Innovation and Entrepreneurship: Key Insights from a Multidisciplinary Review of Big Data and Blockchain Literature

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Abstract. Big data and blockchain technology are critical enablers of innovation and entrepreneurship. These technologies provide entrepreneurs access to valuable data insights and new business ways, enabling them to create new products and services, identify new markets and opportunities, and develop more effective marketing strategies. In this paper, the scientometric analysis method is used to systematically search the Web of Science (WoS) database and a total of 221 research papers retrieved from 1900 to 2023 are selected. Based on the analysis and visualization of the results using Vosviewer and Bibliometrix software. The results show that this research topic has shown rapid growth since 2017, and there are three groups of keywords, including entrepreneurship, and value & creation, and dynamic & capabilities, which correspond to the most research contributions. Among the subject countries, China, Italy, and the United Kingdom are the most important in this field.

Keywords: Big data, Blockchain, Innovation and Entrepreneurship

1 Introduction

Big data, blockchain, innovation, and entrepreneurship are all closely related, as they all significantly shape the modern business landscape. Blockchain technology is widely used to improve data security. It is a tool for individuals and organizations to exchange digital assets without the intervention of trusted third parties[1]. Traditional digital assets are difficult to circulate through a unified standard protocol. However, the blockchain has the characteristics of decentralization, credibility, and non-tampering, which can be used to solve this problem[2]. Enable innovation by providing innovators with new ways to develop, deploy and propagate decentralized applications[3]. Solving the chicken-and-egg problem, network effects, and building an ecosystem around an evolving technology are the three main reasons for the rapid internationalization of blockchain startups[4]. The results show that promising companies based on new manufacturing technologies are mainly created by teams of experienced managers and specialists with solid scientific or technical backgrounds[5].

But there is little discussion about how blockchain technology impacts organizations, their business models, and how they create and deliver value[6]. Blockchain technology reduces the

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cost of starting these marginal institutions[7]. And it provides new opportunities for the development of the human resources service industry[8].

Big Data Analytics Forms One of the Driving Forces of the Fourth Industrial Revolution[9]. In the era of big data, data has become an essential factor of production. Open Government Data (OGD) is of great significance in promoting public innovation and entrepreneurship[10]. In this context, traditional entrepreneurship education needs to be reformed and innovated[11]. Big data analysis capacity building and education to strengthen technology orientation and increase business model innovation[12]. Research shows that a major determinant of company performance lies in Big Data Analytical Capabilities (BDAC). Especially the potential to create important social value related to artificial intelligence and big data is growing[13].

2 Data and Methods

To obtain literature on big data, blockchain and innovation, and entrepreneurship, we use the following Web of Science (WoS) advanced search query:

TS=(“blockchain” OR “big data”) AND TS= (“Innovation” and “Entrepreneurship”)

A total of 221 articles (including SCI-EXPANDED, SSCI.) were collected on 05.11.2023. Use Mapping was performed using VOSviewer and Bibliometric software. The total number of citations in these 211 articles is 2996, the average number of citations per item is 14.2, and the h-index is 27.

3 Research Findings

This paper presents the annual production trend, author keyword co-occurrence network, topic clusters, and topic dendrogram related to the topic along with main countries, keywords, and authors for data and visualization analysis.

3.1 Annual Scientific Production

Data before 2012 show no published articles. A small number of articles were published in 2013, and from 2017 to 2022, the growth rate is sharp. and peak in 2022.

3.2 A map based on author keyword co-occurrence network

Figure 1 shows the mapping based on the co-occurrence network of author keywords, which can be clearly divided into four main clusters, which are explained as follows:

3.2.1 Red "Innovation and Entrepreneurship" cluster

The red clusters are mainly based on innovation and entrepreneurship and combine the research fields of modern and future technologies. From the figure, we can see that contemporary innovation and entrepreneurship are closely related to emerging future technologies. These technologies include the Internet, Industry 4.0, blockchain, etc. At the same time, there are other research angles, including framework, analysis transformation, etc., which show that this area is still developing continuously and the focus of research in this field.

3.2.2 Green "Data" clusters

In the green cluster, information technology is the main topic, and the impact of dynamic capabilities and strategies is also the most popular research topic. The rest of the topics include science, big data analysis, systems, etc. Compared with other clusters, the green cluster has no particularly prominent keywords, which shows that data-related research has broader research opportunities.

3.2.3 Blue "Technology" cluster

The blue clusters show the new challenges and innovations created by the combination of modern technology and business. At the same time, words such as open innovation and decision-making appear, showing that the blue clusters focus on the integration of emerging technologies into modern business. Created new technologies and corresponding new systems.

3.2.4 The yellow "Management" cluster

There are many keywords related to efficiency in the yellow clusters, such as absorption capacity, performance, value creation, etc., which shows that the research on the yellow clusters attaches great importance to reality and efficiency.

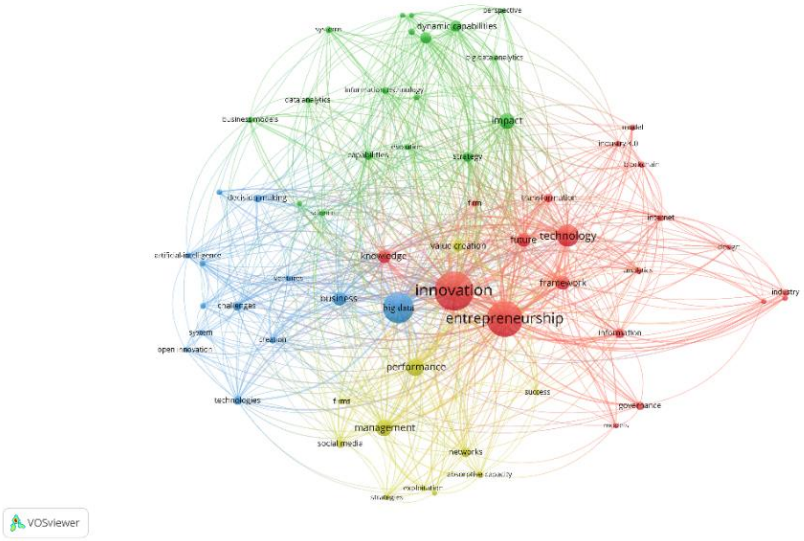

Fig. 1. A map based on author keyword co-occurrence network: clustered outcomes

3.3 Conceptual Structure: Theme Clusters and Topic Dendrogram

The analysis was performed using the conceptual structure of Multiple Correspondence Analysis (MCA) in Bibliometrix software, showing the results of Figures 2 and 3. It identifies three sets of keywords that correspond to the most research contributions, (1) entrepreneurship; (2) value. creation; (3) dynamic. capabilities.

Based on the fact that the first dimension in the MCA results accounts for nearly 50% of the total explained variance, the overall results of this analysis will be useful for clustering popular keywords. The default color palette is used in the figure, and the cluster colors are assigned by Bibliometrix in the order of red, blue, and green.

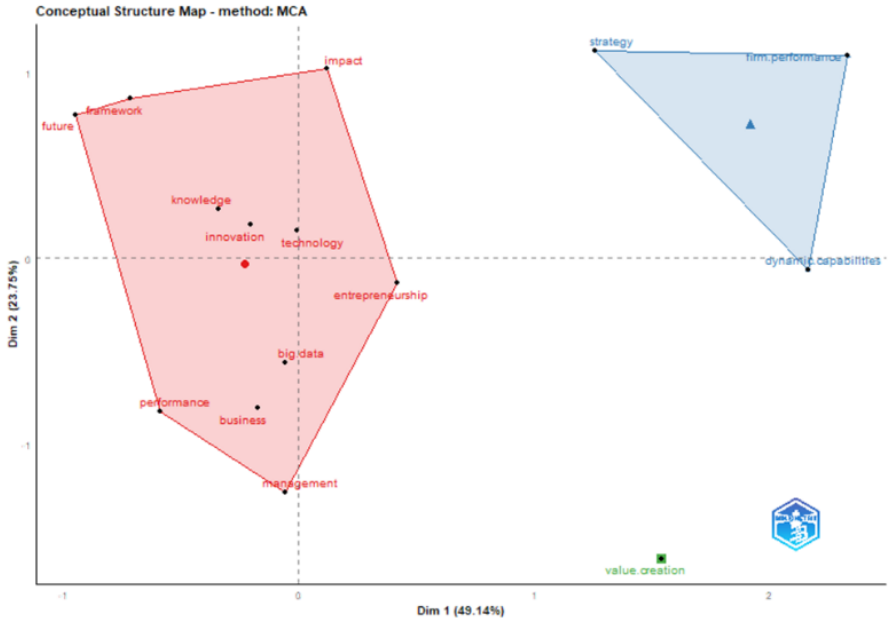

Fig. 2. Conceptual structure using multiple correspondence analysis (MCA): word map of 15 terms.

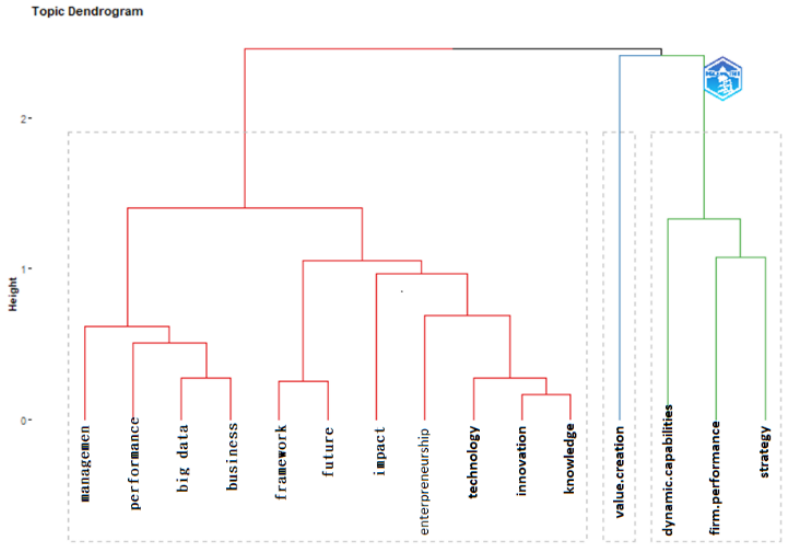

Fig. 3. Conceptual structure using multiple correspondence analysis (MCA): topic dendrogram of 15 terms.

3.4 Main countries, keywords and authors

From the left side of Figure 4, it can be seen that most of the current research on innovation, innovation, and entrepreneurship, and big data comes from China, Italy, and the United Kingdom. It can be seen that these countries make the majority of contributions to this field, and the current active researchers in this field Secundo, Del Vecchio, Bouwman, Klarin, Liu, Yu, etc. (on the right side of the figure) also mostly focus on research innovation and the application of big data.

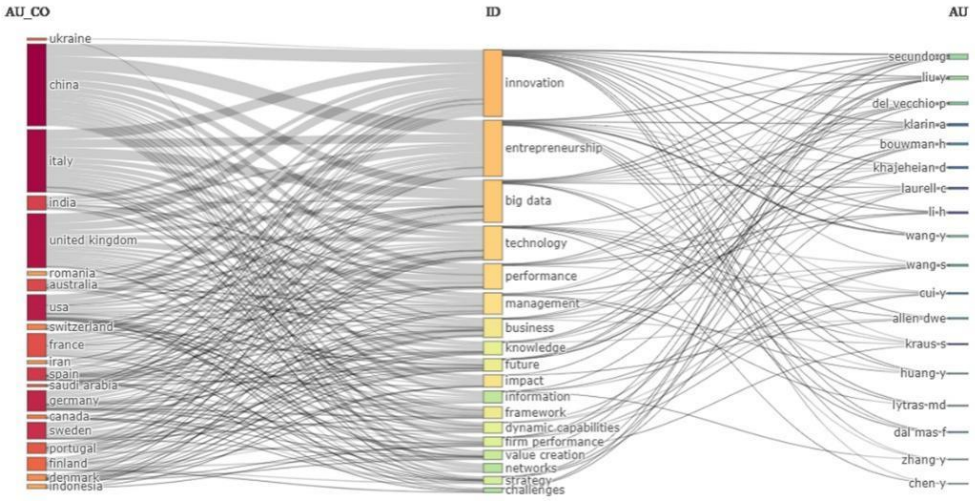

Fig. 4. Main countries, keywords and authors

4 Conclusion

New digital entrepreneurship has emerged in Decentralized Autonomous Organizations (DAOs), where blockchain technology has revolutionized the business models and ownership structures of startups. Digital innovations, such as big data, blockchain, artificial intelligence, and other technologies are rapidly affecting business venture capital and changing the way entrepreneurship and innovation are practiced.

This study analyzed 221 documents from the WoS database on big data, blockchain, and innovation and entrepreneurship. The results after scientific measurement analysis showed that:

First, the attention to this research topic has shown a rapid upward trend since 2017. Second, the main research countries are China, Italy, and the United Kingdom, which shows that these countries pay special attention to the application of new digital technologies in innovation and entrepreneurship. Finally, there are three groups of keywords, including entrepreneurship, value & creation, and dynamic & capabilities that correspond to the research with the most contributions.

In general, researchers are paying more and more attention to the research of big data, blockchain, innovation, and entrepreneurship. This paper provides a new research framework

and vision, which will provide future researchers with a more macro perspective to understand new digital The power of technology to foster innovation in businesses.

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