

Outlook of the Trend of Technological Innovation on China's Employment Industry

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Abstract: This paper focuses on the impact of technological development on the job market, covering a wide range of areas including primary, secondary and tertiary industries. In the context of technological development, some repetitive and low-skilled jobs will be replaced by automation, but at the same time, more high-skilled and high-value-added jobs will be created. The paper also analyzes the role of technological innovation in driving the job market in China and provides a vision of the future job market - a future where work patterns will become increasingly flexible, including freelance and remote work; where vocational training and education will place more emphasis on practice and innovation; and where the job market will become more international and diverse, requiring people with cross-cultural communication skills and multilingual skills.

Keywords: market employment, technological innovation, three industries

1. Introduction

1.1. Background

As technology continues to evolve, many changes in employment will occur in the future. This article will discuss the most likely changes and the reasons for them based on current trends so that people can be more aware of the pros and cons of technology for employment, prepare for and better accept these changes, and not be eliminated from the market.

1.2. Related Research

The application of industrial robots and artificial intelligence will have effects on labor demand, employment structure and employment quality, where there may be a net effect of negative substitution effect and positive productivity effect. Using the generalized propensity score matching method, Jing-Yan Si's study finds that the impact effect of industrial robot applications on corporate labor demand depends on the net effect of the negative substitution effect and the positive productivity effect. Industrial robot application has a significant contribution to labor demand, and total factor productivity is an important transmission mechanism that affects the labor demand of enterprises [1]. In contrast, Sai-Nan Li also defined labor force employment by exploring the impact of AI development on the labor force employed in terms of employment quantity and employment income through his study and explored the impact of AI development on employment quantity and

employment income in primary, secondary, and tertiary industries, respectively, and the results showed that AI development in China will promote the increase of labor force employment level and employment income growth [2]. In addition, Lu's study focused more on Guangdong province, and she studied the changes in employment scale, employment structure and employment quality under robotics application in Guangdong province through a combination of macro and micro approaches, and found that robotics application is reshaping the employment pattern in Guangdong, which helps to optimize the employment structure of manufacturing industry, but the unemployment worries about low- and middle-skilled labor force increase [3].

With the development of technologies such as artificial intelligence, the occupational choices of the mobile population are also changing and the trend of income polarization has been affected. Based on the 2011-2017 monitoring data of the mobile population from the National Health Commission of China, Tang, Sun, and Zhao found that with the development of technologies such as artificial intelligence, the occupational choices of the mobile population have changed significantly, with a significant increase in the share of professionals and technicians and businessmen, and a decrease in the share of persons in charge and managers, civil servants, and construction workers, a significant decrease in the share of employment in routine operative jobs, and a significant decrease in the share of routine The share of employment in knowledge-based jobs rose significantly. This restructuring of employment has an impact on the trend of income polarization, and the difference in income between occupations explains 90% of the level of income polarization [4].

Technological change has also had an impact on labor relations, employment quantity, and employment quality in different industries. Qi Yunying studied the impact of technological change on employment in the commerce and distribution industry in China. By analyzing the destructive and compensatory effects of technological change and using data from 2002-2014 for empirical analysis, it was found that the destructive effect of technological change on employment in China's commerce and distribution industry was greater than the compensatory effect, i.e., technological change inhibited the growth of employment in China's commerce and distribution industry [5]. In another study, Wang Dashun studied the contradiction between the employment-creating compensatory effect of technological progress and the employment-destroying and crowding-out effect based on the theoretical guidance of Marxist political economy and the study of actual data and analyzed the reasons for the expansion of the size of China's industrial reserve army and the possible effects on social stability [6]. There is also a study on Chunrong Liu who studied the impact of technological change on labor relations in China's manufacturing industry, aiming to analyze the changes in manufacturing labor relations and to propose optimization ideas and strategies. In general, manufacturing is an important pillar of the national economy, and technological change is the key to improving the quality of manufacturing development. Optimizing labor relations can help realize the strategy of the manufacturing industry to become bigger and stronger [7]. In order to draw more implications, another study on Pang Xu Shu explored the relationship between technological progress and the amount of employment and attempted an empirical analysis. Using data from the United States for 1948-98 in the course of the study, a significant negative relationship was found between technological progress and the marginal employment elasticity of employment growth, but technological progress facilitated changes in the employment system, thus moderating to some extent the substitution of technological progress for the number of employed [8]. In addition to these four studies, another relevant study by Robin Li found that people are at the junction of the old and new technological revolutions, where technologies such as artificial intelligence, new materials, and new energy are undergoing qualitative changes. Although these disruptive new technologies are still in their infancy and have not formed a huge industrial driving effect, the experience of previous technological revolutions tells us that we should proactively embrace the new technological changes, use them to enhance efficiency and improve productivity, and not worry too much about the possible

unemployment and other problems [9]. In these studies, on the one hand, technological progress has facilitated changes in the employment system, thus moderating the displacement of employment numbers by technological progress, but on the other hand, it has also increased unemployment worries and inequality risks for low- and medium-skilled labor.

Finally, in order to share the benefits of technological advances, improved skills policies and innovative forms of regulation of the digital economy are needed to avoid further increases in inequality. Ernst, Merola, and Samaan's study shows the concerns that the current wave of change based on technological advances in artificial intelligence poses for employment and inequality, and compares previous waves of automation with current applications of artificial intelligence. Globally, the application of AI promises to significantly reduce capital costs and increase productivity. However, in order to share these benefits, further improvements in skills policies and innovative forms of digital economy regulation are needed to avoid the risk of further increases in inequality [10].

1.3. Objective

This paper will explore the main effects of technological development on the three major industries and employment groups. The primary and secondary industries will use the fishing and manufacturing industries as examples, while the tertiary industry will use jobs such as information technology as an example. In addition to these, the paper will also provide some statistics as evidence to describe and analyze the actions that China has taken to promote technological development and employment from the beginning to the present.

2. Impact of Technological Innovation on the Employment Population Industry

2.1. Primary and Secondary Industries

Technological development will have an impact on the primary and secondary industries, such as the number of jobs in the fishing and manufacturing industries will be reduced. Considering that most of the employees in the manufacturing and logistics industries lack education and that China is densely populated and highly competitive, many employees will also face unemployment. Today automation technology is constantly changing and has been able to replace jobs in the primary and secondary sectors, among others. With the development of fishing technology, automation and mechanization are increasing and the use of equipment such as large fishing boats and nets are replacing traditional fishing methods. These devices allow for faster and more efficient harvesting of marine resources, resulting in a significant increase in the productivity and efficiency of fishing. However, this has also led to a reduction in the number of people fishing. Compared to the past, when a large workforce was required to fish, modern fisheries require only a few workers to perform the same fishing tasks.

In manufacturing, for example, the entire process of making snacks, clothes, shoes, etc., from start to finish no longer requires manual handling, with only a few workers to manage and maintain the machines. When employed people lose their jobs, they will lose their source of income, their families standard of living will decline, and the number of poor people in the country will continue to rise.

Technological development will create more jobs, especially in the tertiary sector. With the development of technology, more technically above-board talents and experts are also needed to maintain the equipment, such as computer maintenance engineers, network security experts, digital marketers and other positions will increase. And the upgrade and iteration of these technologies also need many talents to achieve, such as software developers, data scientists, network engineers, etc. On the other hand, such as artificial intelligence, virtual worlds and other emerging industries need more new people to promote the development of these skills. In general, there will be more positions in technology development, upgrading, maintenance, etc.

Changes in the demand for human resources. Some aspects of the workforce will be forced to upgrade in order to adapt to the market, such as skills, expertise, and teamwork. With the development of technology, some old skills may no longer meet the requirements of enterprises, so enterprises need more talents with new skills and knowledge, such as artificial intelligence, big data analysis, cloud computing, etc. Improved expertise will also allow for smoother technology development, fewer blind spots, and rapid application of new technologies into practice. The development of technology will also require closer and more efficient collaboration between departments, and teamwork is also important for the employed population.

3. Development of Technological Innovation Employment in China

China's technological innovation has been in a state of rapid development in the past decades. In the late 1980s and early 1990s, China began its reform and opening-up policy, which introduced foreign investment and technology and laid the foundation for technological innovation in China. During that period, the main drivers of technological innovation in China were state-owned enterprises and institutions such as universities, so the impact on employment was relatively small.

However, with the rapid development of China's economy, China began to increase the development of high-tech industries, including information technology, biotechnology, new energy and other fields. The development of these new industries required a large number of skilled personnel to support them and also led to employment in manufacturing and service industries. This trend became more pronounced in the early 21st century, and the Chinese government has actively introduced policies to provide a better environment and support the development of technological innovation and entrepreneurship.

For example, the Chinese government established the Science and Technology Innovation Fund ("From 2012-2021, the Municipal Fund received about 74,000 project applications and funded about 8,794 projects, with an average funding rate of about 11.82%; the average annual funding rate increased from 8.82% in 2012 to 13.66% in 2021 [11]. "); strengthening IPR protection ("By the end of 2022, the State Intellectual Property Office has directed the construction of 97 national IPR protection centers and rapid rights defense centers. In addition, the State Intellectual Property Office has jointly issued a document with the Supreme People's Procuratorate called "Opinions on Strengthening Collaborative Protection of Intellectual Property Rights," which provides for mechanisms such as case information sharing, transfer of major leads and supervision of major cases [12].") and other policies. These policies not only provide a better environment for technological innovation but also drive the flow of skilled personnel and job growth. In addition, China has been promoting policies such as "mass entrepreneurship and innovation" to encourage more people to participate in technological innovation. These policies provide better support and protection for individual innovation and entrepreneurship and also bring new employment opportunities.

Overall, the rapid development of technological innovation in China has injected new vitality into the job market. Data from the National Bureau of Statistics show that from 2005 to 2021, the number of people employed in information transmission, scientific research, etc. in China grew from 230,000 to 3.54 million, an increase of more than 80% [13]. In addition, technological innovation has led to employment growth in related fields, such as manufacturing and service industries. This trend is also expected to continue in the future, especially as China's economy transforms and upgrades, China will continue to invest more in technological innovation and high-tech industries, injecting more vitality and momentum into China's job market.

4. Outlook for the Future

The world's employment landscape is undergoing dramatic changes and will face new challenges and opportunities in the coming decades. The future is difficult to predict, but based on current trends and projections, the following are some guesses as to what the future holds for employment:

First, with the development of artificial intelligence and machine learning technologies, some repetitive and low-skilled jobs will be replaced by automation, such as manufacturing, finance, healthcare and education. But at the same time, these new technologies will also bring us more high-skilled, high-value-added jobs, such as data analysts and software development engineers. And with advances in data science and analytics, many companies will look to hire more data scientists and analysts to help them understand data and make more accurate business decisions.

Second, the future of work patterns will become increasingly flexible. As technology advances, more and more people will choose to work freelance or remotely to better balance work and life. In addition, new forms of employment such as crowdsourcing and Internet platforms will receive increasing attention and recognition. This will change the traditional workplace culture and employment patterns.

Third, the future of vocational training and education will place more emphasis on practice and innovation. As technology continues to advance, vocational training and education must keep pace with the times, keep up with new technological trends, provide people with more practical and valuable skills, and help them adapt to rapidly changing market demands. The future of education will need to emphasize innovative thinking and practical skills and provide more opportunities for students to develop the skills and qualities they will need in the workplace of the future.

Finally, the job market of the future will be more international and diverse. With the acceleration of globalization and the application of new technologies, people will face more opportunities for multinational enterprises and cross-cultural communication. Therefore, in the future job market, people with cross-cultural communication skills and multilingual skills will be more and more popular. This is because these people can not only help companies and organizations realize their internationalization strategies, but also play an important role in emerging technology fields. At the same time, they have higher creativity, adaptability and problem-solving skills, exactly what the market of the future needs.

To sum up, the future job market will be full of opportunities and challenges. We need to keep learning and acquiring new skills to adapt to the rapidly changing market needs. Future work patterns will also become increasingly flexible and diverse, giving us more choices and freedom. In this future full of opportunities and challenges, the only way to find the best career path for you is to keep innovating and working hard.

5. Conclusion

This paper focuses on the most likely impact of technological innovation on future employment. Through the analysis of various relevant data, the following points are inferred and concluded:

The technology industry will bring about job losses and unemployment, but will also provide more jobs in the tertiary sector. The future market will be more international and diversified, the demand for human resources will increase and people with new skills and knowledge will be more desirable. Work patterns will be more flexible, and training and education will be more hands-on and innovative.

In order to make it easier for the employed population to adapt to the market, the government can increase support for skills training and upgrading to make it easier for workers to adapt to the new employment environment. For example, by setting up special funds and providing subsidies, enterprises can be encouraged to provide training opportunities for employees to help them master new skills; regulation and supervision of the development of new technologies can be strengthened

to prevent the excessive impact of technology on workers. For example, establish corresponding laws and regulations to clarify the boundaries and limits of technological development; strengthen the protection of data privacy and information security to avoid data leakage and information abuse caused by technological development. The government can also introduce some policies for specific employment groups to help them through the transition period. For example, special subsidies or welfare systems can be set up for older workers or workers in low-skilled positions in traditional industries affected by technology to help ease their employment pressure.

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