

# *The Future of Work: AI's Impact on Employment and Social Structures in the Digital Age*

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**Abstract:** Within the framework of the digital economy age, artificial intelligence is sweeping across the world today. Artificial intelligence technology has made remarkable progress, and various industries have been affected, resulting in significant and even profound changes. The employment market has also been impacted as a result. This article uses case and problem analysis methods to explore artificial intelligence's influence on the labor market and societal structures in the digital age. AI's effects on the employment sector are mostly focused on in three aspects: the dangers of automation at work, the effects of AI on employment that are balanced, and how AI affects employment structures. It also has short-term and long-term effects on income inequality and requires the transformation of worker skills to high-tech digitization. Based on this, this article also puts forward suggestions for the follow-up development of enterprises, government, society, and education and puts forward thoughts.

**Keywords:** Artificial intelligence, Digital economy, Employment market

## 1. Introduction

With the subsequent release of programs like ChatGPT and Dall-E2, StableDiff Fusion, the focal point of generative artificial intelligence is now public attention. ChatGPT is the fastest-growing consumer application in history, having amassed 100 million active users in only two months from its launch [1].

Artificial intelligence, abbreviated as AI, is a key factor propelling a fresh wave of technological innovation and the industrial revolution [2]. It is a brand-new branch of technological science that investigates and creates theories, procedures, tools, and application systems for increasing, prolonging, and simulating human intellect. Since the 1950s, artificial intelligence has gradually become a crucial branch of computer science. The digital technology advancing continuously, artificial intelligence has made significant breakthroughs in many fields, like machine and deep learning, natural language processing, and computer vision. These breakthroughs have gradually made artificial intelligence a part of our daily lives, driving progress in the digital age.

Artificial intelligence has become a part of a country's overall strength, and the more advanced artificial intelligence technology is, the more competitive a country becomes in the world. The 2023 Chinese government work report pointed out the need to vigorously develop artificial intelligence and the digital economy: "attempting to upgrade the industrial system and creating fresh, high-caliber labor forces more quickly. People will power the digital economy's creative growth. We shall create policies to stimulate the digital economy's superior advance. People will aggressively grow the digital

sector, apply digital technologies to existing businesses, and completely incorporate digital technology into the actual economy. People will accelerate big data and AI research and application, introduce the AI Plus program, and create globally competitive digital industry clusters. We'll endeavor to digitize the manufacturing industry and expedite the widespread use of the Industrial Internet. In addition, we'll develop digital villages and smart cities, encourage SME digitization, and push the digitalization of the service industry. People will assist platform businesses in doing their share to foster innovation, increase employment, and participate in global markets. People will work to enhance foundational data systems and actively encourage the creation, sharing, and application of data. People will build future-ready digital infrastructure more quickly and a nationally integrated computational system. We intend to undertake a comprehensive and deep digital revolution in order to boost the economy, improve people's lives, and create new strides toward modernization of societal governance. Historically, the technological revolution has had a profound reach on the labor market. From the Industrial Revolution to the Digital Revolution, technological innovation has reshaped the labor market, changing the nature of work, work environment, and job skill demands. Every technological revolution is accompanied by the emergence and disappearance of professions, and significant changes have occurred in the skill requirements for workers. In the context of the continuous development of artificial intelligence in the digital age, the labor market is facing new challenges and opportunities [3].

Today, with the wave of artificial intelligence industrialization sweeping across the world, more and more enterprises are adopting artificial intelligence solutions to replace traditional human resource work. The China International Development Knowledge Center releasing the Global Development Report in 2022, it is predicted that approximately 85 million jobs worldwide will be replaced by machines from 2020 to 2025. This trend will not only bring about improvements in productivity and production efficiency, but also have a profound impact on the transformation of the entire society [4].

Nowadays, artificial intelligence technology has made remarkable progress and has had a profound influence on various industries. However, the rapid progress of artificial intelligence has also raised concerns about employment, privacy, ethics, and other aspects. Therefore, how to fully leverage the advantages of artificial intelligence while reducing its potential risks has become a common concern for policy makers, businesses, and society.

This article aims to explore the effect of AI on employment and social structure in the digital age, under circumstance of the continuously developing digital economy. This article will introduce a case study of how artificial intelligence has a significant impact on employment, specifically analyzing how it reshapes the job market and employment trends and proposing suggestions and thoughts for future development to draw conclusions.

This article is composed of five parts. The first one is the introduction, which outlines the definition, historical background, and emergence of artificial intelligence in the digital age. The second part presents a case study of the significant impact of artificial intelligence on employment. The third part analyzes and explores how to reshape the job market and employment trends. The last part is the conclusion, summarizing the main points of this article and proposing policy recommendations to address the difficulties and possibilities presented by artificial intelligence progress in conjunction with the fourth part.

## 2. Case Description

Artificial intelligence has a significant effect on various industries. According to analysis by McKinsey&Company, the retail and consumer goods, banking, pharmaceutical, and healthcare industries have been most affected. Among them, in the retail and consumer goods industry, generative artificial intelligence can achieve automation of key businesses such as user service,

marketing and sales, inventory and supply chain management, and can increase industry productivity by 1.2% to 2.0%. It is expected to create an additional economic value of \$400 billion to \$660 billion annually. The influence of generative artificial intelligence on the banking industry is also enormous. The application of artificial intelligence technologies such as virtual experts, accelerated code generation, and large-scale generation of customized content can increase the productivity of the industry by 2.8% to 4.7% and is expected to create an additional economic value of \$200 billion to \$340 billion annually. Generative artificial intelligence can significantly upgrade the research and development speed and ability of the pharmaceutical and medical industries, increasing overall industry productivity by 2.6% to 4.5%, and is expected to create economic value of 60 billion to 110 billion US dollars annually.

In software engineering business, generative artificial intelligence can serve as a coding assistant to accelerate the progress of developers. The application of this technology can reduce some of the workload, such as generating initial code, code correction, refactoring, and generating new system designs, and can also improve the work experience of software engineers. A recent study found that developers using Microsoft GitHub Copilot software complete tasks 56% faster than those who do not use the tool. The application of generative artificial intelligence technology in product development can reduce research and design time, improve product simulation and testing processes. Research has found that generative artificial intelligence can increase product development speed by 10% to 15% and shorten product launch cycles [5,6].

Generative artificial intelligence will also bring opportunities and challenges to employment in different positions. On the one hand, generative artificial intelligence will promote the upgrading of job intelligence, and some job positions will be replaced. According to statistics, the intelligent automation capability of generative artificial intelligence greatly improves work efficiency and reduces operating costs. Traditional positions in the United States and Europe will be affected to varying degrees by artificial intelligence automation, and generative artificial intelligence can replace one-quarter of job positions. On the other hand, generative artificial intelligence will also create new professions. "Wenke" enables people to use natural language as a cue word, interact with AI, obtain information or create works. In addition, its related fields will also generate a large number of new job positions, such as artificial intelligence trainers. In the context of the continuous progress of artificial intelligence in the digital economy, it is particularly important to discuss artificial intelligence's effects on employment and social structure in the digital epoch [6].

### **3. Analysis on the Problem**

Considering the transformative influence of artificial intelligence on the job market and employment trends, current research delineates three primary areas of impact: the risks associated with job automation, AI's equitable influence on employment opportunities, and its effects on the structural composition of jobs.

#### **3.1. The Risk of Work Automation**

With the continuous decrease in computer prices and the replacement of conventional work by computers, many tasks have been automated. As artificial intelligence continues to advance, automated jobs are no longer restricted to repetitive duties. There's a chance that more jobs will be mechanized. Multiple studies targeting work automation risks in different countries and industries have found this trend. For example, in 2013, Frey & Osborne first calculated the probability of 702 careers in America being replaced by computers using probability classification models on the account of the O\*NET database. It was found that nearly half of the professions in the United States are possibly becoming heavily computerized [7].

### **3.2. AI's Equitable Influence on Employment Opportunities**

The labor market is poised to be shaped by automation in two principal ways: first, through a complementary role where computers enhance human labor productivity for certain skill sets, and second, through a substitutive role where automation displaces jobs previously done by human workers. The development of artificial intelligence will lead to a gradual decrease in the cost of automation, thereby causing machines to replace human labor. Technological progress may have both negative inhibitory effects and positive creative effects on employment. On the one hand, technological progress improves labor productivity and replaces some labor, thereby reducing employment opportunities and causing unemployment among laborers with medium or low skills. The improvement of technological innovation and productivity will lead to a brief increase in the demand for the main factors used in the production of new products, but the energy-saving effect of technological innovation will lead to a decrease in labor demand, resulting in increased unemployment. However, the capitalization effect of technological advancement can also result in the creation of job opportunities. The first phase of capitalization has already resulted in the payment of the cost of job opportunities. The effective discount rate of future benefits decreases with faster technological advancement, increasing the present value of profits. Thus, businesses will increase the scale of their production and create more jobs in order to maximize profits [8].

### **3.3. The Impact of Artificial Intelligence on Occupational Patterns**

In spite of the fact that the full-scale effect of artificial intelligence on employment is still unclear, it is indisputable that the impact of artificial intelligence on workers in different areas or skills varies. We need to be vigilant about the polarization of the employment phenomenon led by artificial intelligence and automation. Employment polarization refers to the most severe substitution of intermediate-skilled personnel by artificial intelligence or computerization, while job opportunities in highly skilled industries and low-skilled service industries have been promoted. Regarding the reasons for the employment polarization phenomenon, businesses will opt to automate this portion of a task for two tasks of equal complexity because the labor needed for tasks requiring more training is likewise more expensive. Nevertheless, tasks that require extensive training and are extremely complex are difficult to automate. This will lead to an extremely intricate labor flow or tasks involving innate abilities that do not require much training. Due to the coexistence of the "substitution effect" and "creation effect" of AI technology on employment positions, the overall effect depends on which effect is greater. Therefore, the existing research conclusions on the influence of AI technology on labor employment aren't consistent, especially in terms of its impact on the number of labor employment positions, labor wage levels, and labor income share. However, the widespread application of artificial intelligence technology has indeed given rise to a phenomenon of polarization between employment and wages, where intermediate-skilled employment positions have begun to decrease while high- and low-skilled employment positions have increased. It is worth noting that the wage polarization caused by artificial intelligence technology is stronger than the employment polarization, and intermediate-skilled laborers will face huge income decreases. Moreover, this revenue loss does not come from job substitution but from the drop in existing job salaries, which further increases the impact on income disparity [2].

### **3.4. Inequality of Income**

When it comes to inequality of income, while optimizing economic growth and creating more riches, people have also expressed concerns about the potential exacerbation of income inequality aroused by AI or automation. In reality, capital is allocated more unevenly than labor, compared to most capital, which is often centralized in the hands of a tiny proportion of the population. The achievement

of artificial intelligence and automation will encourage a rise in the proportion of capital components used during the course of production, which will raise capital returns and worsen income inequality. AI, or automation, influences the employment of low- and medium-skilled labor and also has a detrimental effect on the related salary ratio of low- and medium-skilled labor. Meanwhile, artificial intelligence has a heterogeneous impact on inequality of income. Resulting from the different progress speeds of artificial intelligence at different periods and the gradual advance of the economy, its influence on income disparity may vary in the respective periods of economic growth. Generally speaking, inequality will rise in the short and medium time, and the creation of new projects will aggravate disparity in the short period. However, over time, as jobs become more standardized, low-skilled labor productivity will rise, preventing the rise in inequality. The exacerbation of income inequality among different social classes has led to an increase in regional inequality, with highly skilled workers creating new jobs gathering in cities. Income inequality between cities is gradually increasing, and the unequal income seen in North and South countries is also gradually increasing [1].

### **3.5. The Transformation in demand for Skills of Laborers**

Artificial intelligence has reshaped the job market and employment trends, while corresponding educational needs and skill combinations have also undergone significant changes. The demand for digital talents has surged, and data literacy and artificial intelligence skills training emphasize programming and computer science education. This requires employers and individuals to place an emphasis on programming and computer science education, as well as lifelong learning awareness. It also requires the government and society to attach importance to and carry out corresponding reforms.

## **4. Suggestion**

### **4.1. Enterprises**

Enterprises need to adapt to the constantly changing employment situation. Cultivate employees' artificial intelligence and digital literacy; organize internal and external training to improve their professional skills; adjust the human resource structure, allocate various talents reasonably, and increase artificial intelligence positions based on business needs and human resource market conditions; strengthen foreign cooperation and exchanges; promote technological innovation and industrial upgrading. At the same time, it is linked to educational reform, strengthening the establishment of industry-university research cooperation relationships among universities and research institutions, and cultivating digital and innovative talents.

### **4.2. The Government**

The government should support workers and maintain social stability. First, it is necessary to establish a sound social security system, give full play to the role of unemployment insurance and subsidies, increase unemployment relief subsidies and guarantees, and improve employment and livelihood security policies. Secondly, there are public expenditures and infrastructure policies. For developing countries with low-income levels, implementing public expenditure policies will be more efficient than direct transfer payments. If it can stimulate the demand for unskilled labor, it can not only pre-allocate jobs for unskilled labor but also enable workers with limited income levels to obtain income. Investing in labor-intensive infrastructure, especially as technological advancements can help developing countries overtake the curve, can yield significant benefits by investing in more digital infrastructure such as public transportation, healthcare, elderly care, and education [9].

### 4.3. Society

Society must attach importance to work-oriented training and preparation, pay attention to vulnerable groups, and make work more difficult to computerize. In the meantime, it is crucial to keep a watchful eye on ensuring data security and privacy, strengthening antitrust and anti-fair competition law enforcement, and ensuring a fair competitive environment in the market [7].

### 4.4. Education

Education reform prepares the next generation for the employment market of artificial intelligence integration. Strengthen the cultivation of digital high-end talents in key areas. Starting from basic education, primary and secondary education needs to focus on cultivating various skills such as mathematics, science, and communication, while increasing investment in basic education to enhance the digital literacy and innovation ability of the entire population; Reform the talent training mechanism in universities, actively open disciplines and majors related to intelligent manufacturing, big data, cloud computing, etc., and optimize courses related to digital economy; Accelerate talent flow and knowledge sharing, improve the collaborative mechanism for efficient talent delivery, and achieve close integration between talent cultivation and market demand; Actively building an enterprise led "industry university research" innovation cooperation base, vigorously promoting the integration of industry and education, and accelerating the industrialization and marketization of scientific research achievements; Improve the incentive mechanism and supporting policies for digital talents, and promote salary distribution to tilt towards digital talents. We need to establish a comprehensive vocational education system for lifelong learning, create an intelligent lifelong learning public service platform for the public, strengthen skill training for unemployed workers, establish a reemployment training system as soon as possible, and facilitate the transfer and reemployment of unemployed workers [10].

## 5. Conclusion

This article discusses the effect of artificial intelligence on employment and social structure in the digital age in the context of the continuously developing digital economy. The effect of AI on the employment market mainly focuses on three aspects: the risks associated with job automation, AI's equitable influence on employment opportunities, and its effects on the structural composition of jobs. At the same time, follow-up development suggestions are proposed on the effect of artificial intelligence on employment and social structure, including enterprise innovation adaptation, government policy introduction, education reform direction, etc., to contribute to reducing negative impacts and accelerating positive growth. As part of the ongoing development process of artificial intelligence, we should not only fully leverage its advantages but also focus on protecting the rights and interests of human labor. The key to achieving this balance lies in cultivating talents with artificial intelligence skills and interdisciplinary knowledge to adapt to the new demands of the labor market; Strengthen vocational training, help workers improve their skills, and achieve job transformation; Encourage enterprises to adopt a human-machine collaborative work mode, making artificial intelligence a human assistant rather than a substitute.

Artificial intelligence, as a powerful technological means, will undoubtedly have a profound impact on future work and social structure. It will drive innovation and productivity development in various industries, bringing more convenience and efficiency to society. However, in this course, we should also pay attention to the negative impacts that artificial intelligence may bring, such as the changes in the job market discussed in this article, as well as issues such as privacy protection and ethical ethics. Therefore, while promoting the growth of artificial intelligence, we need to reinforce policy guidance, education and training, and moral and ethical construction to ensure that artificial

intelligence technology can benefit human society and help achieve sustainable and harmonious development.

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