

Economic Impact of Information Industry Development and Investment Strategy for Information Industry

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ABSTRACT

The information industry leads the digital revolution and innovation. With regards to what economic impact the development of the industry will bring about, there has been minimal focus from literature. This paper fills the knowledge gap by using a dynamic computable general equilibrium model. The results show the development will rapidly promote economic development and social welfare, promote the reduction of commodity prices and the rise of output by providing higher social productivity. Finance, public service, and some traditional industry (such as electricity) will benefit more when the information industry develops rapidly. At present, the industry development of the information industry is more directed at the service industry and final consumption. This paper implies the information industry can strengthen R&D investment towards supporting finance, public services and traditional industries, such as industrial control embedded software products, cloud computing technology, and emergency communication for traditional industries to increase the income.

KEYWORDS

Computable General Equilibrium Model, Development, Economic, Impact, Information Industry, Investment Strategy

1. INTRODUCTION

Enterprise decision-making comes from industry development, and industry development also depends on enterprise decision-making (Ferreira et al. 2016; Gonçalves et al. 2019). The arrival of the era of big data has given research value to digital and information. Production and service models based on information and network are expanding the scope and form of creating and utilizing the information by human, promoting the traditional industries switch towards intelligence, informationization and digitization (Angelovska 2016).

The development of today's society is increasingly inseparable from digital technology and information services (Gallipoli and Makridis 2018). Automation and intelligence gradually penetrated from the tertiary industry to the secondary industry and the primary industry (Zhang et al. 2017). Information technologies have been used in various industries, such as the green information technologies (Przychodzen, Gómez-Bezares, and Przychodzen 2018), the applying in tourism

DOI: 10.4018/JGIM.2021010102

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management (Navío-Marco, Ruiz-Gómez, and Sevilla-Sevilla 2018), applying in food industry (Schneider et al. 2019), applying in medicine (Asan et al. 2018). The rapid development of digital technology has also brought about some problems (Fixson and Marion 2012), such as the dependence of young people on digital products (Wang, Sigerson, and Cheng 2019). However, it is undeniable that enterprises rely more and more on digital to improve the core competitiveness. Digitalization also brings innovation, efficiency and convenience to society (Chen et al. 2018).

Taking China's software industry as an example, it is indicated that number of enterprises in software industry was increasing from 18.1 thousand in 2009 to 39.4 thousand in August 2019, and average annual growth rate is 8.1%. However, the total profit of the industry increased from 33.2 billion CNY in 2009 to 4835.2 billion CNY in 2018, accounting for 5.4% of 2018 GDP in China. The annual growth rate of the profit is 73.9%. Profit growth is almost exponential (see in Appendix A). The number of Internet users was 384 million in December 2009 and was 854.49 million in June 2019, however, the transaction volume of online shopping increased from 250.0 billion CNY in 2009 to 9006.5 billion CNY in 2018. The transaction volume of online shopping increase 48.9% per year (see in Appendix A). No matter from the enterprise side or from the residents side, the development of the information industry is exponential in recent years.

Industrial development has experienced through three eras, the first is the era of the steam engine, the second is the era of electrification, the third is the era of information. Now Industry 4.0 is coming, which is the era of using digital technology to promote industrial transformation, that is, the era of intelligence (Lasi et al. 2014; Liao et al. 2017). Information innovation and management could help traditional industries, such as textile, automotive industry (Dwaikat et al. 2018; Chiplunkar, Chattopadhyay, and Deshmukh 2001). Therefore, the economic impact of the development of information industries is worth studying. This paper seeks to address these questions: what is the impact of the accelerated development of the information industry on GDP? What are the spillover effects on other industries? Which industries will benefit more?

In China, as labor costs continue to rise, the real wages of Chinese manufacturing workers have nearly doubled in 2015 compared with 2006, low-cost labor advantage is a thing of the past. Therefore, China's manufacturing enterprises are striving to achieve transformation and upgrading: to improve the use of automation equipment, and to control operating costs and management costs through enterprise information management, to transform production and processing models (from cheap-labor-based production model to high value-added production and service models with independent intellectual property rights. The development of the information industry will undoubtedly bring great spillover effects and promote the development of other enterprises and the entire economy. Thus, this paper will aim to the economic impact of information industry development by applying a Computable General Equilibrium (CGE) model, hoping to bring some implications to policymakers.

The basic structure of this paper is organized as; introduction and literature review of digital technology and digital industry development are presented in section 1 and section 2. The methodology is briefly introduced in section 3. The scenario design is described in section 0. The simulation results and discussions are provided in section 5. The conclusions and implications are proposed in section 6.

2. LITERATURE REVIEW

The impact of digital design and information technology (IT) is a hot topic (Farrell 2017; Yin et al. 2019). Many scholars have researched on this field.

Some of them focus on the impact of information industries at enterprise level. Marion, Meyer, and Barczak (2015) explored the impact of them on the development of modular product architectures and finally found an insignificant relationship between digital design tool usage and modular product architecture or overall project outcomes. Mauerhoefer, Strese, and Brettel (2017) studied the impact of information technology on new product development performance. Lin, Chen, and Hung (2019)

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