneurs who can control digital technology has become the consensus of global higher education to meet the challenges of the technological revolution (Frey & Osborne, 2017).

2.2 Medium Level: The Real Demand for Interdisciplinary Talents in the Industrial Digital Transformation

From the perspective of industry, the manufacturing and service industries show a trend of deep integration driven by digital technology, and the industrial boundary is constantly broken. With the development of intelligent manufacturing, industrial Internet, digital supply chain and other new formats, enterprises increasingly rely on the understanding of engineering technology systems and digital platform operation logic in the process of operation and management (Porter & Heppelmann, 2015). Enterprises no longer need pure technical engineers or pure business managers but urgently need "bridge talents" who can use business logic to drive technology optimization. They are the key to the success of digital transformation projects. Digital technology innovation itself is also reshaping the paradigm of innovation and entrepreneurship, and promoting its process to be more open, collaborative and global (Nambisan et al., 2019), which puts forward higher requirements for talents' cross-border collaboration and innovation practice ability.

According to China's digital economy talent development report 2024 (see Table1), from 2021 to 2024, the proportion of the demand for business and industrial integration skills in the core industries of the digital economy jumped from 29.6% to 53.9%, far exceeding the growth level of the demand for single business and engineering skills. The industrial digital transformation has entered the "practical stage" from the "concept stage", and the demand for compound talents has become a rigid trend, which also provides the most direct industrial basis for the cultivation of new business talents with the "integration of Commerce and industry".

Table 1. Proportion of Job Skill Demand Structure in Core Industries of China's Digital Economy From 2024 to 2024

Skill demand type	Two thousand and twenty-one	Two thousand and twenty-two	Two thousand and twenty-three	Two thousand and twenty-four
Single business (marketing, finance, etc.)	28.1%	22.7%	18.3%	15.6%
Single engineering (software, code, etc.)	42.3%	37.9%	34.1%	30.5%
Integrated disciplines (business data analysis, intelligent supply chain management, etc.)	29.6%	39.4%	47.6%	53.9%

2.3 Micro Level: The Internal Demand of University Organization Reform and Talent Training Mode Innovation

From the perspective of the self-development of colleges and universities, the traditional talent training organization mode centered on colleges and majors has formed a relatively closed school running unit, which has led to the solidification of the curriculum system and tight discipline walls. With the continuous deepening

of the construction of new liberal arts and new engineering, the connotative development of higher education increasingly emphasizes interdisciplinary integration and cross-border collaboration. It is urgent for colleges and universities to break the institutional barriers between disciplines and specialties through in-depth organizational reform and institutional innovation. Some frontier studies have pointed out that to redesign business schools for the digital age, it is necessary to fundamentally reconstruct their organizational structure, curriculum system and teacher development model (Wade & Marchand, 2020). By promoting the integration of Commerce and industry, colleges and universities can integrate high-quality discipline resources and create a distinctive talent training system, so as to improve the adaptability and competitiveness of graduates in the employment market and future industrial development. This is not only a response to the trend of education reform, but also the internal requirement for colleges and universities to achieve sustainable development and serve social progress.

3. Training Objectives of New Business Talents of "Business Industry Integration" in the Digital Era

Under the background of the rapid development of digital economy and the deep promotion of a new round of scientific and technological revolution, the industrial boundaries are constantly broken, and the business model, production mode and management paradigm are undergoing systematic reconstruction. In this context, the traditional business talent training mode characterized by subject segmentation and linear knowledge transfer has been difficult to meet the urgent demand for compound, innovative and applied talents in the digital era. As an important talent training concept in response to industrial change, the core of "business industry integration" is to break the barriers between business and engineering, and realize the synergy and symbiosis of technical logic and business logic. Therefore, the training goal of "integration of Commerce and industry" new business talents in the digital era should be based on the national digital economy development strategy and the needs of regional industrial transformation, and systematically build a target system with value guidance, ability recombination and practice orientation.

At the level of value objectives, the cultivation of new business talents of "integration of Commerce and industry" should be fundamentally oriented to serve the high-quality development of digital economy, and strive to shape high-quality talents with a sense of social responsibility, industrial mission and innovative spirit. On the one hand, business activities in the digital age are more complex, and their impact has exceeded a single economic dimension, involving multiple issues such as data ethics, technology governance, social equity and sustainable development. Therefore, new business talents should not only have economic rationality and market awareness, but also establish correct values and consciously follow social norms and public interests in technology application and business decision-making. On the other hand, in the face of the reality of rapid iteration of new technologies and increased industrial uncertainty, talent cultivation should strengthen the awareness of innovation and the concept of lifelong learning, guide students to actively adapt to and lead changes, and change from "passive employees" to "value creators" and "industrial innovators".

At the level of capability objectives, the new business talents of "integration of Commerce and industry" in the digital era should have a composite capability structure that integrates technical understanding, business analysis and cross-border collaboration. Specifically, one is to have a solid business foundation and systematic management thinking, and be able to understand enterprise operation, market mechanism and industrial laws; The second is to have certain technical literacy and data understanding ability, be able to read the technical logic, understand the value of data, and effectively communicate with technicians; Third, we should have the ability of interdisciplinary integration and collaborative innovation, be able to integrate technology, capital, data and organizational resources in complex situations, and promote business model innovation and industrial

upgrading. This ability structure requires talents to complete the complete closed loop from "technical insight" to "business value". Through the compound remodeling of the ability structure, the new business talents will no longer be the executor of a single function, but the compound talents who can assume the key roles of decision support, innovation planning and project planning in a digital and intelligent environment.

At the level of knowledge objectives, the new business talent cultivation of "business industry integration" should realize the transformation of knowledge system from "discipline based" to "problem oriented" and "scene oriented". Business problems in the digital age are often highly comprehensive and situational, and a single subject knowledge is difficult to solve complex practical problems independently. Therefore, the goal of talent training should not only stay in the expansion of knowledge "coverage", but also emphasize the systematicness and applicability of knowledge structure. On the one hand, students should be guided to systematically understand the development trend of digital technology, engineering thinking and industrial technology on the basis of mastering the core theories of business such as economics and management; On the other hand, the teaching of knowledge must be closely combined with the scene. Comprehensive courses or projects should be designed by introducing real or highly simulated business and industry scenarios such as "smart retail", "intelligent manufacturing supply chain optimization" and "financial technology risk management", so as to encourage students to independently associate, transfer and comprehensively apply scattered business knowledge and technical knowledge in the process of solving practical problems, so as to form a flexible cognitive structure, rather than an isolated and inert accumulation of knowledge points.

At the level of development goals, the cultivation of new business talents of "business industry integration" in the digital era should focus on students' sustainable development ability and career adaptability. With the continuous evolution of digital technology, the future career form and job demand will continue to change. New business talents must have the ability of continuous learning, rapid iteration and self-renewal. Therefore, the training goal should not only focus on the achievement of students' ability when they graduate, but also on their long-term development potential. By strengthening their learning ability, reflection ability and innovation ability, it will lay a solid foundation for their sustainable growth in the digital industry and emerging business fields in the future.

Therefore, the training goal of "business industry integration" new business talents in the digital era should be based on the value guidance, the ability combination as the core, the knowledge integration as the support, and the sustainable development as the guidance, to build a multi-level and three-dimensional talent training target system, so as to provide a solid talent support for the deep integration of industry and Commerce and the high-quality development of industry under the background of digital economy.

4. The Ability Orientation of The New Business Talent Cultivation of "Business Industry Integration" in the Digital Era

Focusing on the training goal of "business industry integration" of new business talents in the digital era, its ability orientation should be closely connected with the development needs of digital economy and industrial practice scenarios, highlighting the characteristics of complexity, applicability and innovation. Overall, its core competence positioning is mainly reflected in the following four aspects:

4.1 Digital Literacy and Data Driven Thinking Ability

Digital literacy and data-driven thinking ability are the basic abilities of new business talents in the digital era. With the wide application of big data, artificial intelligence, cloud computing and other technologies, data has become the core production factor of enterprises. New business talents should not only have basic data awareness but also be able to form data-based analysis and decision-making thinking in business practice.

Specifically, they should master basic data analysis methods and tools, be able to interpret multi-source data, and transform the analysis results into information that can support management decisions. Research shows that it is very important to build a "digital thinking mode" for the data age, which covers a series of thinking habits such as value cognition, critical evaluation and innovative application of data (Crittenden & Crittenden, 2021). The strategic application of artificial intelligence and other technologies has pushed data-driven decision-making to a new height (Borges et al., 2021). Therefore, digital literacy is not only a kind of technical ability, but also a way of thinking that runs through the whole process of problem identification, scheme design and decision execution. It is the bottom support of the new business talent ability system of "business industry integration".

4.2 Engineering Technology Understanding and System Thinking Ability

The understanding of engineering technology and the ability of systematic thinking are the important characteristics that distinguish the new business talents from the traditional business talents. Under the background of digital economy, business activities are increasingly dependent on complex technical systems. In this situation, although new business talents do not have to become engineering and technical experts, they must have the ability to understand the basic principles and operation logic of engineering and technical systems, and be able to read and understand technology, so as to make scientific judgments in business decisions. At the same time, engineering technology itself is highly systematic and collaborative, which requires new business talents to have the ability of systematic thinking, be able to analyze business problems from an overall perspective, and understand the internal relationship between technology, organization and market. In the era of artificial intelligence, the qualitative judgment, systematic thinking and mechanism cognitive ability emphasized by engineering scientific literacy are the cornerstone of creative work (Hua, 2025). This ability is of great significance for improving the efficiency of cross professional team cooperation and controlling complex digital business projects.

4.3 Business Analysis and Management Decision-Making Ability

Business analysis and management decision-making ability is still one of the core abilities of new business talents, but its connotation has been significantly expanded in the digital era. New business talents need to make full use of data and technical tools, comprehensively consider the technical feasibility, economic rationality and organizational adaptability, and carry out systematic analysis and scientific decision-making. This not only requires them to have a solid theoretical foundation in economics and management but also requires them to be able to carry out scenario analysis, risk assessment and scheme optimization in a dynamic environment. The popularity of digital technology has spawned a new digital business model, whose construction path depends on the deep integration of technological possibilities and business logic (Knotted et al., 2021). Therefore, the business analysis and management decision-making ability should be upgraded from a single "analysis ability" to a comprehensive decision-making ability integrating data, technology and strategic perspectives.

4.4 Cross Border Collaboration and Innovation Practice Ability

Cross border collaboration and innovation practice ability is an important ability for new business talents to realize value creation in the digital era. With the development of digital economy, business problems often show the characteristics of cross domain, multi-agent and multi-objective. New business talents need to have good communication and expression skills, team cooperation ability and organization and coordination ability,

and can play the role of bridge and link in the team composed of engineering and technical personnel, management personnel and marketing personnel (George et al., 2021). At the same time, it should also have a strong sense of innovation and practical ability, be able to carry out exploratory practice in real business and industrial scenarios and transform interdisciplinary knowledge into innovative solutions that can be implemented. Successful digital transformation cases show that the establishment of a close "technology business" collaborative partnership is the organizational guarantee for the smooth transformation of large organizations (Sebastian et al., 2020). This synergy, in a broader sense, is also a "pull" that can attract resources, pool wisdom, and expand in a small way (Hagel et al., 2020).

5. Conclusion

Under the background of the digital age, the profound impact of digital technology on economic and social development makes the cultivation of new business talents face unprecedented opportunities and challenges. Starting from the multi-level driving factors, this paper systematically analyzes the training orientation of "business industry integration" new business talents (see Figure 1). The research believes that "business industry integration" is an important path to achieve high-quality development of new business talents. This path not only responds to the national strategy and industrial needs but also conforms to the trend of global business education innovation and interdisciplinary integration.

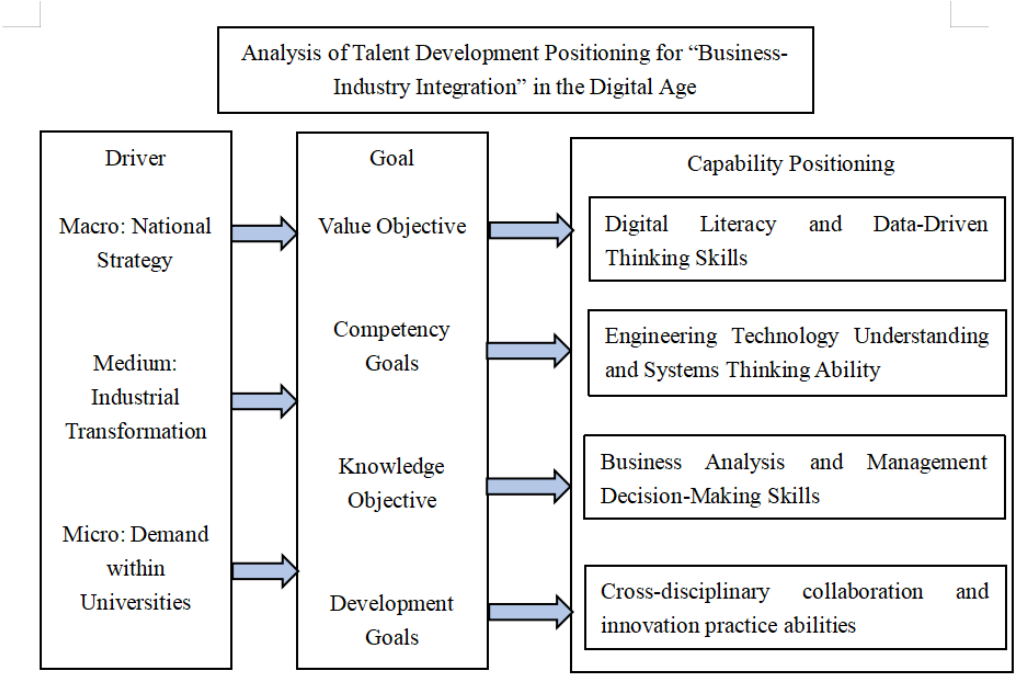

Figure 1. Analysis of Talent Training Orientation of "Integration of Commerce and Industry" in the Digital Era

This study systematically explains the internal logic of the training orientation of "integration of Commerce and industry": it is an inevitable choice driven by national policy, industrial demand and endogenous power of colleges and universities; Its goal is to cultivate interdisciplinary talents with four dimensions of value, ability, knowledge and development; Its core competencies are anchored in the four pillars of digital literacy, system thinking, business decision-making and cross-border collaboration; Its implementation depends on the linkage reform of curriculum, teachers, platform and evaluation system. Colleges and universities

should take a clear training orientation as the guide, promote the deep integration of business and engineering at the level of knowledge, ability and literacy through systematic design, especially strengthen the compound ability building based on digital literacy and systematic thinking, and constantly improve the adaptability and effectiveness of new business talent training.

In the future, in the process of promoting the "integration of Commerce and industry", colleges and universities should pay special attention to avoiding the misunderstanding of "emphasizing form over substance", "emphasizing technology over commerce" or "emphasizing knowledge over ability", and truly take the development of students' ability and the satisfaction of industrial needs as the final test standard. Only in this way can we finally cultivate a large number of urgently needed "bridge type" key talents who can connect technology and business for the development of digital economy and provide a solid talent foundation for the high-quality development of China's economy and the improvement of international competitiveness.

DATA AVAILABILITY STATEMENT

All data supporting the findings of this study are available within the article and its supplementary materials. Additional data may be obtained from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTIONS

Wei Chen: Conceptualization, Writing - original draft, Writing - review & editing, Investigation, Methodology, Data collection, Data analysis.

Yating Yuan**:** Conceptualization, Writing - original draft, Investigation, Methodology, Data collection.

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COMPETING INTERESTS

The authors declare no competing interests.

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