

Digital Transformation of Enterprises and Labor Force Structure Upgrading: Research Progress and Prospect

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Abstract. The transformation of the enterprise digital economy has had a profound effect on the employment of the labor force. Although extant document has discussed the digital economy, there is still a large space for deep analysis and theoretical framework construction of the impact of the digital Economy in Workforce Transformation. This research will look at the intrinsic impact of the digital economy on labor transfer or distribution. Digital capital complements a highly skilled labor force and promotes the upgrading of enterprise labor skill structure; digital transformation mainly affects three aspects: adopting new digital technology, optimizing labor organization form and adjusting business model. Changes of labor force in all respects as a result of the digitalization of business. In the background of the popularization of digital technology, the demand for low-skilled labor rises in the market, which promotes the upgrade of a commodity economy and the pursuit of a higher level of life; Digital transformation promotes the upgrading of enterprise labor skill structure, and different development regions and sizes have distinct differences in labor substitution. The effects of the digital transition can positively affect the innovation of the business model. Based on digitalization, The labor market's iterative renewal will have a decisive impact on the improvement of technology levels and the changing labor force structures.

Keywords: Digital transformation; Labor force; structure upgrading.

1. Introduction

Due to the deep influence of the digital transition on the labor market, the new generation IT is developing rapidly, which has formed the operating model of the company. Promoting the upgrading of the labor force structure and improving the level of the highly skilled labor force has become the key to establishing the competitiveness of enterprises. The need for highly skilled labor is urgently needed to drive digitization and the benefits of efficient production. Although the digital economy has been discussed in the current literature, there is still much room for the in-depth analysis and theoretical framework construction of the impact of enterprise digitalization in the upgrading of labor force structure. Given this, this study follows the relationship between enterprise digitization and a highly skilled labor force.

The workforce measures the manpower available in the current economy, including the employed and the unemployed. Through the analysis of the existing literature, the notion of digital transition and labor force employment is defined. The paper also analyses the relation between the number of companies' digital transition and labor structure. This paper discusses the meaning of the digital transition and the promotion effect of digital technology in the labor structure. and the complementary role of enterprise digitalization and labor structure upgrading. On this basis, This research aims to sum up the rules of the effect of digital transition on labor market, and make some feasible recommendations for labor market planning.

2. Literature Review

2.1. Definition of the Workforce

The workforce is defined as the manpower available in the current economy. It includes people who are working or are looking for work (i.e., the employed and the unemployed). The workforce participation rate is defined as the proportion of working-age populations who actively participate in the labor market through work or job hunting.

Progressive digital technologies, including artificial intelligence and cloud computing, have fueled the implementation of new requirements for workers. Through the development of digital technology to change the labor demand of enterprises and change the employment structure of the labor market. Talent (highly skilled labor force) is a critical internal guarantee for the expansion of the digital economy to improve economic resilience [1]. Hiring a labor force can increase the resilience of the urban economy. Enterprises should implement talent support policies internally and take the initiative to seek talent externally. From the perspective of research value, the improvement of the level of digital transformation of enterprises at the present stage increases the demand for the highly skilled labor force, and the empirical support provided in this research conclusion strongly indicates that during the process of digital transformation of enterprises, the constructions of the labor force encounter entire alteration, which has a significant impact on the labor market [2]. Digital technology is a cost-effective way for enterprises to produce and operate, reshaping their organizational structure, changing their business model, and providing great opportunities [3]. Drawing on the research formula of Anderson et al., digital transformation significantly reduces the labor cost stickiness of enterprises and improves the economic efficiency of labor costs.

2.2. The Connotation of Digitization

A new business model is created for the company's core business through the implementation of a high-level transformation that is on the basis of digital transformation and digital upgrading. The business form is to be constructed through the upgrade of digital technology and support capabilities, which is acknowledged as part of the digital transformation process. The main definitions of digitization are shown in Table 1.

Table 1. Previous definitions of digitization

Author	The definition of digitization
Fitzgerald et al. (2014, p.2)	Major business can be improved through the digitization. Optimizing customer experiences, streamlining operations and reconstructing the way business runs are included. All the achievements are practical only when those cutting-edge digital technologies are utilized.
Solis et al. (2014, p.3)	Technologies are aligned in the process of digitization and the system of business are reformed. Digitization stresses the necessity of engaging customers in digital areas at each point in the mode customers experience life.
Bondar et al. (2017, p.33)	Digitization crafts a network that encompasses all economic sectors, among which all the sectors are supposed to conduct adaptations to variant situations in the digital areas of economy.
Hinings et al. (2018, p.53)	The digitization features different types of digital innovations. Through the innovations, new structures and beliefs will be created. Current business rules can be replaced and new systems can be generated in ecosystems or industries.

Distinct products, sales, or business processes are transformed, which is not the only thing that digital technologies affect, but also the entire business functional systems. The definition of digital transformation in current literature indicates that it mainly affects three aspects of enterprises, namely, the adoption of new digital technology, the optimization of labor force organization form and the

adjustment of business model. Through the above three aspects, the demand for labor has an impact on the labor structure.

3. The Impact of Digital Transformation

3.1. Digital Technology

Although automated digital equipment will destroy low-end manufacturing jobs, technology will also create jobs for highly skilled producer services due to the complementary relationship with highly skilled personnel; the increased income of highly skilled personnel will create more jobs for low-skilled consumer services [4]. Through the innovation of digital technology and equipment, the highly skilled producer services positions are created accordingly, and the digital level and the highly skilled producer services show a synchronous growth trend. The demand for low-skilled labor in the market is accompanied by the living needs of highly skilled workers, shifting from low-cost physical labor to consumer services. To a certain extent, this has promoted the development of a commodity economy and also promoted the social pursuit of higher living standards.

3.2. Labor Organization

Digital technology realizes the systematic reconstruction of labor mode by making the labor force into digital commodities, making the direct labor object dematerialized and making the labor data intelligent [5]. Under the influence of digital transformation, the labor form of laborers has changed from direct production to indirect control of production. The transformation of the labor force organization form raises the requirements on the labor force level and also reduces the scale of the labor force, namely the alternative benefits. When automation equipment is widely used in the primary industry, the original surplus labor force will shift to the service industry.

The employment structure in both developed and developing countries is significantly impacted by technological advancements. The proportion of medium-skilled workers in developed nations has been decreasing, while low-skilled workers in developing nations are experiencing rapid decline [6]. At present, some researchers have constructed a theoretical framework for workers with different skills, this phenomenon is theoretically explained from the perspective of labor cost and skill replacement cost. There are employment structure differences between developed countries and developing countries: compared with developing countries, In developed countries, a higher proportion of practitioners in consumer services or advanced science and technological industries (i. e., higher labor force), In the context of digital transformation, Such industries have a smaller replacement rate, The economic benefit of medium labor force replacement in developed countries is higher than that of other countries; Developing countries have a higher proportion of middle workers than in developed countries, Digital shocks lead to a significant replacement of low-skilled workers.

Labor substitution differs between different development regions and enterprises of different sizes as well. Due to the higher proportion of production personnel in manufacturing enterprises, the substitution effect of digital technology is more obvious, and the employment of highly skilled labor needs more financial support, so digital transformation promotes the labor skill structure upgrading of manufacturing enterprises, large-scale enterprises and state-owned enterprises; in the areas with high marketization level, digital transformation promotes the upgrading of enterprise labor skill structure [7].

3.3. Employment Structure

Digital transformation's acceleration could lead to the phenomenon of polarization in the labor market due to its impact on the employment structure. According to the research, due to the high cost of living in southeast coastal areas, the labor force with primary school education or below is introduced, industrial intelligence promotes the replacement of advanced equipment to the low-education labor force, and the employment structure appears "unipolar polarization" trend [8]. Different from traditional enterprises, digital enterprises make it easier to establish competency

models for key positions, and more importantly, they can help to improve the quality of employee employment. To achieve high-quality development of enterprises, understanding the development trends of the digital economy is essential. According to the analysis of the "innovation effect", The capability of enterprises to collect and integrate information has been enhanced by the advancement of big data and artificial intelligence. Enterprises can quickly grasp the future development trend and effectively improve the quality of employment. In regions with good development prospects of digital finance, digital transformation has greatly improved the quality of employment [9].

On the other side, the digital transformation of cities will also impact total employment. The widespread application of digitization accelerates. The substitution of information to other factors, high-level talents improve labor productivity, but at the same time restrains the demand for low-level labor, leading to structural unemployment. It is necessary to improve the unemployment security system and expand employment, and at the same time to prevent the negative impact of excessive numbers [10].

4. Conclusion

Thus, the workforce is affected by the digital economy at various levels. The research found that the enterprise digital transformation through scale expansion effect increased the high and low degree labor demand, through the technology upgrading effect increased high degree labor demand, reduced the low degree labor demand, under the scale expansion effect and technology upgrading effect cause enterprises at the same time increase high degree and low degree labor demand. By boosting enterprise intelligence and automation, digital transformation results in the 'employment substitution effect', which has a serious impact on improving the quality of the labor force, which is mainly manifested in the best of employment construction and the upgradation of the discourse power of the labor force. The development of the digital economy has an influence on both the manpower market and the structure of labor demand.

Against the government sector, to continue to strengthen the digital infrastructure development, Foster the deep merger of the digital economy with the real economy, vigorously develop education and training for digital technology. Simultaneously the study continues to improve the unemployment safeguard system and the employment service system, strengthening digital infrastructure development, Introduce talent optimization policies. To boost the construction of information infrastructure, advocate for vocational training, and foster digital diversion and enterprise upgrading.; For the enterprises, To strengthen the enterprise internal training management, Integrate human resources; Accelerate the development and application of digital technology, Continue to release the potential of digital technology; For the individual, Learn the skills and technologies related to digitization, Enhance personal value; Actively participate in vocational skills training, Improve the professional competence. Encourage enterprises to digitize and the digital economy to grow in a high-quality manner, and realize the digital transformation of Chinese enterprises and the optimization and upgrading of labor skills construction.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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