The Impact of Artificial Intelligence Application on Labor Mar ket Structure and Adaptation Mechanisms

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Abstract:Against the backdrop of the rapidly advancing global digital transformation process, artificial intelligence technology, which has a strong empowerment effect, is significantly changing the operational pattern of economic and sociological systems, and its effects on the workforce structure are becoming more prominent. This paper pays a lot of attention to where artificial intelligence technology is applied as well as the interaction with the labor market. It is necessary to deeply explain the multi-faceted influence caused by the interaction between two factors. They are imbalances in employment structure caused by the creation and loss of jobs, supply and demand mismatches caused by changes in skill requirements, and increased polarization in the labor market. Adaptation also happens on the labor market, through many aspects such as the education and training systems reform, the development of policies, institutional innovations and cooperation among social capitals and market subjects. Research has demonstrated that artificial intelligence technology not only disrupts traditional labor markets but also brings new opportunities for transformation and upgrade. By creating comprehensive and many-layered adaptation mechanisms, it is possible to lessen the harms brought about by technology shocks, enable a smooth and optimized transition and development in the labor market, and contribute to theoretical support and paths toward full employment and high-quality economic expansion in our nation throughout the age of artificial intelligence.

Keywords: Artificial Intelligence Technology; Labor Market Structure; Shocks; Adaptation Mechanisms; Employment Transformation

1. Introduction

Since the early 21st century,a new generation of information technology with artificial intelligence,big data,cloud computing and other core technologies represented by it,have developed rapidly and profoundly changed people's ways of production and life.Artificial intelligence technology,as the main force behind the new wave of this technological revolution and industrial transformation,is quickly and deeply entering all aspects of the economy and society.in the field of labor market,the application of artificial intelligence technology has not only changed production ways and working methods,but also brought about a huge impact to the labor market.From the past experiences of the industrial revolution,each time a large technology revolution occurred,it would bring drastic changes to the labor market.Artificial intelligence is one of the most revolutionary technologies today,and we can be sure it will have far-reaching and complex effects on the shape of the labor market.

Our country now is at a turning point for economic transformation and improvement.the labor market has faced many challenges due to the change in demographic structure and adjustment of industry structure.Inevitably,the rapid application of artificial intelligence technology will bring new pressures and opportunities to the labor market.On one hand,the extensive use of artificial intelligence technology could cause some traditional jobs to disappear,which might increase the risk of structural unemployment;but on the other hand,it has led to many new industries and job types coming into being,bringing new vitality to the labor market.Artificial intelligence technology applications have effects on the labor market structure how can accurately understand it and how to establish corresponding adaptive mechanisms in response to the challenges brought by technological transformation,it's an important topic of joint concern to scholars as well as policymakers in order to optimize the resource allocation and achieve full utilization of labor resources.The study is intended to comprehensively explore the influence of Artificial Intelligence technology on the structure

of the labor market,to search for the adaptive mechanisms that suit China's own actual circumstances so as to offer useful advice for China's healthy labor market development under the artificial intelligence era.

2. The Impact of Artificial Intelligence Technology Applications on the Structure of the Labor Market

2.1 The Substitution and Creation of Employment Positions: Triggering an Imbalance in the Employment Structure

Artificial intelligence which has an advantage of processing standardized tasks keeps replacing the positions of both manufacturing industry and service industry. Industrial robots have been widely used in various industries such as automobiles manufacturing, resulting in a sharp decline in the demand for low-skill jobs like assembling and welding. There are a few highly automated factories which have already surpassed a robot substitution rate of 50%. But on the other hand, technology has also brought about a new wave of high-end jobs, for example, developing artificial intelligence, algorithm design, etc., but the speed of these new positions growing is much slower than the speed of the old jobs vanishing. Thus forming a contradiction in the shape of simultaneously lacking employment as well as jobs - low-skilled workers laid off from traditional positions are hard pressed to adjust into something else, while the demand for high-skilled individuals fluent in modern things like machine learning is severely lacking. This imbalance not only diminishes market allocation efficiency but also harbors social risks.

2.2 Changes in Labor Skill Demand: Resulting in Supply-Demand Mismatch

With the application of technology, a paradigm change in requirements for skills on the labour market can be seen. The automation of tasks like routine and predictable work makes high-level skills – complex problem solving and innovation – core competencies. But, there is a big lag in the skills of our country's labour force. the education and training system fails to raise the cultivation of people who are also digital literate and cross-disciplinary integration, many people cannot upgrade themselves. Take finance industry as an example, because of the needs in the field like data analyses and risk management caused by AI, there appears a huge gap between these and the counter staff that is traditionally working without knowledge in that area, this gap does not help both individuals' career growth or companies' tech adaptation process in order so that the whole industry cannot be promoted effectively.

2.3 The Exacerbation of Polarization in the Labor Market: Reinforcement of Income and Occupational Stratification.

Technology dividends have been unequally distributed and this has deepened market inequality. High-end talent in core technologies is now receiving exponential income boosts, top AI players can earn over several million each year and still have a high level of professional freedom, low-skilled workers may be fired, see no income growth and risk falling into poverty. Speaking of work classification, the status difference amongst high level professions like data scientist and easily replaceable ones like data operator is increasing. The uneven distribution of technology application intensifies the development divergence among different industries and regions, eastern regions with dense high tech industries have thriving labor markets, whereas industrial zones in central and western areas suffering from great employment and population exodus pressure. This makes social class rigidity more likely to occur.

3. Adaptation Mechanisms of the Labor Market to the Impacts of Artificial Intelligence Technologies

3.1 Reconstruction of the Education and Training System: Cultivating Technology-Adaptive Talent

Skill demand change brought about by artificial intelligence forces educational reform. The base of education should increase the cultivation of digital literacy and innovative thinking, put fundamental artificial intelligence courses in the national educational system, creating a technological consciousness ladder from adolescence to adulthood. Higher Education should further optimize the arrangements within each branch by improving the connection and cross-integration between AI and traditional subjects, and improving the cross-disciplinary problem-solving ability of students through the establishment of industry-education integrated training bases. For those who have a job, a lifelong learning system should be created, which

should be based on government policies, led by enterprises, and involve social participation. And this can be achieved through online education platforms offering relevant skills training for urgent areas of change like industrial robots running and data analysis The purpose is to create a dynamic process of learning – employment – relearning so as to balance the supply – and - demand of skills.

3.2 Policy Support and Institutional Innovation: Building a Resilient Market Environment

The government should improve the ability of the labor market to rebound from shocks with policy mix. In employment policies, add more fiscal and tax support for emerging technologies in artificial intelligence and those that take in low-skill labor. Develop an unemployment early warning and dynamic assistance mechanism, providing full-cycle services such as occupational retraining and entrepreneurship incubation for workers replaced by technology. As for social security, it is important to include new forms of employment like gig economy workers in the coverage framework and to improve the link between unemployment insurance and upgrading subsidies, so that the foundation of people's livelihood can be made firmer. From an institutional development perspective, it is necessary to accelerate the revision of labor law and regulation, clarify the boundaries of rights and responsibilities between humans and robots in human-robot collaboration, establish rules and systems for data safety and worker privacy protection, encourage companies to innovate technologically through property rights protection, and provide companies with an inclusive and cautious institutional environment.

3.3 Social Capital and Collaborative Market Entities: Consolidating Transformational Synergy

As the main body of technology application, enterprises need to build a synchronous mechanism of "technology introduction - personnel upgrade". Co-establishing laboratories with universities, setting up internal training bases, improving the digital literacy of employees, exploring new production and organization models centered on "human-machine collaboration", and liberating the creative value of labor. Industry associations, trade unions, and other social organizations should take advantage of their superior resource integration capabilities, dynamically monitor changes in corporate skills needs, and promote the establishment of a corporate skills certification system across enterprises. Trade unions ought to reinforce their collective bargaining capacities so as to preserve employees' rights concerning wages allocation and job modifications. On the one hand, we should strengthen the public's education on technological awareness; on the other hand, we should alleviate the substitution anxiety of technology by scientific outreach. The idea is to form a collaborative governance pattern between government, business, and society concerning the impact of technology on the job market so that there could be an easy transition in the field.

4. Development Trends and Policy Proposals for the Labor Market in the AI Era

4.1 Development Trends

AI technology continues to advance, so the job market of the future will have the following development trend:

First, human-computer collaborative work will be the main way of working. AI technology won't replace human work, instead it's an addition of human labor to work together to accomplish complex jobs, it will complement human workers and use machines for repetitive work while humans for more creative, emotional and strategic decision.

Second, more and more labor will be flexible and mobile. New jobs and forms of employment will continue to emerge, such as platform-based work and short-term jobs, which will allow people to have more choice in their careers and make cross-sector and cross-sector employment more common.

Third is that the value of skills will be further emphasized Lifelong learning will develop from an additional thing to a basic ability that workers should have because quickly changing technologies need people to constantly update their skills to make them fit with what the market really wants.

Fourth, labour market will get more globalized AI tech breaks down geograpical barriers, it allows for better, faster cross-country allocation of workers, helping global talent markets become even integrated.

4.2 Policy Proposals

To adapt to the changes in the challenges and

opportunities within the labor market of AI era, the author puts forward the following suggestions:

Strengthen high level strategic planning. Formulate nationwide coordinated development plan for AI and the labor market, detailing long-term objectives, major tasks and cross-departmental collaboration mechanisms so as to combine various resources and coordinate different government departments, industries and educational institutions.

Boost investment in education and training with varied methods. create a muli — stakeholder investment system with governments, business and social capital to raise the caliber and effieiency of talent education even more. Focus on reforms in vocational education and technical training, foster integration between industries and academies so that skills keep up with the new market requirements, particularly about digital literacy, application of AI, and interdisciplinary invention.

employment service system improvements using smart technology. improve the construction of public employment service agencies, and make full use of big data, machine learning, and other digital means to build intelligent platforms for matching jobs, career counseling, and skill evaluation. These platforms have to give workers individualized, entire-cycle employment aid, covering every bit from career guidance all the way to follow-on skills training after the work.

Speed up industrial upgrading and reform. Develop and support new industries (AI hardware, smart manufacturing, digital service), as well as promote the integration between AI and traditional industries (manufacturing, agriculture, health care) This dual approach not only makes new economic sectors produce many high-quality jobs but can also make old industries come back to life by adding technical power, making the job market have more room for skilled work.

Step up cooperation with other countries when it comes to global governance. to actively participate in setting global rules on AI governance and labour market rules, learn from foreign practices and rules in areas like technical ethics, flexi-job social security, and lifelong learning systems. to further cooperate bilaterally and multilaterally, to make sure that China's labor market adapts to the international market by improving the competitiveness of China's talent pool in the world's AI talents market.

5. Conclusion

AI technology application affects the labor market structure, but this is unavoidable; instead, it offers opportunities for upgrading. To set up a full adaptation mechanism that involves strategic planning, educational change, policy support, and social collaboration. In order to ease those negative effects brought by technological disruptions, we should help the labor market go towards an efficient, fair, and sustainable direction. Moving forward, we should play the complementary roles of government, companies, schools, and society, building a coexisting environment with technology advancement and employment security, and create a solid foundation of human capital for high-quality economic and social development in the AI era.

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