

Quantitative analysis and research on related literature of block chain technology based on CNKI

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Abstract: With the increasing popularity of digital cryptocurrencies such as Bitcoin, the importance of cryptocurrencies such as Bitcoin is gradually increasing, becoming the field of public research and attracting much attention at home and abroad. This article based on CNKI China academic journal network publishing pool of related research papers, through the literature method to the published between 2003 and 2019 block chain research literature, through the analysis of the literature quantity, resource type and source, characteristic of multidisciplinary research and dispatch mechanism analysis, etc., comparative analysis of block chain present situation and tendency of the development of technology in recent years.

Keywords: CNKI; Block chain; The currency; Bibliometrics

1. Introduction

In November 2008, Satoshi Nakamoto published an article, Bitcoin: Peer-to-peer Electronic Cash System, which described P2P network technology, encryption technology, timestamp technology and blockchain technology under the electronic cash system structure. The publication of this article marked the birth of "Bitcoin". After the first block with the number 0 is born, the block with the number 1 is born in turn, and then the two blocks are connected to form a "blockchain". It is a new application mode in the field of computer technology -- distributed storage, distributed transmission, protocol mechanism, encryption algorithm, etc. It is a part of Bitcoin and an important concept of Bitcoin.

In recent years, with the rapid development of science and technology, despite the great changes in the world's attitude towards Bitcoin, blockchain technology, one of its basic technologies, is becoming more and more hierarchical, and people are increasingly discovering its importance. In terms of science and technology, blockchain includes mathematics, encryption, the Internet, computer programming and many other fields of science and technology. In terms of application software, chain block can call sharing books or a Shared database, the characteristics of data or information is: decentralization, tamper-resistant, full marks, can be traced, open and transparent, collective maintenance, etc., these features ensure the block chain integrity and transparency, and also laid the foundation and reliable reputation, create the cooperation mechanism of trustworthy, broad prospects.

In July 2016, block chain technology has rapidly climbed to the top of the curve of Gartner mature technology [1], the research and application are also presented explosive growth, is in the personal computer, Internet, mobile, social networks after the fifth disruptive innovations, is the human blood in the history of credit, credit of precious metals, the central bank bills of credit after another milestone [2].

With the rapid popularization of blockchain technology, more and more domestic scholars from all walks of life begin to pay attention to the development of blockchain technology. Since 2016, the People's Bank of China and other relevant organizations have issued a series of policies conducive to the development of chain blocks, marked the block chain technology has received strong support from the state, with artificial intelligence, has risen to the same status of quantum information and Internet technology, has become an important strategic frontier technology in the development of our country, the important measures, increase the people from all walks of life to block chain technology in China to further explore the enthusiasm of [3].

2. Data and methods

2.1 Data sources and methods

Senior database based on CNKI Chinese academic journals published online on the basis of related research papers on the basis of literature and other measuring method, through analysis with block chain as the theme of paper publication year, output and dissertation types, main journal distribution, sources and subject analysis block chain research present situation, objective data analysis to understand blocks to development and stage, the research hotspot in the research of the chain, research trends, etc.

2.2 Data acquisition

A total of 14,425 articles were searched by searching the literature published by scholars in recent years with the theme of "block chain" in the CNKI Chinese Academic Journal Network Publication Repository.

3. Result Analysis

3.1 Quantitative analysis of papers

According to the 14,425 papers obtained by CNKI, as shown in Figure 1, from 2003 to 2014, the number of papers has been at a relatively backward level, with only one or two papers published every year and even zero output in some years. This kind of phenomenon lasted until 2015 have improved, in 2016 began to show explosive growth, what can we learn the corresponding since 2016, all countries to recognize the important development of block chain technology prospects, began to focus on the development, and divide it into and artificial intelligence, quantum information and Internet technology equal status, become one of China's strategic frontier technology. So far, various studies related to blockchain will present an eruption-like situation, and the number of published papers is expected to continue to grow in 2020, reaching 5,217.

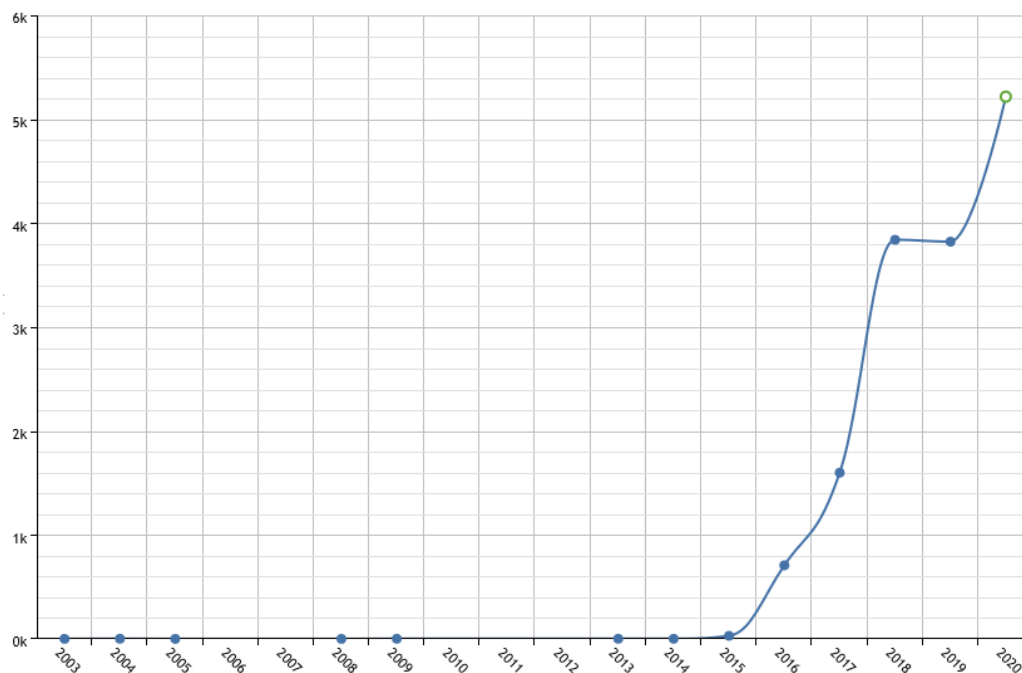


FIG. 1 annual trend of publication volume of "block chain" as the theme on CnKI

According to the classification of 14,425 articles, it is found that the research literature of blockchain can be roughly divided into two categories: 184 articles of review and 660 articles of policy research. Summary literature mainly collects a large amount of information related to topics, issues or research topics from specific fields, professions or aspects, sorts out, reads, analyzes, refines, and sorts out current topics and knowledge insights or insights on issues or research topics, and introduces blockchain through comprehensive introduction and refinement. Policy research is the analysis of the nature, characteristics and functions of policies, as well as the laws of policy generation, development, formulation and implementation, revealing the inherent laws in the process of policy formulation and implementation, improving the accuracy and effectiveness of policies and avoiding undue policy errors [4]. The proportion of review literature and policy research literature is nearly 1:3,

which reflects that only with the approval of national policies can blockchain, a newly emerging research field, be developed and strengthened. This indicates that China's strong support for the development of blockchain technology promotes the development of science and technology.

3.2 Resource types and source analysis of the paper

According to CNKI results, the resource types of papers were statistically analyzed. As many as 9,476 papers were mainly published in journals, accounting for 66.7% of the total literature. A small part was published in newspapers, with a total of 1347 articles, accounting for 9.3% of all literatures. A few of them were published in the master database, 670 articles in total, accounting for 4.6% of all literatures. There is little literature published at national conferences, academic journals, PHDS, or international conferences. Thus, it can be known that the distribution of papers published in blockchain journals is relatively concentrated, which indicates that it is consistent with the distribution rule of journals in the early stage of a new research field [5].

In addition, the top 3 are financial electronic, South China Financial Computer, and China Finance. Among them, there are 137 financial electronic articles, accounting for 9.33% of all literatures and 17.34% of the top 10. In addition, almost all of the top ten literature sources are related to finance, indicating that finance is a major focus of the blockchain research on the technical level and has a broad development prospect.

3.3 Analysis of the characteristics of multidisciplinary literature research and the publishing institutions

By shown in figure 4, the thesis mainly covers the computer, financial, communications, business administration, commercial economy, industrial economy, law, theory of economics, journalism and communication, information and communication, and other areas of the discipline, which suggests that the research main layers in the social sciences and natural sciences of these two areas, show the block chain research with a strong interdisciplinary characteristics, based on the analysis of the above about the contents of literature, we can see from roughly about two levels of a group, the first is the computer science and technology, automation technology, engineering technology, telecommunications, science and technology based on technological level of a group; Secondly, it is based on the application in the financial field, covering many applied fields such as industrial manufacturing, culture and education, medicine and health, energy and electric power engineering.

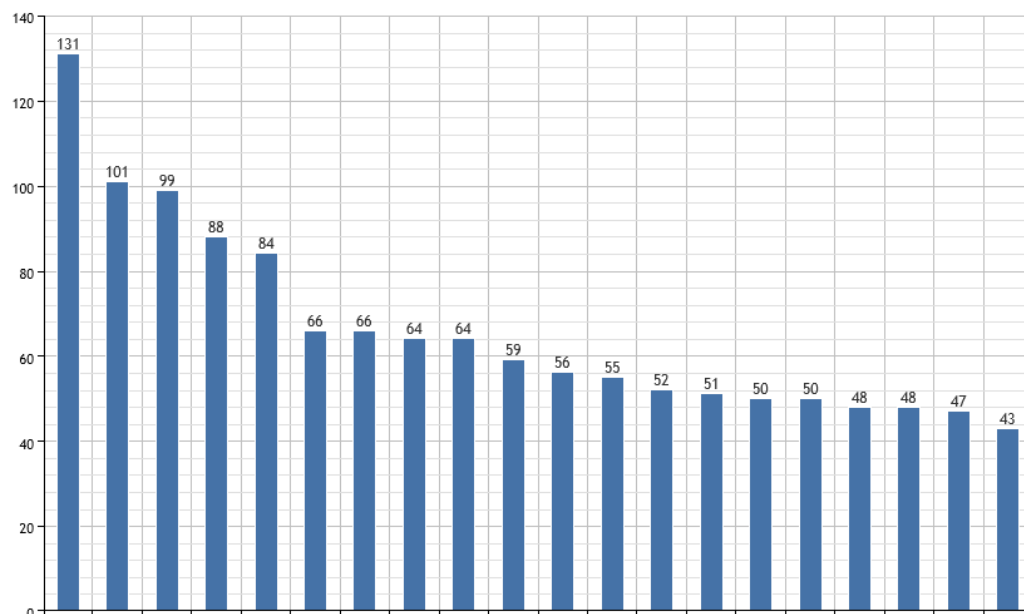


FIG. 2 Main high-yielding mechanisms in the literature

Figure 2 shows the institutions of literature publication.

We can see that the output of colleges and universities in educational institutions is very high. With the continuous improvement of education level, people pay more and more attention to the power of science and technology level, which urges all kinds of researchers in school to strengthen their research on science and technology, improve their research level, and make continuous efforts in the field of science and technology. At the same time, the education department encourages and supports the development of science education, invests heavily in the creation of laboratories and other projects, and focuses on the research of experimental projects,

so that the research results gradually emerge and the volume of published papers increases day by day.

3.4 Annual cross analysis of main keywords

The main core summary in the keyword literature is the main spiritual pillar of the academic research literature. The keyword as the core content, throughout the development of the whole literature, reveals the characteristics and development direction of the overall content of the research results [6]. It is of great significance for literature research to understand the maturity, knowledge structure, research scale and other status of a research topic through annual cross analysis focusing on keywords [7]. From the annual cross analysis of keywords, we can clearly see that the importance of keywords in the literature changes every year. Since 2016, blockchain has been the top priority. In 2016, 2017 and 2019, blockchain has been the top priority. Even in 2019, it has reached a height beyond the reach of others, leaving others far behind, reaching 2,087 articles. In 2017, the "blockchain technology" is highly recommended, which has an inseparable relationship with the "blockchain". It vividly shows that the "blockchain" has been an important technology for national development since its inception, and the research technology has been constantly developing. Since 2020, the number of literatures with "blockchain bills" and "ticketing tax" as the keywords has increased. At present, the two are almost equal in number, accounting for almost half of the total literature. However, at this time, the "blockchain" has fallen significantly. We learn block chain a significant role in the financial industry has been, in recent years, with finance as the main body of the entity, in order to block chain technology of new start-up, in a substantial increase, the rapid development of the company fully illustrates the future development of the digital currency outlook immeasurably, at the same time, caused by the relevant state departments of deliberate: such as the Chinese people's central bank, financial departments, etc.

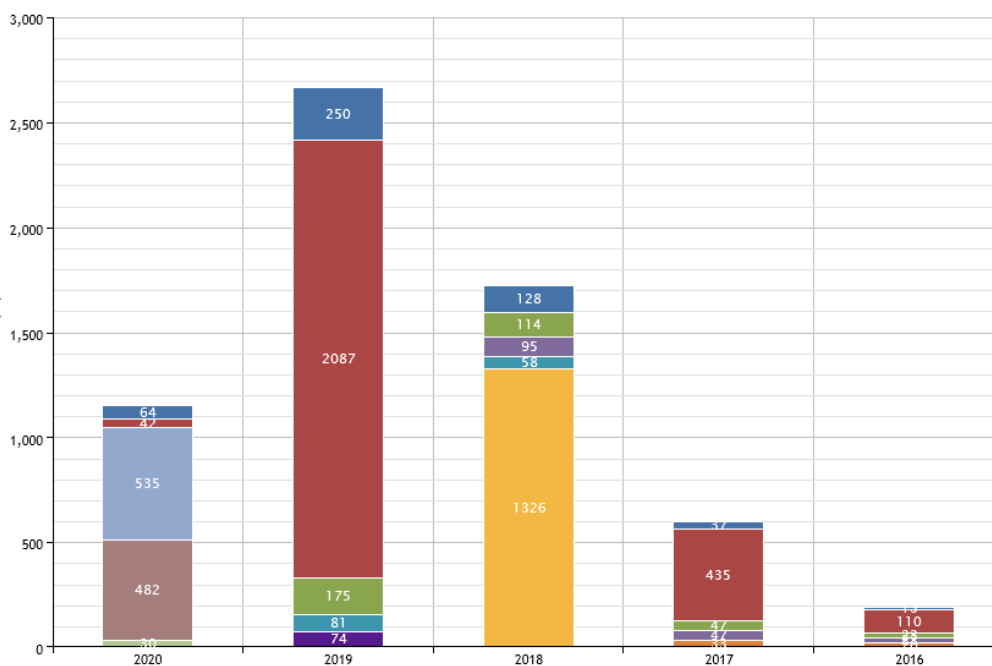


FIG.3 Annual cross analysis of major keywords in literature

4. Conclusion

Based on the general database of Academic journals of CnKI and the quantitative analysis of relevant literature on blockchain technology, this paper discusses and summarizes the development trend of blockchain in recent years on the basis of existing real data. The results are as follows:

1, the number of block chain related research literature showed a trend of growth since 2015, according to the related policy, we can find the block chain technology is at the exploration and research of the early stage, since 2016, the research literature quantity rapid growth, reflect in the rising of a new research field, all aspects of technical personnel in our country will be more and more in-depth research on block chain, strive for a comprehensive understanding, believe in the near future, we will be easier to apply this technology.

2. According to the analysis of resource types and sources of literature, with the rapid development of the

Internet, the vast majority of people are more inclined to publish literature in journals. Electronic information not only spreads fast, but also lasts for a long time and is widely circulated, which has become a popular way for scholars. The results show that financial industry is closely related to land chain technology. This technology has been playing an important role in the financial industry, inspiring the thinking of the national banking industry and related researchers on the future development of the national digital currency, and has potential in the financial fields such as international exchanges, letters of credit, stock registration and stock exchanges. The huge application value can clear connections between other companies, enable direct docking, quickly complete disbursement transactions and significantly reduce costs.

3. Block chain technology covers a wide range of disciplines and has a strong interdisciplinary nature. It can be widely applied in various fields, reflecting the integration of technologies. In addition, educational institutions account for a large proportion in the published literature, which can be speculated to be closely related to the top-level design research and coordinated and planned deployment of the blockchain strategic technology at the national policy level [8].

As blockchain has become the focus of social attention, some of its shortcomings have also emerged, and it faces great challenges. There is still a long way to go for people's life and daily operation, and it needs to be continuously improved and developed. In response to the new round of revolution brought by blockchain technology and industry, the government needs to plan in advance in terms of infrastructure, human capital, policies and regulations, finance, etc., and be prepared to meet challenges and opportunities based on reality and looking into the future [9]. Blockchain technology will play a more important role in the future and have a greater impact on the existing economy and society.

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