

The Impact of AI on the Labor Market

Yan Gao

Department of Business, Bellevue College, Bellevue, Washington, USA

Email: gy050415@gmail.com

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Abstract—In recent years, Artificial Intelligence (AI) has developed rapidly and has gradually influenced the way people work and the labor market. More and more companies have started to use AI to improve productivity and reduce costs. At the same time, AI has also changed the traditional employment structure. Under this background, the impact of AI on employment and the labor market has become an important topic that deserves attention. This paper uses literature review and theoretical analysis to discuss the impact of AI on the labor market. It focuses on several areas, including the impact on occupations and job positions, differences between industries and regions, and the division of skills and income. The research finds that artificial intelligence can improve productivity, promote industrial upgrading, and create new job opportunities. However, it may also affect some repetitive and low-skilled jobs, which can increase employment pressure for some workers. At the same time, workers in different industries, regions, and skill levels are affected in clearly different ways. Overall, AI will not completely replace human labor, but it will push the labor market toward a more digital and high-skilled direction.

Keywords—Artificial Intelligence (AI), labor market, employment structure, technological change, skill differentiation

I. INTRODUCTION

Artificial Intelligence (AI) has advanced more quickly in recent years, and it has begun to have an impact on our daily lives and future careers. In the past, many tasks had to be completed by people, but now AI can already help with many kinds of work, such as organizing information, analyzing data, answering questions, and even writing simple content. These changes have helped many companies improve efficiency and have also made some jobs easier to complete.

However, while AI brings many benefits, it also makes many people worry about whether their jobs will be replaced or whether finding a job will become more difficult in the future. Jobs that are highly repetitive and do not require very advanced skills are especially more likely to be affected by the development of AI. Therefore, AI not only affects the development of companies, but also influences ordinary people's job opportunities, income, and the skills they may need to learn in the future.

This paper reviews the impact of artificial intelligence on the labor market, with particular attention paid to how AI affects employment roles, industry development, and skill and income disparities. This paper provides some reference for future vocational training, educational development, and employment policies.

II. THEORETICAL BASIS

When analyzing the impact of AI on the labor market,

several related theories can be used to better understand this issue. First, the theory of technological progress argues that the development of new technology can improve work efficiency and change the way companies produce goods and services. Some studies also point out that artificial intelligence has been increasingly used in different industries. It not only promotes automation and intelligent production but also improves productivity and quality while reducing labor costs.

Second, the theory of skill-biased technological change suggests that technological development usually benefits high-skilled workers more. This is because high-skilled workers are more likely to learn and use new technologies, while low-skilled and repetitive jobs are more likely to be replaced.

In addition, human capital theory also shows that education, training, and skill development are important for a person's employability. Therefore, under the rapid development of AI, workers need to keep improving their abilities so they can better adapt to changes in the labor market.

III. SPECIFIC IMPACTS OF ARTIFICIAL INTELLIGENCE ON THE LABOR MARKET

A. Impact on Occupations and Job Positions

The impact of artificial intelligence on the labor market is first reflected in occupations and job positions. The main reason is that AI can replace and reshape different work tasks. On the one hand, AI is more likely to replace tasks that are repetitive and easy to standardize, which may reduce the demand for some related jobs. On the other hand, AI can also change the content of existing jobs, allowing workers to focus more on non-routine tasks that require judgment and creativity (Jiliang *et al.*, 2022). The employment impact of AI is different for workers with different skill levels, and it shows a certain pattern of "polarization." This means that while some jobs may be replaced, new jobs may also be created at the same time. In addition, the influence of AI is not limited to low-skilled occupations. Some high-skilled occupations also have a high level of exposure to AI. This shows that AI does not simply replace human labor. Instead, it reshapes occupations by changing the structure of work tasks. Therefore, the impact of AI on occupations and job positions is mainly the result of both the "replacement effect" and the "restructuring effect."

B. Heterogeneous Impacts Across Industries and Regions

The impact of artificial intelligence on the labor market is different across industries and regions. From the industry perspective, technology-intensive industries and industries

with a higher level of digitalization are more likely to be affected by AI, because these industries have better conditions for automation and intelligent technology (Meisha *et al.*, 2021). Studies based on labor structure show that the use of intelligent technology not only has a significant impact on labor demand but also has a structural effect. In other words, different types of workers are affected in different ways and to different degrees. From the regional perspective, the impact of AI also shows spatial differences and spillover effects. Because different regions have different levels of economic development, industrial structures, and technological foundations, their labor markets also have different abilities to adapt to AI. International studies also show that labor markets in different countries have different levels of exposure to artificial intelligence. Therefore, the impact of AI on the labor market is not evenly distributed. Instead, it shows clear differences across industries and regions.

C. Impact on Skills and Income Differences

Under the development of artificial intelligence, the labor market also shows a clear trend of skill and income differences. On the one hand, AI strengthens the effect of skill-biased technological change. High-skilled people are therefore more likely to use new technology to increase productivity and earn more money. However, because their positions are more likely to be replaced, low-skilled workers are under more strain in terms of pay and job stability (Peng, 2021). While artificial intelligence promotes economic growth and technological innovation, it may also create the risk of income polarization and increase social inequality. In addition, generative AI has a stronger impact on middle- and high-income cognitive occupations. This further shows that AI does not simply replace low-skilled workers. Instead, it redistributes opportunities and benefits among different skill groups. Therefore, in the long run, the development of artificial intelligence may make the labor market more divided. Skill differences may gradually turn into income differences.

IV. SUGGESTIONS FOR RESPONDING TO SKILL AND INCOME DIFFERENCES

A. At the Worker Level

Facing the rapid development of artificial intelligence, workers first need to have the awareness of learning new skills. AI is now being used in many industries, and jobs that are more repetitive and based on fixed rules are more likely to be affected. Therefore, workers cannot only depend on their past work experience. Instead, they need to keep learning new knowledge and skills. Especially with the fast development of the digital economy, companies' requirements for employees are also changing. Many jobs no longer only require basic operational skills. They now pay more attention to digital skills, learning ability, and problem-solving ability. Some studies point out that automation does not simply make all jobs disappear. While it replaces some labor tasks, it also increases the value of some human tasks, such as judgment, communication, and the ability to deal with flexible and complex problems (Autor, 2015). However, additional research based on extensive data on occupational task reveals that the impact

of machine learning on jobs mostly happens at the task level, rather than directly replacing an entire occupation (Brynjolfsson, 2018). This implies that while many future jobs may not be completely replaced by AI, the content of the labor will alter. For ordinary workers, not everyone needs to become an AI engineer or a technical expert. However, workers should at least learn how to use some basic digital tools, such as AI office tools, data processing software, and intelligent office systems. Besides technical skills, workers should also improve abilities that are not easily replaced by AI, such as communication skills, teamwork, creativity, and the ability to solve complex problems. Only by continuously improving their overall abilities can workers stay competitive in the future job market and reduce the risk of being replaced.

B. At the Enterprise Level

When companies use artificial intelligence and digital technologies, they should not only focus on reducing costs and improving efficiency. They should also pay attention to employee training and job transformation. Today, many companies use AI systems to complete repetitive tasks, such as data processing, intelligent customer service, inventory management, and basic paperwork. These technologies can indeed improve business efficiency. However, if companies simply use technology to replace workers without helping employees adapt to new ways of working, it may lead to greater employee pressure, job instability, and a wider income gap in the long run. From the perspective of the company itself, the impact of digital transformation on wages and income distribution is not completely simple or one-sided. Some studies based on data from Chinese A-share listed companies find that digital transformation can increase wage levels, and this effect differs across different types of companies and industries. At the same time, digital transformation may also widen the income gap between workers with different skill levels (Dong *et al.*, 2023). This shows that when companies carry out AI and digital upgrading, they should not only focus on the technology itself. They also need to pay attention to how technological change affects employees' income and job structure. Therefore, companies should make employee training a part of digital transformation, instead of only dealing with the problem after jobs have already been replaced. For example, companies can provide training on AI tools, digital office work, data processing, and job-related skills. For employees who originally worked in repetitive positions, companies can also use internal training to help them move into jobs that require more communication, judgment, and management skills. In this way, companies can continue to improve efficiency while also reducing the negative impact of AI on ordinary employees. In addition, companies can redesign job content. Repetitive and process-based tasks that AI is better at can be handled by systems, while employees can focus more on work that requires human experience and judgment. For example, AI can help with organizing materials and doing basic analysis, but final customer communication, decision-making, and risk handling still require employee participation. Related English-language studies also point out that digital transformation may affect wage distribution within companies by improving efficiency

and optimizing the human resource structure (Rui *et al.*, 2023). This gives companies an important lesson: AI should not only be used as a tool to replace people, but also as a tool to help employees improve their work ability. Overall, when facing the development of AI, companies should pay more attention to the balance between “technology upgrading” and “employee development.” If companies only pursue short-term cost reduction, employees may feel less secure, and the long-term stable development of the company may also be affected. In contrast, if companies can combine AI application, job adjustment, and employee training, they can improve efficiency while also reducing the problems caused by skill and income differences.

C. At the Government Level

Besides workers and companies, the government also plays an important role in responding to the skill and income differences caused by artificial intelligence. This is because the development of AI affects the whole labor market, not just one company or one type of worker. Workers in different regions, industries, and skill levels are not affected in the same way. Some low-skilled workers, workers in traditional industries, and workers in regions with weaker digital foundations may face greater employment pressure. Therefore, the government needs to use policy guidance and public services to reduce the inequality caused by technological development. From the perspective of income distribution, artificial intelligence and automation may change the share of labor income in the whole economy. Some studies argue that when automation technology replaces certain labor tasks, it may reduce labor demand and wage levels and also affect the labor income share (Acemoglu & Restrepo, 2018). This shows that if the labor market is left to adjust only by itself, some workers may be placed in a disadvantaged position during technological change. Therefore, the government needs to act in advance, such as strengthening vocational education, expanding skill training opportunities, and providing employment support for workers who are more strongly affected. In terms of specific policies, the government can increase investment in vocational education and continuing education, so that more workers have the chance to learn digital skills and basic knowledge related to AI. For example, the government can support vocational schools in offering courses such as AI applications, data processing, intelligent manufacturing, and digital office work. It can also provide retraining subsidies for current workers. For people with a higher risk of unemployment, the government can provide career guidance, job transfer training, and basic living support. These measures can give workers more time and support to adjust to changes in the labor market. At the same time, the government should also pay attention to improving the overall level of human capital. Some studies based on provincial panel data in China find that the impact of artificial intelligence on the labor income share is complex, and improving human capital can lessen the negative impact of AI on labor income share (Ting-ting *et al.*, 2022). This demonstrates that education and training are not only important for personal development, but also important ways to reduce income inequality. If workers’ overall skill level improves, the impact of AI will not be concentrated

only on a small number of low-skilled groups. In addition, the government also needs to strengthen the regulation and guidance of companies’ use of AI. Using AI itself is not a problem, but without proper rules, companies may overuse technology to replace workers, ignore employee rights, or increase income inequality. Therefore, the government can improve labor protection systems, encourage companies to provide employee training, and support small and medium-sized enterprises in digital transformation. Overall, the government’s role is not to stop the development of AI, but to build a better balance between technological progress and employment stability. Only in this way can AI genuinely serve economic development instead of further widening the gap between different groups.

V. CONCLUSION

This paper analyzes both the positive and negative impacts of artificial intelligence on the labor market. The research shows that AI can improve industry efficiency and change the way companies operate. At the same time, it can also affect low-skilled and repetitive jobs, bringing employment pressure to related workers. However, AI does not completely replace human labor. Instead, it reshapes job content and working patterns. Its impact also differs clearly across industries, regions, and skill groups. To respond to this issue, workers need to improve their digital skills and overall abilities. At the same time, companies should provide employee training and support job transformation. The government should also improve vocational education and employment policies. Only through cooperation among workers, companies, and the government can the labor market better adapt to the changes brought by the age of artificial intelligence.

However, this paper also has some limitations. For example, the research method is relatively simple, as it only uses literature review and theoretical analysis, without enough support from empirical data. Second, the references are also limited. There is a lack of comparative studies across countries and industries, so the research coverage is relatively narrow. Future research can add empirical investigation and use real labor market data to make the argument more convincing. To further broaden the research perspective, more international and multi-industry studies should be included.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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