



# The Effect of the Digital Economy's Growth on Employment

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**Abstract.** The digital economy is a brand-new type of economy. For the real economy, information and knowledge are the most important factors of production and the most important carrier of the real economic development. It is an information network that relies mainly on information technology to efficiently perform some complex economic tasks. This study explores the characteristics of digital economy based on a new business model and analyzes the positive and negative impacts of digital economy on employment. Meanwhile, some possible measures will be proposed through discussion.

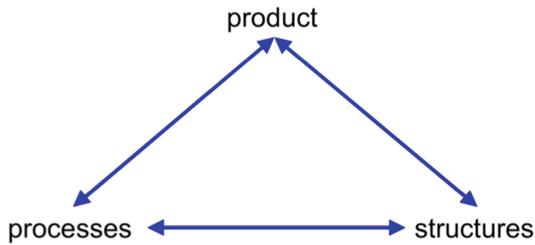
**Keywords:** Digital economy · Employment · Big data · Digital divide

## 1 Introduction

At present, intelligent living is made possible by modern microelectronics and communication technologies, which would have been almost inconceivable a few decades ago. The utilization of the Internet, cloud computing, big data, Internet of Things (IoT), fintech, and other emerging digital technologies allows for the digital collection, archiving, analysis, and sharing of information as well as the transformation of social relationships. The digital economy is growing rapidly and affecting a wide range of economic sectors, including employment. For instance, the digital economy plays an important role during COVID-19 pandemic. Lots of people now work from home, and students must complete their coursework online. As a result, the digital economy offers some new job opportunities and affects the working environment while also offering many solutions to problems. It is obvious that the growth of the digital economy is a future trend, so it is important to research its effects and development plans. The objective of this paper is to study the characteristics of the digital economy and discuss how it affects employment in China. Moreover, based on this, this paper proposes some potential policies.

## 2 The Components of Digital Economy

According to Zimmermann's business models (2000), the key characteristics of the digital economy are structure, process and products (Fig. 1) [1].



**Fig. 1.** The business model of digital economy (photo credit: original)

## 2.1 Structures

Economic transactions between businesses can now only be done over broadband connections. Thanks to the development of the digital economy, most transactions are likely to be done on online platforms. Zimmermann (2000) claimed that consumers would communicate directly with their suppliers as a result of “e-commerce’s” consequences. Intermediation serves a fundamental purpose in economic systems, and a digital economy is no different. However, in the digital economy, the setup and appearance of intermediaries is different. As a result, traditional intermediaries will be eliminated from the value chain. For example, E-loan is a financial intermediary that deals in a variety of LOAN products from different suppliers around the world [1].

## 2.2 Processes

First, value creation activities are increasingly initiated and led by customers, especially their fundamental needs. When working with specialized intermediaries or even manufacturers directly, customers express their unique wants and needs. These goals are defined by the ideas such as personalization, personalization, and mass customization. Zou and Zhang (2019) illustrate the use frequency of personalized advertising on Taobao. When customers log on to the site, they can see a variety of products recommended by Taobao on the home page, based on their previous purchases. Items are arranged in chronological order of prior purchases. For example, if a customer recently bought a shirt, information about other shirt manufacturers would be recommended first on Taobao’s page. There will be a comprehensive introduction of the recommended products [2].

## 2.3 Product

Taking advantage of the new ICT infrastructure, each product module can be set up differently to fit a wide range of situations and work with almost any other content or service. For instance, because most of RED’s users are women, certain cosmetics ads appear on their main pages in China when they open the popular mobile app. Furthermore, lots of celebrities have their Weibo accounts, because Weibo is the most popular social media platform in China. They often post advertisements for products they recommend, which are seen by a large number of subscribers.

### 3 The Impacts of Digital Economy on Employment

#### 3.1 Positive Impacts

##### 3.1.1 Expanding the Scale of Employment

As China's digital economy continues to grow, it will be deeply integrated with the real economy and create a large number of jobs. On the one hand, the growth of jobs in the digital industrialization is driven by the employment growth of digital industrialization is driven by the emerging digital industry sectors, represented by the ICT sector, cloud computing and big data. For example, new mobile communication technology known as 5G. Jeon et al. (2020) emphasized that many governments have established their own 5G development strategies in order to advance the 5G sector. [3] On the other hand, the development of digital technology continuously supports the digital transformation of traditional industries. Relying on the extensive application scenarios and huge demand space provided by traditional industries, it promotes the emergence of the demand for digital talents in traditional industries. For instance, Ma et al. (2022) illustrated that due to the advances in mobile communication technology, live streaming is currently used for online shopping, resulting in a new type of social commerce called live streaming commerce. Before ByteDance turned e-commerce into a business and launched TikTok Live in 2018, Alibaba launched Taobao Live in China for the first time in 2016. [4] According to a business report released by IResearch in 2021, the market size of China's live streaming commerce exceeded 1.2 trillion yuan in 2020 and will exceed 4.9 trillion yuan by 2023, with an annual growth rate of 197.0%. [5] While enhancing social productivity and maximizing resource allocation, digital technology has also brought forth certain new problems and concerns. According to database from China Academy of Information and Communications Technology, digital industrialization and industrial digitization are also growing, and the field of digital governance is also creating jobs in the digital economy. Take smart campus as an example, Abuarqoub et al. (2017) conducted that a smart campus is a brand new education system that provides an interactive and creative environment for students and faculty. The roll-call process is considered the most time-consuming, especially in classrooms with large numbers of students. If both students' and staff's attendance were tracked automatically through smart campus, time would be saved and mistakes made by people would be eliminated [6].

##### 3.1.2 Create a New Kind of Work Ecosystem

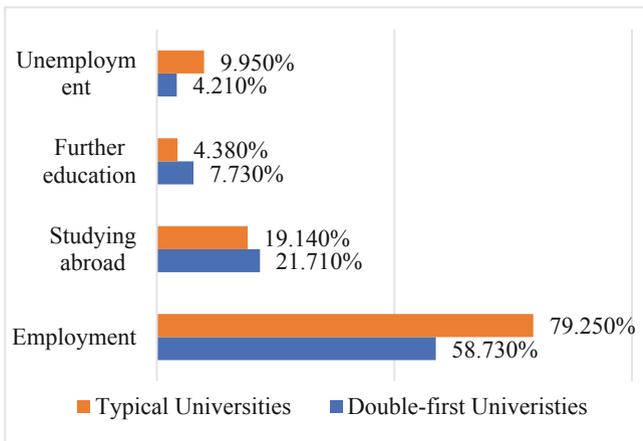
Novel Coronavirus has forced millions of people to work remotely. Remote work is a working style that allows professionals to work outside of a traditional office environment. Crisis conceives opportunities. COVID-19 has closed many schools and offices, but it has also changed the way people learn and work. As a result, the online education and telecommuting industries will grow by leaps and bounds. Due to the flexibility, platformization and digitalization of the digital economy, traditional work boundaries tend to blur or even disappear, allowing employees to start work without waiting for meetings. Take online education as an example, referring to Pokhrel and Chhetri's research (2021), for the first time ever, teaching and learning are examined and tested using online

platforms like Google Classroom, Zoom, virtual learning environments, social media, and numerous group forums like Telegram, Messenger, WhatsApp, and WeChat. Even if face-to-face teaching resumes, more research could be conducted. These platforms can provide students with more resources and guidance. [7] At the same time, businesses can look globally for employees that match their needs. These skills can also be used to complete off-site office work, either part-time or full-time.

### 3.2 Negative Impacts

#### 3.2.1 Continuing Structural Unemployment

According to iResearch’s report (2021), the demand for IT talent outstrips supply. In terms of qualifications, the number of IT talents is in a pyramid, accounting for 8 percent of the high, 41 percent of the middle, and 51 percent of the low. Companies’ “recruitment challenges” are most pronounced at the high and low ends, mainly due to supply-demand imbalances or a lack of employment attractiveness. [8] Besides, as shown in Fig. 2, most students decide not to find a job after graduation. Undergraduates have a relatively low direct employment rate, and many students choose domestic higher education as their first choice of study, because it is easier for postgraduates to find jobs than undergraduates. Students from double-top universities are more likely to pursue further education than those from ordinary universities, while those from ordinary universities are more likely to choose direct employment. In double-first class universities, more people pursue additional study domestically or overseas than they do jobs immediately after graduation. As a result, the supply gap has grown even wider.



**Fig. 2.** Options for students after graduation (table credit: original) Source: The report from iResearch on the availability of Chinese IT talent in 2021.

### **3.2.2 The Digital Divide is Still Widening**

Information and communication technologies (ICTs) have the potential to improve people's quality of life. Technology has become ingrained in our daily lives and the digital divide prevents those without full access to ICTs from participating effectively in society. In the field of education, Soomro et al. (2020) point out that people's access to enough digital technologies affects their ability to improve their social status and economic resources. [9] Contrarily, limited access to technology can further compel a group of people who are already marginalized. In addition to creating a knowledge gap, digital exclusion limits opportunities for cross-cultural networking, communication and understanding. Furthermore, there is a need to look after the elderly population. Olphert and Damodaran (2013) discuss that computers and the Internet can be powerful tools to help them maintain independence, social connection and sense of worth even if their health is getting worse or they can't do much physically. However, if older people can't take advantage of the opportunities and services that are increasingly being offered online, they risk being left out of society in new ways. This is true even though they are already more likely to be left out because of things like poverty, isolation, and poor health. [10] Besides, the digital divide is contentiously widening during the COVID-19 pandemic. In China, for example, health organizations use health codes to estimate a person's exposure risk based on tracking factors such as travel history, time spent in high-risk areas and close contact with potential carriers. It's a color-based QR code used on contact-tracking apps. The government's collection and management of medical information is very efficient, but it is very difficult for the elderly to use health QR codes through mobile phones. Older people refuse to use the Internet, lack the financial means to buy relevant equipment or access the Internet, and lack technological literacy and proficiency. When people are unable to access information and communication technologies, they are unable to obtain online health resources and remote medical care, which may make them feel excluded from society and worsen the health inequality that exists for older people. At the same time, because the elderly do not use health code, the daily life of the elderly has been affected. For instance, no one is allowed to enter public spaces or use public transit without a health code.

## **4 Policy Recommendation**

### **4.1 Increase the Pace of Digital Talent Training**

The government should support the construction of key disciplines in universities, such as computer science and technology, software engineering and big data. There should be many other avenues for students to obtain information and knowledge outside of the classroom. Students can take classes in different universities and even learn about different majors through the Internet. For example, they can acquire knowledge through MOOC, YouTube, Ted, Bilibili and so on. Moreover, colleges and universities should place more emphasis on students' abilities to blend professional knowledge with practice than only their professional knowledge test scores. At the same time, the companies should start working with universities themselves and create an internship platform for students. In terms of employment, the government has created a perfect employment

platform to help these promising talents find jobs and encourage enterprises to recruit the best talents.

## 4.2 Maintaining Elderly People's Digital Engagement

There are several possible reasons for the disengagement of elderly people. Olphert and Damodaran (2013) pointed out that older people are reluctant to use computers or mobile devices due to poor eyesight because reading and understanding web material is challenging. With the development of science and technology, a large number of mobile applications are becoming more and more challenging for both adults and the elderly. Moreover, the majority of older people take security seriously. They are very worried about their personal information being leaked. When using an app, users are often forced to see a variety of advertisements, which can easily trick the elderly. [10] Unlike typical devices for adult use, simple and smart mobile devices must be designed for older users. For instance, the font size needs to be large enough for them to read it. When people use multiple applications, they can do so without spending time and a complicated registration process. Moreover, the security performance of cell phones used by the elderly should be better than that of regular cell phones. Yao et al. (2021) suggested that the government could create a centralized electronic medical record system for the elderly in China to track and record everyone's health status. The second potential is to develop a platform for distributing high-quality health information that is supposedly senior-friendly. For health promotion, chronic disease management, and older adult health education, an authorized platform with a high rate of older population penetration is essential [11].

## 5 Conclusion

This paper explores a new business model to examine the structures, processes and products of the digital economy. At the same time, this study explores the positive and negative impacts of the digital economy on employment. The digital economy has had many positive effects, including the creation of many new jobs and the new working environment. On the negative side, the digital economy has further widened the digital divide and increased structural unemployment. Thus, the government should speed up the process of cultivating digital talents to solve structural unemployment. For instance, companies and universities ought to work together to improve the conditions for student learning and internships. Meanwhile, the elderly are a population that cannot be ignored, and the government should maintain the digital participation of the elderly to solve the digital divide. The government should create a unique system specifically for managing the lives and health of the elderly, in addition to designing a mobile phone or computer for them.

Huge investments in the digital economy's technological development help to advance the sector as a whole. The unknown will have a much greater impact on the future of the digital economy than the known.

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