



Literature Review on Digital Economy Promoting Digital Transformation of Garment Enterprises

Mengyu Liu and Meng Zhao^(✉)

Beijing Institute of Fashion Technology, Beijing, China
fzyzm1@bift.edu.cn

Abstract. As a pillar industry of China's national economy, the garment industry has attracted the attention of scholars at home and abroad. Since 2019, from the proposal of digital economy to the creation of advantages, to the promotion of development and improvement of governance, a series of layouts in China have made digital transformation penetrate into all fields. It is of great significance for garment enterprises to take advantage of the trend of digital economy, stand in the perspective of overall thinking, join the tide of digital transformation, and do a good job in transformation and upgrading. This paper starts with the overall statistics of domestic and foreign clothing enterprises' research literature, and comments from three perspectives: basic theories, transformation motivation and realization path. Finally, it summarizes and prospects the relevant research on digital economy supporting clothing enterprises' transformation.

Keywords: Digital economy · Garment enterprises · Enterprise digital transformation

1 Introduction

The Government Work Report in 2021 clearly puts forward the priorities of accelerating China's digital development and creating new advantages in the digital economy, which indicates that developing the digital economy is a new trend of China's future economic development. Therefore, garment industry, as a pillar industry in China, needs to carry out digital transformation driven by the digital economy. On the one hand, due to the impact of the COVID-19, garment enterprises are facing overcapacity, management structure confusion and other development problems, and enterprise transformation and upgrading are imminent. On the other hand, the digital economy has developed rapidly under the influence of the epidemic situation, providing a direction for the transformation and upgrading of traditional clothing enterprises. Based on this, this paper uses the method of literature review to start with the concept of digital economy and digital transformation of garment enterprises, and gradually expounds the motivation of digital transformation of garment enterprises and the path of digital economy to help garment enterprises transform, hoping to provide methods for digital transformation of garment enterprises in the future.

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2 Literature Statistics on the Transformation of Garment Enterprises Assisted by Digital Economy at Home and Abroad

2.1 Statistics of Relevant Foreign Documents

The data of foreign papers are mainly obtained from the Emerald full-text journal library. A total of 468 papers related to foreign clothing and digital economy were obtained from 2000 to 2022 by searching for the keywords ‘digital economy’ and ‘garment’.

The research in foreign related fields can be divided into two stages. The first stage is before 2016. The main research directions include the impact of the emergence of the digital economy on enterprises. The application of digital technology in garment design and customization, the preliminary exploration of e-commerce in enterprises, and the use of information systems in garment enterprises. The second stage is from 2017 to 2022, in which the number of documents issued by relevant fields has increased significantly. The main research directions include the role of digital innovation in the fashion industry, the construction of digital innovation and textile value chain, and the further application of digital technology in the clothing field.

2.2 Statistics of Relevant Domestic Documents

The data of domestic papers are mainly from WanFang database to obtain relevant literature information. Through the analysis of key words clothing, digital economy and digital transformation, it is found that from 2000 to 2022, digital economy and clothing enterprises accounted for 3.66% and 3.53% respectively.

According to the number of papers issued from 2000 to 2022, the number of papers that combine the digital economy with the digital research of garment enterprises is relatively small, but it can be roughly divided into three stages. Before 2012, the number of papers issued from scratch was the highest in 2012. The main research content is the application of logarithmic technology in garment design. From 2011 to 2018, it is a stable development stage. In this stage, the brand has increased, the channel has been improved, and the number of documents issued has been relatively stable. The main research direction is the e-commerce operation of clothing and the application of network information system by clothing enterprises. From 2019 to 2022, the number of documents issued has increased, because China has put forward the development plan of “digital economy” for four consecutive years. In addition, affected by the epidemic in 2020, the development of the real economy has been hindered, and the digital economy has developed unprecedentedly upstream, gradually distributed in various industries.

Although there is little research on the digital economy and the digital transformation of clothing enterprises, However, the number of articles on digital economy and digital transformation of enterprises has increased significantly, reaching a peak of 410 in 2021. The main research includes the transformation of the clothing industry driven by digital economy, the orientation of clothing brand marketing and global value chain division, and the orientation of intelligent manufacturing transformation of the clothing industry.

3 Research Focus on the Transformation of Garment Enterprises Assisted by Digital Economy at Home and Abroad

3.1 Overview of Digital Economy

The term “digital economy” was first proposed by Don Tapscott (1996) [1], an American scholar, to generally refer to various emerging economic relationships after the emergence of Internet technology. Later, with the progress of digital technology, the definition of digital economy in foreign countries has become more perfect, and the mainstream views are as follows. Don Tapscott (1996) proposed to use it to refer to various emerging economic relations after the emergence of Internet technology. Japan’s Ministry of Industry and Trade (1997) [2] elaborated three characteristics of digital economy, including information technology foundation, electronic means and economy without physical movement. The G20 Digital Economy Development and Cooperation Initiative (2016) [3] defines the digital economy as a series of economic activities using digital knowledge and information as key production factors, modern information networks as an important carrier, and ICT as an important driving force. Mahmud S A (2017) [4] defined the digital economy as a trend of realizing international business and large-scale business transformation relying on digital technology. Lauscher (2019) [5] defined the digital economy as an era, an era of using new technologies, which is more macroscopic in expression.

Although China started late in digitalization, with the improvement of China’s strength, the digital economy has achieved leapfrog development in China since 2016. Domestic scholars and relevant institutions have made definitions of the digital economy, among which the Chinese Academy of Information and Communications has relatively comprehensive and accurate definitions of the digital economy in the *White Paper on China’s Digital Economy Development* (2020) [6]. It is interpreted as taking digital knowledge and information as the key production factors, digital technology innovation as the core driving force, modern information network as the important carrier, through the deep integration of digital technology and the real economy, continuously improving the digital and intelligent level of traditional industries, and accelerating the construction of a new economic form of economic development and government governance model. After that, the Chinese Academy of Information and Communications has continuously enriched the connotation of digital economy, and extended the digitalization of traditional industries to the four modernizations in 2020, namely, digital industrialization, industrial digitalization, digital governance, and data value.

To sum up, it can be found that there is no universally accepted definition of digital economy by domestic and foreign scholars at present. On the one hand, due to the uneven development level of countries and the different emphasis on industrial layout, the definition of digital economy focuses on different directions. On the other hand, the digital economy is still in the development stage, and its connotation and extension are constantly enriched and developed. However, the essential characteristics of the concept of digital economy have not changed. They are all based on digital technology to study all economic outputs brought by digital inputs.

3.2 Overview of Digital Transformation of Garment Enterprises

The research on enterprise digital transformation is shown in the table. Most foreign scholars believe that it is based on digital technology and the coordination of enterprise strategy and plan; Most domestic scholars are based on the role of digital technology in enterprises, but there are differences in the transformation methods of enterprise transformation. Some scholars believe that the focus is on the adjustment of the internal organizational structure of enterprises, while others believe that it is a kind of resource connectivity, which can be summarized as “external connectivity and internal connectivity” (Table 1).

Table 1. Research context of enterprise digital transformation (owner-draw)

year	author	Viewpoint
2015	Xinyu Song [7]	Think that enterprise digital transformation uses Internet technology to improve operation efficiency.
2016	Jin Xia [8]	Think it is based on technology to realize the interconnection between people, enterprises and society.
2017	Xueqin Tang [9]	The digital transformation of enterprises is based on the transformation of business models and core processes of enterprises based on digital technology.
2020	Zaychenko I, Bagaeva I, Smirnova A [10]	Considered as a significant change in business strategy and process under the influence of digital.

For the understanding of digital transformation of clothing enterprises, see Fig. 1. There is no specific definition of digital transformation of clothing enterprises in foreign countries, and there is no accurate definition of digital transformation of clothing enterprises in China. However, according to the context of digital transformation of clothing enterprises, it can be understood that digital transformation of clothing enterprises is the integration of digital technology and the whole chain of clothing, enabling enterprises to complete digital transformation.

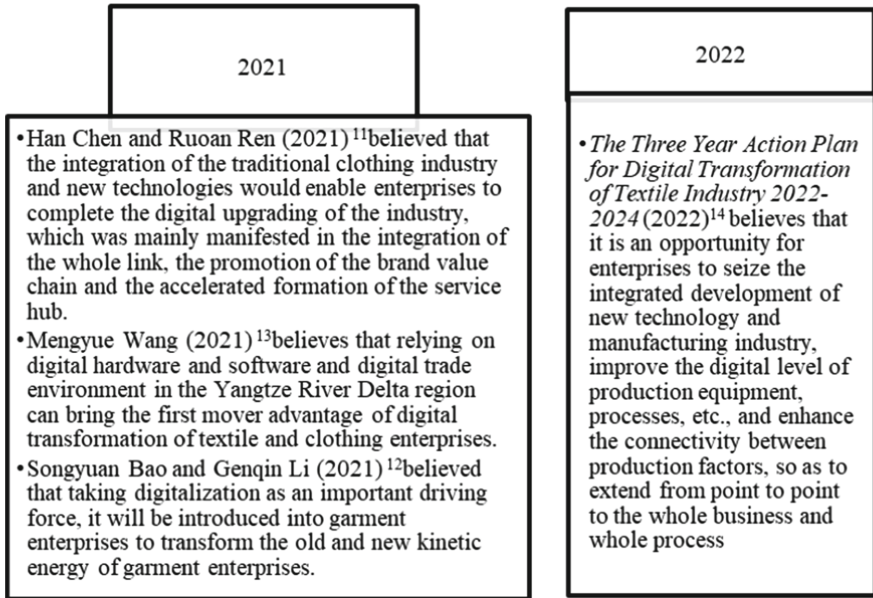


Fig. 1. The Research Context of Digital Transformation of Garment Enterprises (owner-draw)

3.3 The Motivation of Digital Transformation of Garment Enterprises

To sum up, foreign research on digital transformation of garment enterprises mostly focuses on how specific technologies are applied in enterprises. Based on this, this paper focuses on the domestic literature to sort out and summarize the motivation.

Through analysis, the motivation of enterprise digital transformation can be described from the macro, medium and micro perspectives. First of all, from a macro perspective, mainly because digitalization has brought new technological revolution, the country has provided a large amount of financial support for digital R&D and transformation in response to the rapidly changing international market environment. Secondly, in the middle view, as enterprises in various fields have been distributed digitally, the industry has been upgraded and the industry competition has intensified. Finally, from a micro perspective, enterprises adjust themselves to adapt to the digital environment, the enrichment and development of consumer needs, and the need to improve efficiency, thus promoting the digital transformation of enterprises.

However, at present, the domestic research on the motivation of digital transformation of garment enterprises is limited to the research on enterprises under the classification of enterprise size, while the research direction on the digital transformation of enterprises under different industry classifications is less. Therefore, in the future, we can analyze its motivation more pluralistically, and summarize the general motivation for the digital transformation of garment enterprises (Fig. 2).

Macro Level	Miguel - Angel Galindo Mart í n (2021) ¹⁵ believed that the emergence of niche markets, the entry of new markets, and the intensification of competition were the main motivations to stimulate enterprises to adopt digital transformation.
	Peijian Xu, Qi Ding and Siwen Zhang(2020) ¹⁶ believed that the new round of technological revolution brought about by digitalization has changed market demand and industrial development.
	Xiaoyue Wang, Jingyu Jia, Luyao Sun and Hengchang Xu(2020) ¹⁷ believed that the macro policy guarantee and the maturity of digital technology were the main reasons.
	Chunying Wang and Hongmin Chen(2020) ¹⁸ believed that macro policies should be promoted.
Medium Level	Chunying Wang and Hongmin Chen(2020) ¹⁸ : industrial upgrading at the medium level.
	Modan Li(2021) ²⁰ , based on the SCP model and resource based theory, summarized the first reason as the industry competitive environment to promote the digital transformation of enterprises.
Micro Level	Lichtenthaler U (2017) ¹⁹ believed that the digital transformation of enterprises was driven by new demands, and promoted the innovative transformation of enterprises in order to create added value.
	Peijian Xu, Qi Ding and Siwen Zhang(2020) ¹⁶ , based on IDC's survey, believed that the key reason for enterprise's digital transformation is to survive better.
	Modan Li (2021) ²⁰ summarized the second motivation as the enterprise's own redundant resources and innovation ability to promote the enterprise's digital transformation.
	Chunying Wang and Hongmin Chen (2020) ¹⁸ : The need for enterprises to improve efficiency at the micro level is the main reason.
	Yantong Luo (2021) ²¹ believes from the micro level that it is the social consumption habits that urge enterprises to choose this way to obtain greater profit margins

Fig. 2. Research on the Motivation of Digital Transformation of Garment Enterprises (owner-draw)

3.4 Research on the Realizing Path of Digital Economy Assisting the Transformation of Garment Enterprises

From the perspective of path steps, Shubai Wang (2019) [21] proposed that there are three main steps in the digital transformation of enterprises: intelligent product manufacturing

in the early stage, brand building and channel development in the middle stage, and finally from standardization to customization. Oertwig N, Gering P, Knothe P, etc. (2019) divided the implementation of enterprise digital transformation path into four levels through the evolution of data integration, namely, digital structure transparency, digital operation transparency, digital individualized operation and digital integration operation.

From the perspective of method proposal, as shown in the Table 2.

Table 2. Summary of Suggested Methods for Digital Transformation of Garment Enterprises (owner-draw)

year	author	Viewpoint
2018	Antonova [24]	Enterprise digital transformation requires the connection of all participants in the value chain, and the deployment of data collection, exchange, processing and analysis to support relevant decisions.
2019	Verhoef. P and T. Broekhuizen et al. [25]	They conducted a multidisciplinary review, elaborated on the capabilities and assets required for digital transformation, and pointed out that digital transformation requires a specific management structure to calibrate performance.
2020	Chunying Wang and Hongmin Chen [18]	They based on Haier Group and Aerospace Cloud, believe that the realization path of enterprise digital transformation is mainly achieved through enterprise innovation, platform customization and strong government investment.
2021	Yantong Luo, Songyuan Bao and Genqin Li [21]	The realization of the transformation path of SMEs needs to stand in the perspective of strategic thinking, achieve product and system innovation with a win-win attitude and the principle of gradual progress.
	Mengyue Wang [13]	Based on the cases of Shenzhou Group and Hongdou Group, Mengyue Wang summarized the digital transformation path of textile and clothing enterprises in the Yangtze River Delta, including digital design, proofing, manufacturing, resource allocation, industrial chain management, trade and marketing.

(continued)

Table 2. (continued)

year	author	Viewpoint
	Han Chen and Ruohan Ren [11]	They, taking the driving factors and challenges of digital transformation as the starting point, believed that the path of digital transformation should be built from consumer data flow, omni channel retail and digital operation.
2022	Yuxiang Wang and Jian Jiang [28]	Based on case analysis and enterprise data analysis, they believe that there are three main paths for the digital transformation of the main force of the digital economy, namely, the party building industrial Internet platform, the joint construction of information alliances, and the combination of “tradition and digital”.
	Wei Yu [29]	Based on literature review, he proposed a comprehensive model of enterprise digital transformation, including digital strategy planning, corporate culture change, digital infrastructure construction and organizational structure change.
	Yatong Liu and Fatao Wang [30]	They based on the transformation path of SAINTANGELO and Cotte Intelligence, put forward that the digital transformation path of clothing enterprises is mainly achieved through platform construction, omni channel marketing and personalized customization.

To sum up, the current research direction on the path of digital transformation of garment enterprises assisted by the digital economy is mainly divided into two aspects: steps and method suggestions, which can roughly summarize the following three points. First, the path steps can be summarized into four steps, starting point determination, decision making, continuous promotion, and finally integration and promotion. The method suggestions can be summarized as policy and legal support, high standing thinking of enterprises in terms of technology, the construction of innovative and shared digital platforms and the training and absorption of talents in the digital field should be maintained. Second, most of the current papers on the digital transformation path of garment enterprises for the digital economy are based on the digital transformation path of enterprises, lacking the path research of specific types of enterprises. Lastly, most of the main path studies are based on case studies and text descriptions, lacking empirical analysis and quantitative comparison of the impact of each specific indicator on the digital transformation of enterprises assisted by the digital economy.

4 Conclusions and Prospect

In this paper, starting from the digital economy, digital transformation of enterprises and digital transformation of garment enterprises, the reasons for digital transformation of enterprises are described. Finally, the path of digital economy to help digital transformation of garment is summarized.

The research finds the following four points. First, the factors, paths and ways of enterprise digital transformation have gradually become an important topic for domestic scholars. Second, there are few articles at home and abroad that combine the relationship between digital economy and enterprise digital transformation. Third, the research at home and abroad is lack of thinking about the digital transformation of enterprises in the digital economy era under the multi-disciplinary background. Fourth, the research on the path of enterprise digital transformation is mostly through case analysis, and the representativeness of case selection is questionable.

In summary, there is still room for further research in combination with the existing research. Firstly, the current literature research methods are relatively limited, lacking quantitative research on various research factors, and it is difficult to have a strong correlation construction. Secondly, the research lacks more in-depth research on the digital transformation of the clothing industry. For example, there is still relatively little research on what types of clothing enterprises can layout digital transformation, how to layout digital transformation for different types of clothing enterprises, and how various components of the digital economy affect the digital transformation of enterprises. Finally, in the era of digital economy, the application scope and scale of digital technology need to be more clearly defined. Whether it is product design or consumer demand research, enterprises are required to grasp the boundaries of providing better services and consumer information security, which is also the subject of in-depth research on the future digital transformation of enterprises.

In general, with the arrival of the digital economy era, more and more enterprises in various fields will enter the ranks of digital transformation, and will also promote people and various stakeholders to change their lives, work, consumption and other behaviors. Therefore, it is of great theoretical and practical significance to improve the research on the impact path of digital economy on the digital transformation of enterprises in various industries. This paper takes clothing enterprises as an example, summarize the perspectives that can be continued and developed in future research in related fields, and expect to have more in-depth research in this field.

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