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Research on Employment Effect of Digital Economy

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Abstract: Digital economy is a new economic form, which has both positive and negative effects on employment. This paper first analyzes the positive impact of the digital economy on employment, that is, to continuously expand the scale of employment and innovate employment patterns, improve the quality of employment and raise the level of wages, bring about flexibility and diversification of employment. Then, it analyzes the negative impact of the digital economy on employment. Finally, the paper puts forward countermeasures and suggestions on how to promote the positive role of digital economy in employment.

Keywords: Digital economy; Employment effect; Employment pattern; Employment quality.

1. Introduction

Digital economy is a new economic form with data resources as the key element, modern information network as the main carrier, information and communication technology integration and application, and all factor digital transformation as the important driving force. Thanks to the rapid development of communication and information technology, digital economy has become the hottest topic at present, and digital economy is ushering in a golden period of development. Human beings are slowly transitioning from the information technology era to the data processing era. As a national basic strategic resource and an important factor of production, data has occupied an important position in a country's economic progress. In recent years, the position of digital economy in the national economy has been continuously improved, which has played a major role in promoting the development of China's economy to a high level and quality. In 2020, the scale of China's digital economy will reach 39.2 trillion-yuan, accounting for 38.6% of GDP, with a year-on-year increase of 2.4 percentage points. It can be seen that China's digital economy plays an important role in promoting domestic economic development.

Domestic scholars have conducted extensive research on the impact of digital economy on employment. Niu Luqing (2017) believes that the digital economy can create new employment opportunities, build a new employment ecology, and optimize and upgrade the employment structure. Zhao Shuangshuang (2020) studied the employment effect of the digital economy using theoretical analysis, indicator analysis and empirical research methods. The results show that the development of the digital economy has a promoting effect on the employment level of digital economy related posts. Yang Xiao et al. (2020) empirically analyzed the impact of the digital economy on the employment structure. The results show that the digital economy can optimize the employment structure, and the impact of the digital economy on the regional employment structure is heterogeneous. Wang Dong (2020) found that the development of digital economy has a positive role in promoting the employment of workers, providing more employment opportunities and choices for workers, and providing greater possibilities and better platforms for workers to realize their labor value. Hu Fangzhi et al. (2021) believed that the digital economy has created a large number of employment opportunities, stimulated innovation and entrepreneurship, and injected new development impetus into the digital economy . Gong Liutang (2021) pointed out that the digital economy will have different impacts on employment in different regions, industries and people, and bring new opportunities and challenges to China's employment market. Wang Yafei et al. (2022) found that the digital economy has a significant inhibitory effect on the growth of total employment, but it has significantly promoted the upgrading of employment structure and employment quality. Huang Haiqing et al. (2022) explored the impact of digital economy on urban employment and its mechanism based on the panel data of Chinese cities, and found that the development of digital economy can significantly improve the employment scale of cities, and this conclusion is still valid after a series of robustness tests. Bao Chunlei et al. in combination with the development of China's digital economy, analyzes the impact of digital economy development on employment from the aspects of employment quantity, employment structure, employment quality and labor productivity, and puts forward policy suggestions for the outstanding problems. Li Li (2022) believes that the digital economy has played a positive role in expanding the size of the employment market, stimulating the vitality of enterprise development, promoting the transformation of the employment structure, improving the ecology of the employment market, etc., but it has also formed a series of challenges to the healthy development of the employment market [10]. Hu Yongjun et al. (2022) believed that the digital economy has made outstanding contributions to stabilizing employment by providing new jobs, but the huge potential of expanding total employment contained in the digital economy has not been fully activated, and there are some weaknesses in the labor system, rights and interest's protection [11].

Domestic scholars have conducted in-depth research on the mechanism of digital economy affecting employment and the impact of digital economy on employment, and achieved rich results, but failed to systematically analyze the positive and negative effects of digital economy on employment, let alone put forward reasonable countermeasures and suggestions. Therefore, this paper mainly analyzes the positive impact of the development of the digital economy on employment, and then analyzes its differential effect and negative impact, so as to draw the strategy and path of high-quality development of the digital economy for China's employment.

2. The Positive Impact of Digital Economy on Employment

2.1. Continue to expand the scale of employment and innovate employment patterns

With the promotion of a new round of science and technology and industrial revolution, digital technologies such as e-commerce, big data and the Internet have become increasingly mature, while creating a large number of jobs and employment opportunities. From couriers to takeaways, from commodity e-commerce to catering e-commerce, from travel e-commerce to tourism e-commerce, jobs created by the digital economy are everywhere. The 2020 China Digital Economy Development Report released by the Prospective Industry Research Institute clearly pointed out that in 2019, the number of platform employees in new business forms increased by 4.2% compared with 2018, reaching 6.23 million in total, and the number of platform driven employment increased by 4% year on year, reaching about 78 million.

The digital economy provides a huge career system for the society. From management to service, to technical operation and maintenance, a large number of employees are required at each step, which brings more jobs and opportunities to the society. At the same time, the development of the digital economy has also brought many new professions, such as artificial intelligence workers, e-sports operators, information security testers and industrial Internet engineering technicians. The emergence of these new occupations has undoubtedly injected new blood into China's domestic employment market and eased the employment pressure. In general, the development of the digital economy has produced a large number of new forms of employment, expanded the field of employment, enabled everyone in the society to have the opportunity to work, alleviated the severe current employment situation in China, and played a vital role in China's employment situation.

2.2. Improve employment quality and salary level

Digital economy is closely related to AI, big data, cloud computing, and the Internet of Things, which are hot scientific and technological fields in the world today. Therefore, the development of digital economy requires a large number of high-tech talents. Take cloud computing engineering technicians for example. According to the Analysis Report on the Employment Prosperity of Cloud Computing Engineering Technicians issued by the Ministry of Human Resources and Social Security in September 2020, in 2020, 62% and 66% of cloud computing basic hardware integrated service enterprises and application R&D integrated service enterprises will have bachelor's degrees or above. Such a high threshold makes digital economy related enterprises need a large number of high-tech talents, but the most intuitive result is that the salary of digital economy related occupations is increased, and the average salary is higher than that of other occupations. The digital economy uses digital technology to promote economic growth by improving the level of productivity and production efficiency, and positively promotes the improvement of the employment environment. In short, the digital economy, as a hot enterprise at present, has a high employment threshold, but its salary is very high. The digital economy has increased the quality of employment in China, and has attracted a large number of talents to join the relevant industries, thus further increasing jobs and employment opportunities.

2.3. Flexible and diversified employment

The impact of the digital economy on the diversification and flexibility of employment modes is mainly realized through the positive incentives of the digital economy on entrepreneurial and innovative activities and self-employed flexible employment. The basic requirement of occupations related to the digital economy is to process a large amount of data and information. Thanks to the development of the Internet, such job requirements can be perfectly realized. At the same time, the use of Internet technology in the digital economy reduces the time and space restrictions on these economic activities. Therefore, it is easier for potential employees to cross regional and industrial restrictions, participate in entrepreneurship and innovation, and improve innovation efficiency. These entrepreneurial activities can be carried out by one-man companies, self-employment and other forms of self-employed employment. Of course, they can also be carried out in the form of traditional companies, partnerships and other forms of non-self-employed employment. A variety of choices bring about a high degree of diversification and flexibility in employment.

We are most familiar with WeChat platform data to show the flexibility and diversification of employment brought by the digital economy. On April 22, the Chinese Academy of Information and Communications released the Report on New Jobs and New Positions of Digital Employment based on the WeChat platform. The report showed that the WeChat ecosystem composed of public accounts, small programs, video accounts, WeChat payment, and enterprise WeChat will generate 36.84 million employment opportunities in 2020, with a year-on-year growth of 24.4%. Since the outbreak in 2019, WeChat applets have played an important role. First, there have been more than 7.8 million job opportunities in applet development, product, operation and other fields, and millions of job opportunities have also been created in video shooting, live broadcast and cargo delivery. At the same time, during the epidemic, people were isolated from each other to reduce the risk of transmission of the epidemic. As a result, a large number of physical enterprises were affected, but the WeChat ecosystem in the digital field was less affected. Every relevant employee could choose a job that was suitable for him or her, and he or she could complete the work at home, which was flexible and stable.

3. The Negative Impact of the Digital Economy on Employment

The development of digital economy has promoted our economy. However, due to the short development time, environmental factors and other problems, the actual development situation is not always positive. While digital economy has brought us positive effects, its negative effects also deserve our attention.

3.1. The impact of the emerging digital economy and the destruction of traditional jobs

With the continuous development of the digital economy in recent years, artificial intelligence and automation technologies have also been continuously applied to labor-

intensive enterprises. The deep integration of manufacturing and other industries that need manual labor with the digital economy has led to serious loss of traditional jobs. The impact of the introduction of new technologies and traditional jobs is extremely obvious. According to the data of China Statistical Yearbook 2021, since 2013, the number of employments in the manufacturing industry has decreased year by year, from 52.579 million to 38.055 million in 2020, reducing the employment of about 14.52 million people, or 27.623%.

From the perspective of manufacturing industry alone, although the development of digital economy is only a few years, its rapid development and deep impact on employment are obvious to all. Especially in the employment situation under the current epidemic situation, a large number of low skilled workers have an extremely strong demand for jobs. However, with the rapid development of the digital economy, the employment of a large number of labor-intensive enterprises mainly engaged in manufacturing industry is not in line with the reality. Because of the strong substitutability of skills and the weak ability of low skilled labor force to cope with risks, a large number of cheap labor force in China will also become a hindrance to future economic development. A large number of labor force lacking advanced skills will be unemployed for a long time. Under the background of the current economic downturn, the problem of unemployment reduction will be difficult to solve.

3.2. The development of digital economy will further expand the group income gap and aggravate the gap between rich and poor

With the increasing development of the digital economy, a large number of low skilled workers are bound to be eliminated by the future labor market due to the lack of learning ability for new skills. With the development of the digital economy, the polarization in the labor market may further expand, and the employment of highly educated and highly skilled people will be more extensive. Enterprises prefer the emerging technologies they have to replace the cost increase caused by the increase in the labor cost of low skilled workers. Compared with low skilled workers, the employment opportunities and wages of highly educated people will increase. In the middle and later period of digital economy development, the gap of group income will further expand. With the substitutability of labor factors, their remuneration will inevitably decrease, and the income gap between high-tech talents and low skilled talents will be aggravated with the development of digitalization. More and more capital will replace labor, and the role of capital elements in manufacturing-based industries will continue to replace labor elements, making the distribution of wealth between capital and labor uneven, and the substitution effect will gradually increase, thus increasing the inequality among workers.

In terms of industry, digital industrialization is the main force in the development of digital economy. In the leading industries dominated by the information and communication industry, among which, in the more representative Internet industry, the development of the digital economy has greatly increased the demand for talents in these industries. Standing at the forefront of digital economy development, the industry will enjoy more preferential policies and more talent dividends. Compared with the manufacturing industry that is affected by the development of digital economy, it will enjoy less development advantages, so the economic development gap between industries will also expand. In terms of occupation, the development of the digital economy will cause the loss of some low skilled labor positions, increase the unemployment rate, widen the income gap of residents, and the salary level of skilled talents will be far higher than that of ordinary labor groups, and the gap between rich and poor will also further expand.

3.3. Unbalanced and uncoordinated development of digital economy and technology between regions

The development level of digital economy in a region has a strong positive correlation with the development level of the local national economy. According to the data in recent years, provinces with a higher level of economic development will also have a higher level of digital economic development. According to the White Paper on the Development of China's Digital Economy (2020) released by the China Academy of Information and Communication Research, the top five provinces with strong competitiveness in the total development of digital economy in 2019 are Guangdong, Beijing, Shanghai, Jiangsu and Zhejiang. From the perspective of proportion, the digital economy in Beijing and Shanghai plays a leading role in the regional economy, and the proportion of digital economy GDP has exceeded half. The development of digital industrialization in various regions is closely related to the regional industrial structure. In terms of total amount, Guangdong and Jiangsu, which have strong information industry foundation, still lead the development of digital industrialization in the country, and the regional industrial structure has affected the process of regional digital industrialization to a certain extent. From the perspective of proportion, as one of the leading forces to promote regional economic development, the information industry has accounted for more than 15% in Guangdong, Jiangsu, Beijing and other regions with relatively high economic development levels, while the proportion in the central and western regions, which lack infrastructure and are relatively backward in technology, does not exceed 5%.

The development of China's digital economy has prominent regional aggregation characteristics. Beijing - Tianjin - Hebei, Yangtze River Delta and Pearl River Delta have become the regional core of China's digital economy development. On the one hand, the economic development level of these three regions is relatively high, and they have already led the country before the emergence of the digital economy. Therefore, they have more infrastructure construction than the central and western regions, providing a large number of talents and funds for the development of the digital economy. On the other hand, these three regions have a good industrial foundation, a higher degree of integration between the industry and the digital economy, and a wider practical effect. On the whole, the development and distribution of digital economy at this stage are still roughly around the "Hu Huanyong Line", with obvious regional differences.

The unbalanced welfare brought about by regional development leads to greater regional differences in digital economy employment. At the current stage of China's digital development, the competitiveness of the digital economy in the eastern, central, western and northeastern regions of China is relatively unbalanced. At the stage when the digital economy leads the regional economic development and

reconstructs the regional economic system, the imbalance of the development of the digital economy will inevitably lead to the adjustment of the regional structure of labor force. In the absence of industrial transfer mechanism, and subject to the objective conditions of economic development level, the automation, digitalization and intellectualization of the production methods of the first and second echelons will have a crowding out effect on the low skilled labor resources of the third echelon. When the third echelon cannot create more labor positions independently, its employment stock will continue to accumulate, which will inevitably aggravate the industrial employment contradiction between different regions.

4. Strategies to Promote the Development of Digital Economy in the Future

4.1. Basic strategies for promoting the stable development of the digital economy

(1) Stabilize market development while expanding employment. Since the "14th Five Year Plan", the emergence and development of the digital economy has made great contributions to China's employment market through the support and guidance of relevant policies, and has also eased the economic impact of the epidemic to a certain extent, so that China's overall economic development has gradually warmed up. To stabilize the market development and expand employment at the same time, it is necessary to appropriately expand the employment scale, improve the employment mechanism, accurately subdivide the types of employment, cooperate with enterprises, institutions, organizations, etc., issue corresponding policies to attract the employment of personnel within the system, improve the quality of employment, and avoid the waste of redundant human resources and the shortage of human resources.

(2) Comply with the employment mode of digital economy development. With the development of the digital economy, it has brought a variety of employment models for the society, spawned a large number of new digital jobs, and achieved the integration of digital technology and various industries. Employment in the digital economy is a trend. Only by complying with the development model, actively improving the industry regulations and systems on the development of digital science and technology in various platforms, ensuring the standardization and popularization of the employment model of digital economy development, and realizing the popularization of digital economy employment for all, can China's digital economy develop to the forefront of the world.

4.2. Integration strategy for promoting synchronous development of digital economy

(1) Deeply promote the integrated development of digital economy and real economy. First of all, we should correctly recognize the impact of the digital economy on employment. The development of digital economy has indeed brought a large number of jobs to our country. It has also enabled the rapid development of China's network technology, which has brought vitality to our economy, especially during the epidemic period. However, with the rapid development of digital economy in recent years, the development of China's real economy is relatively difficult. Therefore, to ensure the sustainable and stable development of China's economy and society, it is necessary to promote the integrated development of digital economy and real economy. We should closely link the two in the economic market from the perspective of policy, improve the high matching between digital network and physical products from the perspective of policy, and realize that the development of digital economy drives the development of the real economy. In the economic market, digital economy will be brought into the market through the promotion of the real economic network, so as to achieve the popularization of digital economy in many aspects and industries.

(2) Mobilize the differential driving role of employment in the development of regional digital economy. In addition to Beijing, Shanghai and Zhejiang, three provinces and cities with rapid digital economy development, the monthly salary of digital economy staff in other provinces and cities ranked in the top ten in digital economy development is generally within the range of 5000-8000, while the monthly salary of staff in other cities is less than 5000. Therefore, only by balancing the pain points of inter-regional economic development, fully guaranteeing the appropriate exchanges and cooperation among regions, and improving the unbalanced institutional system between regions can we more effectively ensure that the digital economy can develop at a high speed throughout the country without the interference of other external factors. Of course, we should also face up to the difficulty of mobilizing the differential driving role of employment in the development of regional digital economy, recognize the slow development of individual regions due to geographical location or other reasons, follow the "double carbon" development principle, and actively promote the development of digital economy. In a word, in this era of big data, the uneven development among regions is not surprising, but only through the joint efforts of all regions can China's economy be brought to a higher stage of the times.

4.3. Breakthrough strategies to promote high-quality development of digital economy

(1) Give play to the role of digital related industries in stimulating employment. The employment direction of digital economy mainly includes blockchain direction, artificial intelligence direction, Internet of Things direction, etc. Its essence is to use the products of digital technology in economic society through the use of modern digital information technology, so as to bring convenient, efficient, comprehensive and other progress for economic development. Through the analysis of the current employment forms in China, it is necessary for almost all enterprises and industries to carry out industrial digital upgrading or promote new enterprise production organization methods and new employment models to promote the employment of digital related industries. Through the formation of the digital industry chain, a large number of jobs will be created, which will stimulate the employment enthusiasm of all kinds of employees, Thus, a large number of unemployed people and unemployed people are provided with employment directions and jobs.

(2) Attach importance to the innovative ability and employment promotion of digital human capital. Human capital is necessary for economic growth. While the digital economy drives employment, a large number of employment opportunities and jobs have emerged, but it also reduces the overall level and density of employed people. Although the

increase in employment rate has provided impetus for China's economic development, it has reduced the quality of economic development on the basis of economic growth. Therefore, in order to improve the high-quality role of digital economy development on employment, enterprises and digital industrial organizations should receive human resources, and at the same time, they should also carry out long-term training to encourage employees to actively innovate. At the same time, we should also attach importance to cooperation with universities and colleges to tap higher talents with both innovative and practical abilities. Through tapping the potential of higher talents, the development of digital economy will inevitably continue to improve and improve, bringing inexhaustible impetus to China's economic development.

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