Development Economics of China
2025, VOL. 9, NO. 12, 92-96
DOI: 10.47297/wspdecWSP2515-797319.20250912

A Study on the Influence of Digital Economy Development on Labor Employment

Yajie Zhu

Guangzhou College of Commerce, Guangzhou, Guangdong, 511363, China

ABSTRACT
This paper systematically studies the multidimensional effects of digital economy on labor employment and its internal mechanisms, and finds that digital economy has significant employment creation effects through the birth of new formats and new posts, which are embodied in direct creation, form creation, association creation and space creation; meanwhile, its substitution effects also impact traditional employment deeply, which are embodied in four aspects: automation substitution, de-intermediation, skill iteration acceleration and overall format substitution. Creation effect and substitution effect work together to promote the transformation of employment form from fixed post to task, platform and distance, and lead to the characteristics of skill polarization and liquid employment structure. This paper puts forward systematic countermeasures from three levels of government, society and individual, including constructing digital skills and lifelong learning system, innovating labor and social protection system, implementing employment-friendly industrial policies, upgrading public employment services and promoting regional inclusive development, so as to promote employment stability and high-quality development in the digital economy era.

KEYWORDS
Digital economy; Employment impact; Employment creation; Employment substitution; Employment structure

1 Introduction

The digital economy is reshaping global economic operations with unprecedented breadth and depth. New technologies, represented by artificial intelligence and big data, while creating new industries and jobs, also form substitution shocks to traditional employment positions, triggering a series of practical challenges such as polarization of employment structure, skill supply-demand mismatch, and lagging labor rights protection. Against this profound backdrop, systematically investigating the net effect, mechanisms, and response strategies of the digital economy on employment helps break through the limitations of traditional labor economics theory, construct a new analytical framework for the digital technology-employment relationship, and deepen the understanding of the inherent laws of employment structural change. Concurrently, it provides a scientific basis for the government to plan digital economy development proactively, design precise employment promotion and skills training policies, and improve the new labor rights protection system; assists enterprises in optimizing human resource strategies; helps workers clarify career planning and skill upgrading directions; and promotes fuller, higher-quality employment, fostering a positive interaction between the digital economy and inclusive growth, and maintaining social stability. Therefore, researching the impact of digital economy development on labor employment is both a theoretical necessity responding to major era changes and a practical requirement for solving real development problems and planning future development strategies, possessing significant theoretical value and practical guiding significance.

2 The Job Creation Effects of the Digital Economy

2.1 The Direct Creation Effect of the Digital Economy on Employment

The most core creation effect of the digital economy stems from its fundamental industrializing property, i.e., directly giving rise to unprecedented new industries, new business formats, and entirely new occupational positions. The commercialization of digital technologies such as big data, artificial intelligence, and cloud computing directly nurtures high-end technical professions like AI trainers, data analysts, and blockchain engineering technicians. Meanwhile, the rise of digital platforms has spawned new service roles such as e-commerce live-streaming consultants, online store designers, and short video operation specialists. These positions are not simple substitutes for traditional jobs but represent "from 0 to 1" employment increments brought about by deep innovation and application of digital technologies, constituting a new, knowledge-intensive growth pole in the labor market.

2.2 The Impact of the Digital Economy on Employment Forms

The digital economy has greatly expanded the employment pool and created a large-scale flexible employment form

through platformization and de-organizational models. With the Internet platform as a hub, it connects massive service demand and labor supply, creating tens of millions of job opportunities for online ride-hailing drivers, takeaway riders, and freelance couriers. At the same time, the digital deconstruction of work tasks and the popularization of remote collaboration technology have made telecommuting, freelancing, and crowdsourcing work possible, breaking the time and space limitations of traditional full-time employment. This effect not only directly creates a large number of jobs, but also profoundly reshapes the definition and organization of work, improving the flexibility and inclusiveness of the labor market.

2.3 The Associated Creation Effect of the Digital Economy on Employment

As a general-purpose technology, digital technology's employment creation is reflected in its comprehensive penetration and empowerment of traditional industries, that is, through industrial digitization, it indirectly drives the employment upgrade and extension of the entire industry chain. On the one hand, traditional manufacturing, agriculture, and service industries are not simply laying off employees during digital transformation. Instead, they are adding digital skills-added positions on a large scale, such as intelligent manufacturing, engineering technicians, digital managers, and agricultural Internet of Things technicians. On the other hand, a digital business format can drive the segmentation and extension of the entire industry chain from supply chain product selection, smart warehousing and logistics to content planning and after-sales customer service, creating new nodal employment opportunities in every link. The scale of employment it indirectly drives often far exceeds the employment it directly creates.

2.4 The Spatial Creation Effect of the Digital Economy on Employment

The networked nature of the digital economy helps to break through the geographical restrictions of employment, optimize the spatial allocation of labor resources, and provide a new path for balanced regional development. Knowledge-intensive and service-oriented jobs can be delivered across regions through the Internet, which eliminates the need for talents to gather excessively in first-tier cities and creates high-quality localized employment opportunities for small and medium-sized cities and rural areas. At the same time, rural e-commerce, smart cultural tourism, digital agricultural technology services and other models have attracted some talents to return to their hometowns to start businesses and find employment, activating the county economy, injecting new employment momentum into rural revitalization, and demonstrating the potential of the digital economy in promoting equity in employment space.

3 The Substitution Effect of Digital Economy on Employment

3.1 The Substitution Effect of Automation and Intelligence on Programmed Jobs

The substitution effect of the digital economy on programmed jobs is manifested in the direct replacement of repetitive, process-based and codifiable manual and mental labor positions with industrial robots, automation software and artificial intelligence systems. The core driver of this substitution is that digital technology can perform standardized tasks with greater efficiency, lower cost and greater stability, resulting in a structural decline in demand for middle-skilled conventional positions.

3.2 The substitution effect of process optimization and organizational reshaping on intermediary positions

The digital economy has reconstructed the circulation chain of goods and services through platformization and disintermediation, allowing traditional intermediary positions that originally played the role of information matching, transaction matching, and regional bridging to be efficiently replaced by digital platforms. Online travel platforms have significantly reduced the demand for traditional travel agency stores and ticketing agents; e-commerce platforms have reduced the number of offline retail clerks and wholesale agents; and financial technology has impacted the work of bank counter staff and some credit reviewers. This substitution does not stem from the direct replacement of humans by machines, but through business model innovation, which makes the transaction process flat and efficient, thus eliminating the employment needs of traditional intermediate links.

3.3 Structural Substitution Effect Caused by Accelerated Skill Iteration

The rapid evolution of digital technology has led to a sharp shortening of the life cycle of vocational skills. Some workers have been marginalized by the market because they cannot update their skill reserves in a timely manner, forming a kind of "skills obsolescence" replacement. Even if their jobs have not been directly eliminated by technology,

the job requirements have fundamentally changed. If traditional financial accountants cannot master big data financial analysis tools, their competitiveness will be replaced by peers with digital skills; if traditional marketers do not understand digital marketing and user data analysis, their value will also be significantly depreciated. This kind of substitution is more hidden. The essence is that workers with new skills replace workers who stick to old skills, exacerbating frictional unemployment in the labor market.

3.4 The Overall Substitution Effect of Emerging Business Formats on Traditional Business Formats

The rise of the digital economy has caused emerging industries and business models based on digital technology to completely replace some traditional industries in market competition, resulting in a shrinking stock of jobs in the corresponding industries. The popularity of digital media has led to the large-scale disappearance of jobs in the traditional newspaper industry and CD retail industry; the rise of online ride-hailing platforms has significantly squeezed the market share of traditional taxi drivers; the development of online education platforms has also impacted employment in traditional offline teaching and assistant institutions. This substitution is systemic and occurs at the industrial level. The result is the transfer of employment opportunities from the old economic form to the new economic form. However, the transfer process will inevitably be accompanied by labor pains and reallocation challenges in specific industries.

4 The Digital Economy's Profound Changes in Employment Forms and Structures

4.1 The Transformation of Employment Patterns Caused by the Digital Economy

The most fundamental change in the digital economy is to reshape the basic units and organization of work itself. Traditional industrial society is centered on "fixed positions" and "long-term employment. " Digital technology decomposes work into discrete tasks that can be digitally managed, measured, and traded. This has given rise to the platform-based gig economy, project-based freelancing, and crowdsourcing models, shifting the relationship between labor and employers from "long-term attachment" to "short-term transactions." At the same time, cloud computing and collaboration tools enable work to break through the limitations of physical locations and achieve remote collaboration on a global scale, giving rise to "digital nomads" and distributed teams. While this change gives workers unprecedented flexibility and autonomy, it also brings new challenges such as income instability, lack of social security, and fragmented career development paths.

4.2 Changes in the Employment Structure Caused by the Digital Economy

The impact of the digital economy on the labor market structure shows distinct "polarization" characteristics: complex skills with high cognition and high creativity and non-stylized skills with low threshold and high interpersonal interaction are in strong demand and difficult to be replaced, while a large number of stylized middle-skilled jobs continue to shrink. What is deeper is that as a new management center, platform algorithms have reshaped the distribution of control and bargaining rights in the labor process, and workers may fall into the invisible control brought about by algorithm optimization. In addition, labor is no longer a solid resource fixed in a certain industry or enterprise, but a liquid existence that quickly switches between different jobs based on real-time needs, project flows and skills matching on digital platforms. This exacerbates market uncertainty and the discontinuity of individual careers.

5 Countermeasures and Suggestions to Deal with Challenges and Guide Employment Transformation

5.1 Build a Forward-looking, Multi-level National Digital Skills Development Strategy and Lifelong Learning System

Faced with the structural unemployment risks brought about by the acceleration of skills iteration, the government should play a leading role and join forces with enterprises, universities and vocational training institutions to jointly build a multi-level skills development system of "inclusive digital literacy education-intermediate and advanced digital skills training-cutting-edge digital talent cultivation". Specific measures include: incorporating digital literacy into the core content of national basic education and public employment services; incentivizing enterprises to retrain on-the-job digital skills through tax incentives, financial subsidies, etc.; vigorously developing flexible learning achievement recognition mechanisms such as micro-certificates and vocational skill level certification to support workers in lifelong and sustainable skill updating to effectively bridge the digital skills gap.

5.2 Improve Labor Laws and Social Security Systems that Adapt to New Forms of Employment

In response to the lack of protection of workers' rights and interests caused by platform-based and flexible employment, adaptive reforms of the existing labor laws and social security systems must be carried out. The core direction is to break the traditional binary identification framework of "labor relations", explore the establishment of a "third type of worker" or "employee-like" identity based on "labor facts", and gradually include new employment groups such as platform practitioners into the coverage of work-related injury, unemployment, and pension insurance. At the same time, we should promote the establishment of social security payment and benefit calculation methods that are compatible with the characteristics of multi-platform employment and income fluctuations, and use digital technology to realize the convenient transfer and continuation of social security relationships to build a social safety net.

5.3 Implement Employment-friendly Industrial and Innovation Policies to Maximize Employment Creation Effects

In the process of promoting digital industrialization and industrial digitization, policy design should have a clear employment orientation. On the one hand, we should vigorously support core digital industries such as artificial intelligence and big data to create high-quality technical jobs; on the other hand, we should encourage traditional industries such as manufacturing, agriculture, and service industries to carry out digital transformation that "stabilizes employment and promotes upgrading" through special funds, government procurement, pilot demonstrations, etc., and encourage the creation of more "human-machine collaboration" jobs. At the same time, we actively cultivate localized life service platforms, county-level e-commerce and other business formats that can both improve economic efficiency and have strong employment absorption capabilities, and achieve synergy between technological progress and employment expansion.

5.4 Strengthen the Digital Empowerment of Public Employment Services and Labor Market Information Systems

In order to cope with the "liquification" of the labor market and the increase in frictional unemployment, the public employment service system must be intelligently upgraded with the help of digital technology. A national unified and dynamically updated labor market big data platform should be built to analyze job demands and skill trends in real time, and provide workers with accurate job recommendations, skills training and career planning guidance. At the same time, a "reemployment assistance channel" will be established for labor groups affected by technological substitution, and one-on-one job transfer training, job search guidance and transitional living subsidies will be provided to reduce their transition costs and pains and improve the allocation efficiency and fairness of the labor market.

5.5 Promote Regional Coordination and Inclusive Development to Prevent and Resolve The Digital Employment Gap

In order to prevent the digital economy from exacerbating regional imbalances in employment opportunities, policies need to guide the spread of digital employment opportunities to the central and western regions, small and medium-sized cities, and rural areas. Specific measures include: increasing investment in digital infrastructure in underdeveloped areas; encouraging companies to attract non-local talents through remote working models and promoting the digital flow of work; focusing on supporting digital projects such as rural e-commerce and smart cultural tourism based on local characteristics to create localized high-quality jobs. Through conscious regional policy guidance, the digital economy can become an important tool to promote coordinated regional development and promote common prosperity.

6 Conclusion

The impact of the development of the digital economy on labor employment is far-reaching and complex. It is not simply creation or replacement, but a dynamic process that promotes the comprehensive reshaping of the employment system from quantity to quality, and from form to structure. The research in this article shows that while the digital economy directly creates high-end technical jobs and large-scale flexible employment, it also impacts the traditional employment model through technological substitution and industrial restructuring, and accelerates the trend of platformization and task-oriented employment forms and the polarization and liquefaction of the employment structure. While this transformation has improved market efficiency and flexibility, it has also brought serious challenges such as skills gaps, lack of rights protection, income instability and regional imbalances.

The government should focus on institutional innovation and macro guidance to build an inclusive legal environment and skills development strategy; society and education systems need to strengthen the integration of industry and education and a lifelong learning ecosystem to bridge the gap between skills supply and demand; individual workers must improve their digital literacy and career adaptability and actively manage their careers. Only through the coordinated efforts of the government, society and individuals can we maximize the employment creation potential of the digital economy, ease the pain caused by technological substitution, and ultimately achieve more adequate, higher-quality, and fairer employment growth, and promote the coordinated development of the digital economy and the labor market at a higher level.

References

[1] Bai Junhong, Wang Yanbing. How industrial digitalization affects labor employment [J]. Economic Dynamics, 2025, (04):126-144.

[2] Wang Chunchao, Nie Yafeng. Research Progress on the Impact of Digital Economy on Employment [J]. Economic Dynamics, 2023, (04):134-149.

[3] Cai Yuezhou, Niu Xinxing. Measurement and structural analysis of the added value scale of China's digital economy [J]. China Social Sciences, 2021, (11):4-30+204.

[4] Ye Xu, Du Yunhan, He Wenjun. Employment structure effects of digital economy development [J]. Finance and Trade Research, 2021,32(04): 1-13.

[5] Qi Yudong, Xiao Xu. Enterprise Management Transformation in the Digital Economy Era [J]. Management World, 2020,36(06):135-152+250.

[6] He Zongyue, Song Xuguang. The Mechanism and Implications of Digital Economy in Promoting Employment: Reflections After the Pandemic [J]. The Economist, 2020, (05):58-68.

[7] Li Xiaohua. New Characteristics of the Digital Economy and the Formation Mechanism of New Drivers in the Digital Economy [J]. Reform, 2019, (11):40-51.

[8] Sun Zao, Hou Yulin. How industrial intelligence reshapes the labor employment structure [J]. China Industrial Economics, 2019, (05):61-79.

[9] Acemoglu D., &Restrepo P. (2019). Automation and New Tasks: How Technology Displaces and Reinstates Labor. Journal of Economic Perspectives, 33(2), 3-30.

[10] World Bank. (2019).World Development Report 2019:The Changing Nature of Work. Washington, DC: World Bank.

[11] Official website of the People's Republic of China. "14th Five-Year Plan for Digital Economy Development" [EB/OL]. (2021-12-12).