



Bibliometric Analysis of the Digitalized Economy: A Systematic Review

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Abstract: The digital economy has gained excellent research attention in both practices and academia. Various organizations in the world are using digital technology. Recently, there has been much interest in topics like the Blockchain, sharing economy, and others, leading to apparent changes in several fields. At the same time, interest in the digital business economy is expanding. The bibliometrics analysis on the subject is a great way to address and discuss the possibilities and risks of the digital revolution. This study retrieved 10258 articles from the web of sciences database between 2015 and 2022. The analysis's findings revealed that since 2015, publications have significantly increased in several disciplines, including management, business, economics, library and information science, business economics, and others. In addition, research institutions in Spain, the USA, and the UK have excelled in the field of the digital economy. The authors used the VOS viewers software to examine what occurred and generate a keyword map showing the connection between the topic and the cooccurrence network generated by keyword data. As a result, researchers, funding organizations, policymakers, and business professionals interested in developing the digital economy can use this paper as a resource.

Introduction

A new trend in social development is the "digital economy," which is a sector of the economy that offers goods and services and relies on digital technology for its creation, production, merchandising, and supply (Li and Liu [2021](#)). It converges and combines real-world businesses and creates a value-creation model based on information and communication technology, which is the primary driver of innovation and transformation in all sectors of the economy (Yin and Liu 2020; Kagermann [2015](#)).

The digital economy encompasses economic endeavours, structures, occupations, groups, markets, products, services, and business models. A digital economy is a new form based on emerging technologies, digital knowledge, and information that have become a core driving force for regional development (Hu, Zhao, and Shi [2021](#)). The "digital economy" relies on digital technologies such as the Internet, big data, cloud computing, software, fintech, hardware, applications, and telecommunication in all

spheres of the economy, including internal and external activities of the organization and between the organization and individuals to accumulate, store, examine and share information digitally (Domazet, Zubović, and Lazić 2018). The digital economy depends on multiple interconnected physicals and institutional and social technologies. It is a complex adaptive ecosystem (Frolov and Lavrentyeva 2019) and a phenomenon of multiple criteria (Balcerzak and Bernard 2017). It is a systematically organized spatial structure and network of economic entities. It contains various tools, including innovation methodology and products, mathematical models and methods, telecommunication services, e-business, e-market, software and information tools, and other software and components (Okhunov et al. 2021). The digital economy is an activity that makes billions of connections every day among people, devices, businesses, data, and processes. Hyperconnectivity and interconnectedness of people, businesses, and machines are the backbones of the digital economy, resulting from the Internet of things and mobile.

Digital Transformation of economy and business has gained excellent research attention in academia and practice (Morakanyane, Grace, and O'Reilly 2017). It has become an inevitable trend in digitization and globalization (Hagberg, Sundstrom, and Egels-Zandén 2016). Digital transformation influences not only individual industries but also all sectors of the economy. The vast majority of businesses avail opportunities to modify their business models by adopting digital technologies such as the Internet of things, Blockchain, big data, and social networks (Ziyadin, Suieubayeva, and Utegenova 2019).

The Internet and digital technology are primarily shifting the traditional business model (Karimi and Walter 2015), bringing great opportunities and significant threats to developing and established businesses (Kathan, Matzler, and Veider 2016). In addition, digitization produces a new form of knowledge

essential to innovation, which allows enterprises to develop untapped potential (Lerch and Gotsch 2015; Dougherty and Dunne 2012). On the other hand, Chief Information Officers and other senior managers face challenges in figuring out how to manage risk and avail opportunities for digitization (Hess et al. 2020).

This paper offers a bibliometric analysis of the subject, identifying significant nations, works, organizations, and areas for significant study. It also highlights the status of research trends in the digital economy. For this, we performed a bibliometric analysis of the scientific literature published on the digital economy to identify the area of interest and potential for future research.

Data & Methods

The "digital economy" will be the subject of a systematic literature review for this study. The undergraduate metrology analysis was used to gather the literature from the WoS to obtain pertinent literature on the digital economy. The keywords "Digital Economy," "Digital Transformation", and "Business and Economics" were used for searching the relevant literature till July 2022. A total of 10,258 articles were retrieved and mapped using VOS viewer software for exploratory analysis.

Research Findings

This study examines the notions, publications, institutions, and themes that have influenced research on the digital economy and the digital transformation of business.

Annual trends

Figure 1 illustrates how publications on this subject have sharply increased since 2015. In 2015, 423 research papers on the topic were published. In 2017 the publication trend increased to 8.45 %, and 11.20 % in 2018. From the year 2019 to 2021, the percentage of publishing sharply increased from 15% to 25%, which shows the increasing trend of publication on the topic.

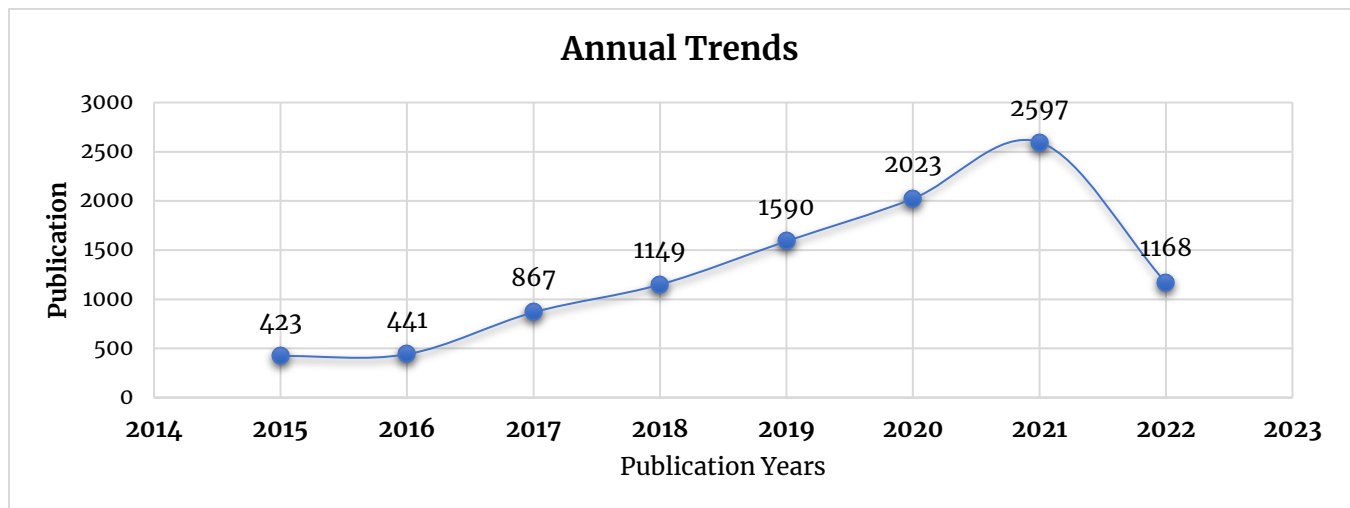


Figure 1: The number of publications

Web of Science (WoS) Categories and Research Areas

Table 1 presented the best ten Web of Science (WoS) categories; Economics, Management, communication, environmental sciences,

Communication, and business were found in the top five. These five categories accounted for 3,956 publications, with 39% in their respective fields, such as business, management, environmental sciences, communication, and economics.

Table 1. Web of Science (WOS) Categories

Web of Science Categories	Record Count	% of 10,258
Economics	1005	9.797
Management	798	7.779
Environmental Sciences	742	7.233
Communication	717	6.99
Business	694	6.765
Environmental Studies	583	5.683
Computer Science Information Systems	515	5.02
Green Sustainable Science Technology	470	4.582
Engineering Electrical Electronic	467	4.553
Astronomy Astrophysics	398	3.88

Sources: Web of Sciences Categories and author calculation

Top Ten Published Countries

Table 2 shows that most literature comes from Spain, the USA, England, and China. The data

illustrate that Spain significantly influences this field of research, tracked by the USA, UK, and China.

Table 2: Top Ten Published Countries

Countries/Regions	Record Count
Spain	1884
USA	1577

England	1539
People's Republic of China (PRC)	1169
Russia	965
Germany	751
Australia	640
Italy	507
France	441
Canada	356

Sources: Web of Sciences Categories and author calculation

Top Ten Funding Agencies

Table 3 lists the top ten funding agencies. Again, the Spanish Government plays a vital role, followed by UK Research Innovation (UKRI), European Commission (EU), And Engineering

Physical Sciences Research Council (EPSRC). The National Natural Science Foundation of China (NSFC) ranks fifth, and National Sciences Foundation ranks sixth in the world in funding in this field.

Table 3: Top 10 Funding Agencies

Funding Agencies	Record Count
Spanish Government	850
UK Research Innovation	733
European Commission	726
Engineering Physical Sciences Research Council	424
National Natural Science Foundation of China	406
National Science Foundation	295
United States Department of Energy Doe	223
Alfred P Sloan Foundation	201
Australian Research Council	188
National Aeronautics Space Administration Nasa	172

Sources: Web of Sciences Categories and author calculation

Top Journals

As shown in table 04, the leading research journals that published related research papers include "Sustainability," "Monthly notice of the

royal astronomical society," and "Astronomy astrophysics", "Technological forecasting and social change," "astrophysical journal," and "IEEE access".

Table: 4. Top Journals

Publication Titles	Record Count
Sustainability	336
Monthly Notice of the Royal Astronomical Society	142
Astronomy Astrophysics	134

Technological Forecasting and social change	70
Astrophysical Journal	68
IEEE Access	65
Frontiers in Psychology	53
Journal of Cleaner Production	53
New Media Society	52
Sensors	51

Sources: Web of Sciences Categories and author calculation

Keyword Analysis

Analysis of the author's keywords and their occurrence network is shown in figure 02. The eight clusters were identified; cluster 01 includes keywords such as "Business model", "collaborative environment", "digital platforms", "entrepreneurship", "sharing economy", "technological innovation", digital economy", digital transformation. In the existing tendency of the sharing economy, companies like Airbnb and others represent the birth of digital platforms. All of them are attempting to achieve sustainable development.

Cluster 02 includes "big data", "business model," digital economy, digital transformation, information systems, information technology, Internet of things, and smart factory. It demonstrates how the evolution of the sharing economy and digital platforms is closely related to modern business models, resulting in a new blue sea strategy.

Clusters 03 includes automation, digital labour, digital technologies, digitization, financialization, gig economy, platform economy, and smart manufacturing relates to emerging businesses in the commercial economy. Figure 02 clearly and unambiguously illustrates that it is impossible to undervalue the economic effects of digital technology. Moreover, it encourages the emergence of digital economies like financialization, the gig economy, and smart

manufacturing while fostering innovation and entrepreneurship.

Cluster 04 includes analytics, big data analytics, business model innovation, circular economy, digital circular economy, digitization, ecosystem, and value creation. It advocates applying the concepts of the circular economy to business, creating new business models, and facilitating the redesign of goods and value chains (Bressanelli et al., 2022). The circular economy business models are also made possible by digital technologies (Ranta, Aarikka-Stenroos, and Väisänen 2021). It also can take advantage of growing digital technologies, such as Blockchain, artificial intelligence (IA), big data, and the Internet of things (IoT), among others. These technologies, combined with business models, provide a solution to many worldwide economic hitches, particularly those relevant to the transformation of the circular economy (Chauhan, Parida, and Dhir, 2022). Cluster 05 includes effect, cultural production, neoliberalism, on-demand economy, political economy, self-branding, social media, and value. Cluster 06 includes emerging countries, industry 4.0, sustainability, sustainable development, and triple bottom line. Cluster 07 includes artificial intelligence (AI), bitcoins, Blockchain, machine learning, and optimization. Finally, cluster 08 includes coronavirus, future cities, pandemics, and smart cities.

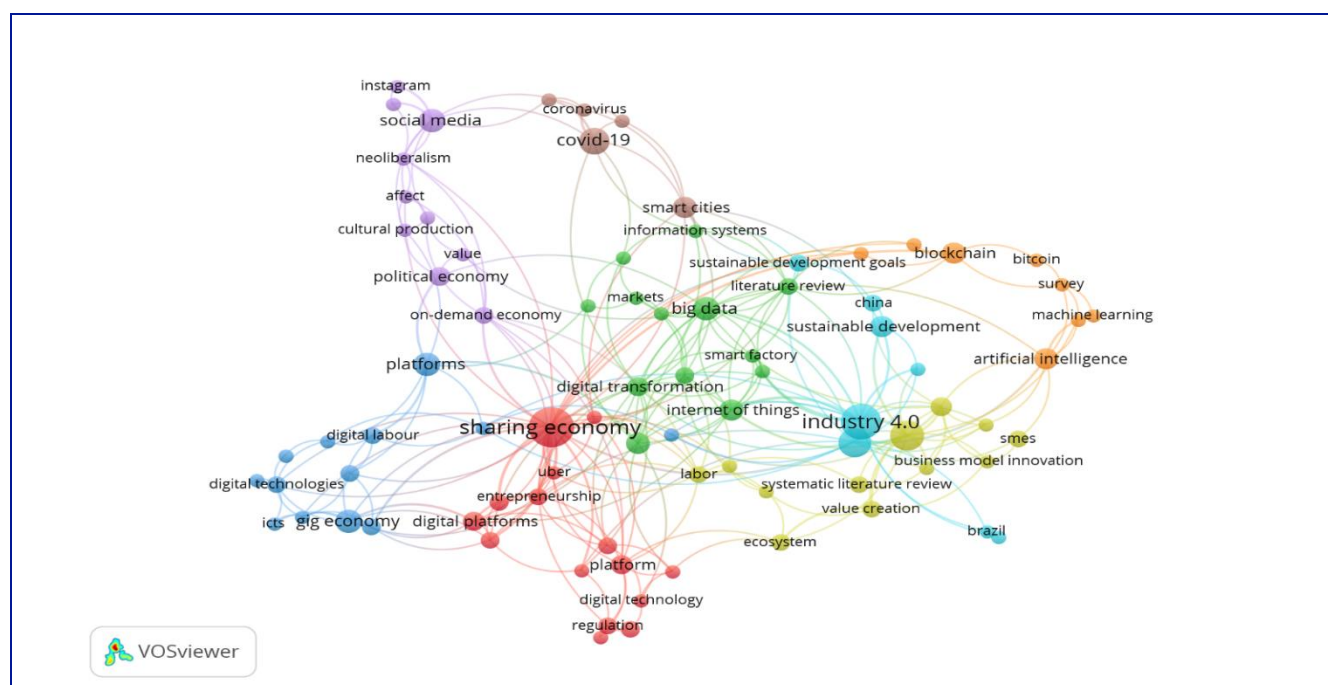


Figure 2: Keyword Analysis

Conclusion

In this paper, a bibliometric analysis of the digital economy was conducted using the VOS viewer software to highlight the current state of research and trends. To our knowledge, no prior study on bibliometric analysis relevant to the digital economy has been identified. This paper intends to cover this gap. The analysis shows (a) that the number of publications in the digital economy has proliferated, with Spain, the United States, and the United Kingdom playing significant roles. (b) This area of study is still in its initial stages in developing nations. (c) The main research areas covered in this study include entrepreneurship and innovation, the impact and application of digital transformation artificial intelligence (AI), machine learning, and other high-tech business value creation model. To encourage the healthy and sustainable development of the digital economy, strengthen businesses' capacity for innovation, and increase their competitiveness, future research relevant to the digital economy must combine more themes, such as digital product innovation, production services, and consumer retail. This study also found that the literature on the digital economy also includes

"political economy", "political, corporate social responsibility," and resource conservation. To make more contributions and more effective development in digital economy research, the emergence and advancement of empirical research must be our main concern. Additionally, we must concentrate on both local and international concerns. It is also true that digital technologies bring disruptive innovation in different ways. However, it is crucial to consider sustainability when the digital economy espouses such technologies for transformation because it impacts society and governments' economic policies.

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