



# Research Hotspots and Trends of International Digital Business Development

## — Knowledge Graph Analysis based on Citespace

Shiqi Zhang<sup>1</sup>, Gefei Liu<sup>2</sup>

<sup>1</sup>Fanli Business School of Nanyang Institute of Technology, Nanyang, Henan, 473000, China, 565715834@qq.com

<sup>2</sup>School of Economics and Management, Beijing Forestry University, Beijing, 100080, China, 3297875925@qq.com

**Abstract.** Digitization enables the rapid flow of information and resources around the world, promotes international trade and transnational cooperation, and promotes global economic integration. Based on the bibliometric method and knowledge map visualization analysis method, this paper takes the international digital business development research literature included in the Web of Science core collection from 2004 to 2023 as the sample data for quantitative and qualitative analysis. The research results show that the research hotspots of international digital business development mainly focus on the quality requirements of digital trace data in information systems, the direction of future digital transformation research, and how enterprises can build dynamic capabilities in the context of digital transformation.

**Keywords:** Digital Business Development; knowledge map; Citespace

## 1 INTRODUCTION

Digital transformation is profoundly changing the business environment worldwide. Enterprises adopt digital technology to improve operational efficiency, innovate business models and open up markets.<sup>[1]</sup> However, the complexity and diversity of digital commerce makes the related research deepening. In order to understand the development status and trend of digital commerce, this paper uses Citespace to conduct statistics and knowledge map analysis on the collected literature data, and combines relevant literature to analyze the time distribution, knowledge base, research hotspots and research trends of international digital commerce development research.

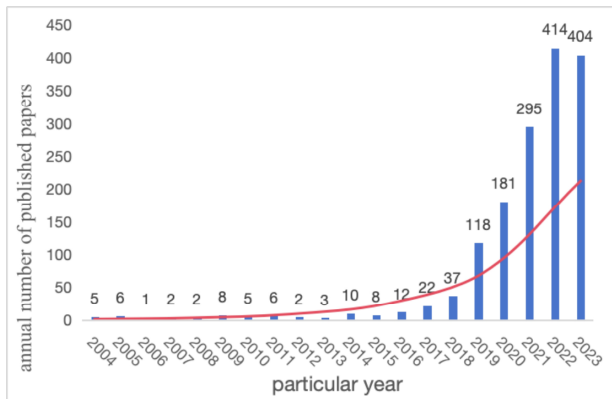
## 2 RESEARCH METHODS

This paper uses the knowledge graph method to analyze and draws the knowledge graph with the help of Citespace. Using the analysis functions such as the number of published papers, citations, and keywords in Citespace, the knowledge map of inter-

national digital business development research is drawn, and the related co-citation network and co-occurrence network are obtained, and then the distribution of research forces, knowledge base and research hotspots are analyzed. It is convenient to objectively understand the research situation in this field, and provide reference and inspiration for promoting the development of follow-up research and domestic high-quality development research.

### 3 TIME DISTRIBUTION OF INTERNATIONAL DIGITAL BUSINESS DEVELOPMENT RESEARCH

The statistics of annual publication volume and citation frequency lay the foundation for bibliometrics and further analysis. According to the time distribution of literature and citation frequency, we can explore the development process of the discipline research and predict the future prospects and development trends. The annual distribution of the number of publications on international digital business development research from 2004 to 2023 is obtained from the statistical data, as shown in Figure 1.



**Fig. 1.** Annual distribution of international digital business development research from 2004 to 2023

It can be seen from the number of papers published in Figure 1 that the research on digital economy has been tepid before 2018, and it has gradually warmed up since 2018. With the development of practice and the evolution of theory, more and more research institutions and scholars have entered this field to carry out research. Among the sample data, there were 129 literatures ( 8.37 % ) from 2004 to 2018 and 1412 literatures ( 91.63 % ) from 2019 to 2023. Among them, the number of literatures increased sharply from 2021 to 2023, with an average annual volume of nearly 370 articles. The speed of knowledge accumulation is accelerating, and the research on digital business development is showing a deepening trend. It can be clearly seen from the trend of the number of publications over the years that scholars and research experts in related fields around the world are paying more and more attention to the development of digital commerce. This shows that the development of digital busi-

ness is becoming an academic hotspot in the field of international research, and with the continuous innovation of digital technology and the vigorous development of digital economy, it has great extension space in future research.<sup>[2]</sup>

### 4 KNOWLEDGE BASE OF DIGITAL ECONOMY

With the help of Citespace, the literature co-citation analysis is realized, and the time span is set to 2 years. The Pathfinder algorithm is used to select the cited literature by the network nodes. After running, the knowledge map of the digital economy literature co-citation network is obtained ( see figure 2 ). In the figure, the node size is proportional to the citation frequency of the literature, and the line between the nodes represents the co-citation relationship between the literature.

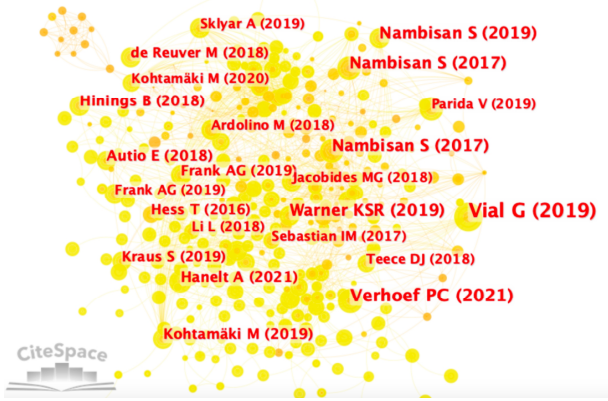


Fig. 2. Literature co-citation network of international digital business development research

Combined with Figure 2 and related literature content, it can be seen that the highly cited literature on international digital business development research mainly appears in 2017-2021, indicating that the foundation and driving literature of international digital business development research was born a short time, and digital business development is still a relatively young and relatively new research direction. From the perspective of literature citation frequency, Vial G ( 2019 ), Verhoef PC ( 2021 ), Nambisan ( 2017 ), Warner KSR ( 2019 ) and other literatures in the international digital business development research are highly cited. From the research content of the cited literature, these highly cited literatures mainly discuss the quality requirements of digital trace data in information systems, the direction of future digital transformation research, the further development of the field of digital transformation, and how enterprises can build dynamic capabilities in the context of digital transformation. These literatures play an important supporting and promoting role in the evolution and deepening of knowledge in this field.

## 5 RESEARCH HOTSPOTS OF INTERNATIONAL DIGITAL BUSINESS DEVELOPMENT

In order to explore the research hotspots in the field of international digital business development, this paper uses Citespace 's keyword co-occurrence network function to generate knowledge maps. The keyword is selected as the type of network node, and the keyword co-occurrence network knowledge map of international digital business development research is obtained ( see Fig.3 ). The high-frequency keywords with a frequency greater than 50 are counted, and the results are shown in Table 1.

**Table 1.** High-frequency keywords of international digital business development research from 2004 to 2023 (> 50 times )

keyword	frequency	keyword	frequency
digital transformation	269	dynamic capability	66
innovation	219	impact	65
technology	133	digital technologies	62
digitalization	109	performance	62
business	99	industry 4.0	60
digital economy	99	internet	52
management	94	sustainability	51
business model	88	entrepreneurship	50
big data	87	transformation	50
information-technology	69		

As can be seen from Table 1, in addition to the highest frequency of digital transformation as the topic of sample literature search, the keywords with the highest frequency are innovation, technology, virtualization, business, etc. These keywords appear as more significant nodes in the map because of their more frequent occurrences, as shown in Figure 3. [3]



**Fig. 3.** Keyword co-occurrence network of international digital business development research

According to Table 1 and Figure 3, combined with the content interpretation of the key node sample literature, based on the previous knowledge map analysis and re-

search hotspots, it can be predicted that the future research trend of the digital economy involves three aspects: first, the impact of digital transformation on business models; second, the research on digital economic growth driven by innovation; third, the research on digital transformation and organizational culture change.

### **5.1 Research on the Impact of Digital Transformation on Business Model**

Digital transformation has not only changed the operation mode of enterprises, but also had a profound impact on their business models. We can study how traditional business models are reshaped by digital technology; it can also study how digitization enables enterprises to provide personalized products and services based on customer data. For example, using big data and artificial intelligence for precision marketing and customer demand forecasting.<sup>[4]</sup>

### **5.2 Research on Digital Economic Growth Driven by Innovation**

The research on digital economy growth driven by innovation mainly focuses on how to achieve growth and development of digital economy under innovation-driven factors. It is possible to study how emerging technologies ( such as artificial intelligence, blockchain, Internet of Things, and 5G ) can promote the development of the digital economy. The research on digital economic growth driven by innovation not only focuses on the innovation of technology and business model, but also includes many factors such as policy support and social impact.<sup>[5]</sup> This research field provides a basis for enterprises, policy makers and academia to deeply understand the driving forces and trends of digital economy development, and helps to promote sustained economic growth and transformation.

### **5.3 Research on Digital Transformation and Organizational Culture Change**

The research on digital transformation and organizational culture change is to explore how enterprises can change their organizational culture through digital transformation, so as to improve operational efficiency, adapt to market changes and enhance competitiveness. These studies can help enterprises better adapt to changes in the digital era, improve efficiency, and stay ahead of the competition.<sup>[6]</sup>

## **6 COMPLIMENTARY CLOSE**

The development of international digital commerce is driven by many factors, including technological innovation, business model change and policy support. Future research should pay more attention to the integration and application of digital technology, the adaptability of business model and the dynamic changes of global market. At the same time, policy makers and enterprises need to pay attention to data privacy and security, market access and other issues in order to achieve sustainable digital development.<sup>[7]</sup>

## REFERENCES

1. Tapscott, D., & Tapscott, A. (2024). "Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World." Penguin.
2. Brynjolfsson, E., & McElheran, K. (2024). "The Business of Data: Big Data and Business Innovation." MIT Press.
3. Chen Yue, Chen Chaomei, Liu Zeyuan, et al. [ J ].Scientific research, 2015,33 ( 2 ) : 242 253.
4. Mayer-Schönberger, V., & Cukier, K. (2024). "Big Data: A Revolution That Will Transform How We Live, Work, and Think." Houghton Mifflin Harcourt.
5. Cavusgil, S. T., Knight, G., & Riesenberger, J. R. (2024). "International Business: The New Realities." Pearson.
6. Chui, M., Manyika, J., & Miremadi, M. (2023). "The Next Digital Frontier: How Technology is Shaping Business." McKinsey Quarterly.
7. Kumar, A., George, J., & Kavadias, S. (2023). "Data Privacy and Security in the Digital Age." Wiley.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

