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Research on the Challenges and Breakthrough Pathways for Enhancing Human Resource Resilience in Liaoning Province in the Context of the Digital Economy

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Abstract: The rapid development of the digital economy is profoundly reshaping the global economic landscape and human resource systems. Regional human resource resilience, as a core capability for addressing uncertainty and supporting industrial transformation, is increasingly recognized as critical. As a traditional industrial base in Northeast China, Liaoning Province faces unique challenges in its digital economy transformation, including an overly reliant industrial structure and talent outflow, making the development of human resource resilience particularly urgent. This paper employs literature review, case analysis, and comparative research methods to systematically analyze the mechanisms through which the digital economy influences Liaoning Province's human resource resilience. It identifies current challenges in structural adaptability, mobility efficiency, ecological support, and governance coordination, and proposes targeted breakthrough strategies across four dimensions: skill development, mobility optimization, ecological construction, and governance innovation. The study aims to provide theoretical references and practical guidance for enhancing human resource resilience and promoting the deep integration of the digital economy with the real economy in Liaoning Province, while also offering insights for human resource transformation in similar regions of the Northeast Old Industrial Base.

1. Introduction

The digital economy has become the core engine of global economic growth. Its characteristics-with data as the key production factor and digital technology as the core driving force-are profoundly transforming production methods, employment structures, and talent demands[1]. From artificial intelligence to industrial internet, the widespread penetration of digital technology has not only spawned new business models and modes of operation but also imposed new demands on the adaptability and risk-resilience of human resources systems. In this context, human resources resilience, as the invisible cornerstone of high-quality regional economic development, has evolved from a mereshock-resistance capability to a dynamic equilibrium capability of adapting to change and innovating through adaptation[2]. For Liaoning Province, this proposition holds particular

significance. As one of China's key old industrial bases, Liaoning once led the nation with its robust industrial foundation and technical talent reserves. However, in recent years, factors such as lagging industrial restructuring and slow digital transformation have placed the human resources system under multiple pressures, including talent outflow and skill obsolescence. How to reshape human resources resilience in the digital economy wave is both the key to breaking through regional development bottlenecks and a strategic fulcrum for achieving Northeast China's revitalization.

A review of domestic and international research indicates that the interactive relationship between the digital economy and human resources has become an academic hotspot. Existing research has primarily focused on the impact of digital technology on employment polarization and skill premiums [3], with a particular emphasis on regional disparities. The experiences of developed regions such as the Yangtze River Delta and the Pearl River Delta in leveraging policy innovation to build digital talent ecosystems have been widely discussed [4]. Regarding human resources resilience, existing research has primarily approached the topic from an organizational perspective, with limited systematic analysis at the regional level, and a notable lack of empirical exploration targeting old industrial bases. Liaoning Province's uniqueness lies in the fact that its human resource resilience not only faces common challenges posed by the digital economy but also bears the historical burden of the transformation of old industrial bases, such as high skill conversion costs for workers in traditional industries and strong institutional constraints on talent mobility. These unique characteristics dictate that research cannot simply replicate the experiences of developed regions but must instead construct a more targeted analytical framework.

Based on this, the core research content of this paper includes three aspects: first, analyzing the internal mechanisms of the digital economy's impact on the resilience of human resources in Liaoning Province and identifying key pathways; second, combining field research and data evidence to identify the specific challenges currently faced in enhancing resilience; and third, designing a breakthrough path for multi-stakeholder collaboration from a regional governance perspective. The research methodology follows a logical sequence of theoretical framework-current status analysis-challenge identification-pathway design. It establishes a theoretical foundation through literature review, highlights Liaoning's shortcomings through case comparisons (e.g., comparisons with Jiangsu and Guangdong's digital talent policies), and ultimately arrives at research conclusions that combine theoretical depth with practical value.

In terms of research methodology, this paper will employ a combination of literature review, case analysis, and comparative research methods. By reviewing core literature in fields such as the digital economy and human resource resilience, a theoretical analytical framework will be constructed. Typical cases such as the equipment manufacturing industry in Shenyang and the software industry in Dalian will be selected to analyze the current state of resilience at the industry level. By comparing policy practices in advanced regions within China, lessons that can be learned will be distilled. Additionally, to enhance the empirical validity of the research, we will integrate data from the Liaoning Provincial Statistical Yearbook and publicly available data from the human resources and social security department, supplemented by interviews with small-scale enterprises, to strengthen the persuasiveness of the conclusions. The innovative aspects of the research are twofold: first, it is the first to integrate regional governance theory into human resource resilience research, emphasizing the collaborative role of government, enterprises, and universities; second, grounded in the context of the transformation of old industrial bases, the proposed pathways address the common requirements of the digital economy while also taking into account Liaoning's industrial characteristics and historical endowments.

2. The Theoretical Relationship between the Digital Economy and Human Resource Resilience and the Current Development Status in Liaoning Province

2.1. Definition of Core Concepts

The digital economy can be defined from three dimensions: technology, industry, and governance. At the technological level, it is supported by digital technologies such as 5G, big data, and artificial intelligence. At the industrial level, it manifests as a dual-drive model of digital industrialization (e.g., the electronics manufacturing industry) and industrial digitalization (e.g., smart manufacturing). At the governance level, it is reflected in new governance models such as the market-based allocation of data elements and the coordination of digital rules. Its core characteristics are data-driven, platform-enabled, and cross-border integration [5], which have a disruptive impact on the skill structure, allocation efficiency, and innovation capabilities of human resources in regional economic development. Human resource resilience, as the core capability to address these demands, must be understood from a dynamic perspective-it not only refers to the resilience of the human resource system in the face of external shocks (such as technological revolutions and economic fluctuations), but also includes the recovery capacity to achieve functional upgrades through structural adjustments after shocks, as well as the transformation capacity to proactively adapt to changes. From a compositional perspective, risk-resistance capabilities (such as buffer mechanisms to address unemployment risks), adaptability (such as the speed of skill updates), innovation capabilities (such as the potential for talent to create new occupations), and collaborative capabilities (such as the efficiency of cross-departmental talent cooperation) collectively constitute the core elements of regional human resource resilience. Regional governance plays the role of a coordinator in this process, integrating government, market, and social forces to balance efficiency and fairness, thereby providing institutional safeguards for enhancing human resource resilience.

2.2. The Correlation Mechanism between the Digital Economy and Human Resource Resilience

The correlation between the digital economy and human resource resilience exhibits a double-edged sword effect. On the one hand, digital technology enhances resilience through empowerment: the widespread adoption of industrial internet has made production processes more flexible, reducing the impact of changes in individual positions on the overall system [6]; online education platforms have broken the spatial and temporal constraints of skills training, accelerating the improvement of human resource adaptability; new business models such as the platform economy and sharing economy, which have emerged from the digital economy, have provided talent with diversified employment channels, enhancing the system's risk-resistance capabilities. On the other hand, the digital economy also tests resilience through disruption: skill mismatches are exacerbated, with traditional industry workers facing unemployment risks due to a lack of digital skills, while there is an insufficient supply of high-end talent in the digital industry [7]; employment polarization is emerging, with the gap between high-skill, high-paying positions and low-skill, low-paying positions widening, weakening the stability of the human resources system; The existence of urban-rural and regional digital divides has resulted in an unbalanced pattern of human resource resilience, characterized by strong in the east, weak in the west; strong in cities, weak in rural areas. The role of regional governance lies in mitigating these negative effects through policy interventions, such as promoting digital skills training through fiscal subsidies, narrowing the digital divide through equalization of public services, and optimizing talent allocation through multi-stakeholder collaboration mechanisms.

2.3. Overview of Digital Economy Development in Liaoning Province

The digital economy in Liaoning Province is currently in an accelerated catch-up phase. From the perspective of industrial digitization, as a traditional industrial base, Liaoning has made some progress in the digital transformation of traditional industries such as equipment manufacturing, metallurgy, and petrochemicals. Projects like the Smart Manufacturing Demonstration Factory of Shenyang Blower Group and the Digital Twin Mine of Ansteel Group have become industry benchmarks. However, the overall penetration rate remains below the national average, and the lag in digital transformation among small and medium-sized enterprises is particularly pronounced. In terms of digital industrialization, the Dalian software industry cluster has reached a certain scale, with the revenue of the software and information technology services industry exceeding 300 billion yuan in 2024. However, there are few leading enterprises in emerging fields such as artificial intelligence and blockchain, and the industrial ecosystem is not yet fully developed. In terms of digital infrastructure construction, the density of 5G base stations across the province has reached 8.5 per 10,000 people, achieving basic coverage in areas above the county level. However, there is still room for improvement in network speed and stability in rural areas, and the depth of industry applications on industrial internet platforms remains insufficient. In terms of policy support systems, Liaoning Province has successively issued documents such as the Digital Liaoning Development Plan (2021-2025) and the Liaoning Province Digital Economy Promotion Regulations, clearly proposing the talent-driven digitalization strategy. Measures such as housing subsidies and startup support are being used to attract digital talent, but the systematic and continuous nature of these policies still needs to be strengthened.

2.4. Current Foundation of Human Resource Resilience in Liaoning Province

The current foundation of human resource resilience in Liaoning Province is characterized by the coexistence of traditional strengths and emerging weaknesses. In terms of human resource stock, the province has a permanent population of approximately 41 million, with 63% of the population in the working-age group. It has 116 universities, producing over 300,000 graduates annually, providing a basic guarantee for human resource supply. The talent advantages of traditional industries remain prominent. The workforce in the equipment manufacturing sector is highly experienced, with a number of national-level skill master workshops, and possesses unparalleled competitiveness in precision processing and equipment maintenance. In terms of the human resources service system, the province has established a three-tier public employment service network at the provincial, municipal, and county levels, with vocational skills training covering urban and rural workers. Human resources service industrial parks in cities like Shenyang and Dalian have gathered a number of professional institutions, providing support for talent mobility. However, it should also be noted that there is a significant gap between these foundations and the demands of the digital economy: The trend of high-educated young talent flowing out of the province has not been fundamentally reversed, with the employment rate of university graduates within the province in 2023 being less than 50%; there is a significant shortage of digital skills talent, with the supply-demand ratio for positions such as artificial intelligence engineers and data analysts exceeding 1:10 according to data from the Provincial Department of Human Resources and Social Security; and the digitalization level of human resources services remains low, with low adoption rates for new service models such as online recruitment and remote training. These realities underscore the urgency and complexity of enhancing Liaoning Province's human resources resilience.

3. Challenges Faced in Enhancing Human Resource Resilience in Liaoning Province in the Context of the Digital Economy

3.1. Challenges in Aligning Human Resource Structure with Digital Economy Demands

The mismatch between human resource structure and digital economy demands is the most pressing challenge at present. On the one hand, workers in traditional industries lack the necessary digital transformation capabilities. In Liaoning Province, the proportion of the workforce employed in traditional manufacturing remains as high as 35%, with over 50% of workers aged 45 or older. This group has long been engaged in repetitive, experience-based work and has low acceptance of digital skills such as operating intelligent equipment and data-driven management. Surveys indicate that only 18% of workers in traditional industries have received systematic digital skills training, and most companies report that older workers cannot use new equipment is the primary obstacle to the intelligent upgrading of production lines. On the other hand, there is a severe shortage of high-end talent in the digital industry. Although Dalian's software industry is large in scale, local talent accounts for less than 40% of core technical positions, with a heavy reliance on talent from other regions. High-end talent in emerging fields such as artificial intelligence and cloud computing is even more scarce, with companies forced to offer salaries 20% higher than the national average to compete for talent, yet still unable to meet demand. The imbalance in age and educational structure further exacerbates this mismatch dilemma: among the province's working-age population, those aged 55–64 account for 22%, with an aging rate higher than the national average. Meanwhile, over 60% of highly educated talent (bachelor's degree or above) under 30 choose to work outside the province, leading to insufficient reserves of the youth talent pool needed for digital economic development. This structural contradiction of excess traditional skills and shortage of digital skills makes it difficult for the human resources system to quickly respond to the transformative demands of the digital economy.

3.2. Efficiency Challenges in Human Resource Mobility and Allocation

The inefficiency of human resource mobility and allocation constrains the flexibility required for enhancing resilience. Talent distribution within the region exhibits a polarized trend, with Shenyang and Dalian concentrating over 70% of the province's digital economy enterprises and high-end talent, while cities in western and northern Liaoning such as Jinzhou and Fuxin have talent densities that are only one-third of Shenyang's. The causes of this imbalance are twofold: on one hand, administrative divisions create institutional barriers, with regional disparities in public services such as social security continuity, professional title evaluation, and children's education, resulting in high costs for talent mobility across cities; on the other hand, the uneven distribution of industries means that non-core cities lack a solid foundation in the digital economy, making it difficult to offer attractive job opportunities. The issue of insufficient cross-regional talent attraction is even more pronounced. Compared to the Yangtze River Delta and Pearl River Delta regions, Liaoning Province lags significantly behind in terms of salary levels, career opportunities, and innovation and entrepreneurship ecosystems. Data shows that the average salary in Liaoning Province's digital industry is only 65% of that in Shenzhen, and the province lacks a digital industry ecosystem like those in Hangzhou and Chengdu, leading to difficulties in attracting and retaining high-end talent. Even when talent is attracted through policy incentives, they often leave again due to a lack of opportunities to utilize their skills. This internal imbalance and weak external attraction creates a talent mobility dilemma, preventing human resources from achieving resilience through optimized allocation and instead exacerbating regional development imbalances.

3.3. Challenges in the Ecological Support System for Human Resource Development

The ecological support system for human resource development has yet to establish a virtuous cycle compatible with the digital economy. The uneven development of digital infrastructure remains the primary bottleneck. While urban areas have relatively well-developed digital infrastructure, rural regions still face deficiencies in network coverage quality and data application scenarios, preventing rural labor from fully benefiting from the digital economy and widening the resilience gap between urban and rural human resources. The challenges faced by small and medium-sized enterprises (SMEs) in their digital transformation further weaken the ecological support capacity. Over 80% of SMEs in the province lack the funds, technology, and talent required for digital transformation, making it difficult for them to adapt to market competition in the digital economy. Not only are they unable to create high-quality job opportunities, but they also face the risk of being phased out, which directly impacts the employment stability of human resources. The disconnect between the vocational training system and market demand is particularly prominent. The establishment of digital economy-related majors in higher education institutions lags behind industrial development, with course content emphasizing theory over practice; pre-employment and on-the-job training provided by enterprises has limited coverage and is primarily focused on basic operational skills, lacking cultivation of digital thinking and innovative capabilities; The quality of training provided by social training institutions varies widely, and the alignment between certificates and job requirements is low. More importantly, as the primary entity responsible for human resource development, enterprises have not fully leveraged their role. Many traditional manufacturing enterprises still exhibit a tendency to prioritize technological investment over talent cultivation, equating digital transformation with mere equipment upgrades while neglecting the concurrent enhancement of employees' digital skills. This results in a mismatch between machine replacement and talent upgrading, thereby reducing the adaptability of the human resource system.

3.4. The challenge of coordinating the human resources resilience governance system

The lack of coordination in the human resources resilience governance system hinders the full realization of policy effectiveness. At the government level, there is a clear issue of policy fragmentation, with talent policies from the human resources and social security department, digital economy policies from the industry and information technology department, and training policies from the education department failing to effectively align, and even conflicting in their objectives. For example, some local governments, in an effort to promote digital industry development, have overly prioritized attracting high-end talent while neglecting the skill transformation of workers in traditional local industries, resulting in waste of policy resources. The absence of a multi-stakeholder coordination mechanism is even more critical. The division of responsibilities among government, enterprises, universities, and industry associations in enhancing human resource resilience is unclear, and there is a lack of routine communication and cooperation platforms. There is a disconnect between university talent cultivation and corporate needs, with low corporate participation in vocational education, and the role of industry associations in standard-setting and information sharing has not been fully activated. This governance structure, characterized by government acting alone, insufficient market response, and limited social participation, results in a lack of systemic synergy in enhancing human resource resilience, making it difficult to form a virtuous cycle of policy guidance-market operation-social collaboration.

4. Pathways to Enhancing the Resilience of Human Resources in Liaoning Province in the Context of the Digital Economy

4.1. Strengthening Digital Skills Development and Optimizing the Quality Structure of Human Resources

Strengthening digital skills development is a foundational initiative for optimizing the quality structure of human resources and enhancing resilience. It requires the establishment of a collaborative system involving universities, enterprises, and government. As the primary source of talent cultivation, universities should accelerate the development of programs related to the digital economy, incorporate courses on artificial intelligence and big data analysis into traditional disciplines such as computer science and software engineering, and establish interdisciplinary programs in the digital economy to cultivate composite talents who are proficient in both technology and industry. Enterprises should assume primary responsibility for on-the-job training, promote the new apprenticeship system, and conduct customized digital skills training based on production realities. Leading enterprises such as Shenyang Machine Tool and Shenyang Compressor Group can pilot a digital skills certification system, linking training outcomes to job promotions and salary incentives. The government should play a guiding and supportive role by establishing a digital skills training special fund to subsidize training for small and medium-sized enterprises and rural workers, while also establishing the Liaoning Province Digital Skills Public Service Platform to integrate high-quality training resources and provide free online courses. For the special group of traditional industrial workers, a digital craftsman cultivation program should be implemented, using methods such as mentoring newcomers and hands-on training to help them master practical skills such as operating intelligent equipment and collecting production data, thereby reducing the cost of skill transition. For young digital talent, the government should enhance attractiveness by optimizing public services, establishing digital talent communities in core cities like Shenyang and Dalian, and providing services such as housing guarantees and priority access to education for children. Additionally, it should develop digital economy innovation and entrepreneurship zones, offering tax incentives and financing support to startup teams, ensuring that young talent can be attracted, retained, and utilized effectively.

4.2. Facilitate the flow of human resources to enhance allocation efficiency and flexibility

Facilitating the flow of human resources is a key measure to enhance allocation efficiency and strengthen resilience and flexibility. To break down barriers to talent mobility within the region, we should seize the opportunity presented by the development of the Shenyang-Dalian metropolitan area to promote the integration of talent policies. A cross-city social security transfer mechanism shall be established to ensure seamless portability of pension and healthcare coverage, mutual recognition of professional qualifications shall be implemented to eliminate administrative barriers in career advancement, and educational and healthcare resources across metropolitan areas shall be coordinated through a shared high-quality public services framework—enabling unrestricted talent mobility within the region without reservation. To address the issue of weak cross-regional talent attraction, innovative digital talent hub models can be established, collaborating with digitally advanced regions such as Beijing, Shanghai, and Shenzhen to co-build offshore innovation centers. Through flexible talent recruitment methods such as project collaboration, technical consulting, and weekend engineers, high-end talent can be attracted to serve Liaoning while avoiding the high costs associated with full-time talent recruitment. Optimizing human resource allocation through digital technology is an inevitable choice. Efforts should be accelerated to build a Liaoning Province Human Resources Big Data Platform, integrating data on corporate job requirements, talent skill levels, and

training resources, and utilizing artificial intelligence algorithms to achieve precise matching. The platform can also monitor talent mobility trends and skill gaps in real time, providing data support for policy formulation. For example, when a digital skill shortage emerges in a particular industry, the platform can automatically trigger training alerts to guide targeted resource allocation. By combining regional collaboration, flexible talent recruitment, and digital empowerment, the efficiency and flexibility of human resource mobility can be enhanced, injecting vitality into resilience enhancement.

4.3. Building a sound digital ecosystem to lay a solid foundation for the resilient development of human resources

Building a sound digital ecosystem is a systematic endeavor to lay a solid foundation for the resilient development of human resources. The balanced layout of digital infrastructure is a prerequisite. Efforts should be made to continuously extend digital infrastructure to counties and rural areas, improve the coverage quality and speed of 5G networks and fiber-optic broadband in rural areas, and narrow the digital divide between urban and rural areas. To address the issue of insufficient digital transformation capabilities among small and medium-sized enterprises (SMEs), a Digital Partnership Program can be implemented, where the government purchases services to organize leading digital economy enterprises and professional service providers to offer free digital diagnostics and technical guidance to SMEs. Financial subsidies can be provided to enterprises that achieve significant transformation outcomes. Additionally, SMEs should be supported in accessing industrial internet platforms to share computing power, data, and technical resources, thereby reducing transformation costs. Leading enterprises should play a leading role in ecosystem construction. Local digital enterprises such as Dalian Huaxin and Neusoft Group should be encouraged to open their technology platforms to drive the development of SMEs upstream and downstream in the industrial chain. Traditional industry leaders (such as Ansteel and Benxi Steel) should be supported to collaborate across industries with digital enterprises to form a manufacturing-plus-digital integrated ecosystem. Through industrial agglomeration effects, talent should be attracted and cultivated, creating a virtuous cycle where industrial development attracts talent, and talent attracts industrial growth. Additionally, it is necessary to improve the digital economy employment support system by establishing digital employment service stations in communities to provide digital career guidance and job recommendations for workers. Particular attention should be given to the digital employment transition of groups such as migrant workers and laid-off workers, helping them secure employment through new business models like e-commerce live streaming and online customer service, thereby enhancing the inclusiveness and risk-resilience of the human resources system.

4.4. Innovate regional governance models and enhance the collaborative governance capabilities of human resources resilience

Innovating regional governance models is key to addressing the issue of insufficient collaboration among multiple stakeholders. A governance framework should be established from three aspects: institutional design, empowerment of stakeholders, and mechanism innovation, to form a multi-stakeholder governance structure. A joint conference system for the governance of human resources resilience in the digital economy should be established, led by a provincial government official in charge, to convene monthly meetings with multiple departments to address issues such as policy coordination, resource allocation, and cross-regional collaboration. Meeting resolutions should be documented in a ledger, with clear responsibilities and timelines, and supervised by the inspection office to prevent indecision. Social organizations in the human resources service sector should be cultivated, with a focus on supporting digital economy industry associations and professional service

institutions. Industry associations should be granted the functions of setting talent standards and certifying skills, while service institutions should be commissioned to conduct talent forecasting and training. The government should oversee quality, establish standards, and incentivize social participation through tax incentives. A dynamic evaluation and early warning mechanism should be established, based on big data, comprising a system with four primary indicators and 12 secondary indicators, covering risk resilience, adaptability, innovation, and collaborative capacity. The National Bureau of Statistics should integrate data and release a resilience index report quarterly, setting warning thresholds. In case of anomalies, a response mechanism should be triggered to swiftly formulate intervention measures.

5. Conclusions and Policy Recommendations

5.1. Main Conclusions

This paper conducts a systematic study on the issue of enhancing human resource resilience in the context of the digital economy in Liaoning Province, and draws the following core conclusions: First, Liaoning Province faces four major challenges in enhancing human resource resilience, including inadequate alignment between human resource structure and the demands of the digital economy, low efficiency in human resource mobility and allocation, weak ecological support for human resource development, and insufficient coordination in the governance system for human resource resilience. These challenges stem both from the common challenges posed by the digital economy and from Liaoning Province's historical characteristics as an old industrial base, such as a high proportion of workers in traditional industries and strong institutional constraints. Second, enhancing the resilience of human resources in Liaoning Province requires the coordinated advancement of multi-dimensional pathways. Strengthening the cultivation of digital skills is a foundational endeavor, facilitating the flow of human resources is a key measure, building a favorable digital ecosystem is an important support, and innovating regional governance models is an institutional guarantee. These four pathways are not isolated but form an organic whole that is mutually interconnected and reinforcing. For example, the effectiveness of skill cultivation requires talent mobility to achieve optimal allocation, while ecosystem development provides the environmental support for skill cultivation and talent mobility. Third, regional governance plays an irreplaceable role in enhancing human resource resilience. Only through the collaborative efforts of governments, enterprises, universities, and social organizations can the current systemic challenges be addressed, leading to a virtuous governance framework characterized by policy guidance, market operations, and social collaboration.

5.2. Policy Implications

For the Liaoning Provincial Government, policy optimization should be pursued from three key areas: first, strengthen policy integration by reviewing existing talent policies, industrial policies, and digital economy policies to eliminate conflicting provisions, and establish the "Liaoning Province Digital Economy Human Resources Resilience Enhancement Action Plan" to clarify future five-year objectives, tasks, and responsibility assignments; second, increase resource allocation by establishing a digital talent development fund to prioritize projects such as digital skills training for workers in traditional industries and the recruitment of high-end digital talent. Simultaneously, digital talent zones are piloted in Shenyang and Dalian to grant greater policy autonomy; third, build a collaborative governance platform to consolidate talent data and training resources scattered across various departments, creating a one-stop human resources service platform to enhance service efficiency.

For enterprises and social organizations, they should proactively assume social responsibility: As the primary entities in human resource development, enterprises should shift away from a mindset

that prioritizes technology over talent, incorporating digital skills training into their corporate development strategies. Traditional manufacturing enterprises, in particular, should increase investments in digital skills training for their employees to achieve simultaneous progress in automation and talent upgrading. Social organizations should actively participate in the governance process. Industry associations can serve as bridges to facilitate communication and information sharing between government and enterprises. Human resource service institutions should innovate their service models to provide customized digital talent solutions.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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