Research on the Energy Distribution and Tendency of Blockchain in the E-commerce Field

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ABSTRACT. *In order to understand the hot and forward trend of the research about the blockchain in the Chinese e-commerce field, it takes the literature in e-commerce field with the blockchain of the CNKI database as the sample, and it also uses CiteSpace V, SPSS21.0, Excel2010 and CNKI platform to carry out bibliometrics and visualization analysis. The energy distribution in the area of China's block chain research in e-commerce field is analyzed from the aspects of subject distribution, research level, source journals, author distribution, research institutions, fund projects and so on. And from the high frequency key words, key words social network and other dimensions depth analysis of the research hot spots and frontiers in the e-commerce field of block chain in Chinese academic circles. The study found: The research of China's block chain in the field of publishing has not yet started completely. It needs to be paid attention to by the academic circle, and its research field, scale of cooperation，scale and depth of research need to be strengthened. The research focuses mainly on the application of the agricultural products, the payment of e-commerce, the traceability of the electric business field and the regulatory aspects of the e-commerce. E-commerce segments, e-commerce related areas, e-commerce payment refinement, e-business logistics refinement, e-commerce finance, new technology or ideas related aspects are relatively cutting-edge potential research trends.*

KEYWORDS: *Blockchain, e-commerce, knowledge spectrum, payment, logistics, finance*

1. Introduction

Blockchain has attracted much attention since its entry into the field of practice in China. After entering the 2017, the concept of blockchain has been sought after by many venture capitalists. By using the CNKI database as the source, the key words of the blockchain are retrieved, and the retrieval time is up to February 28, 2018. After the unrelated literature is put forward, 1026 pieces of the blockchain literature are obtained, of which 191 are the core documents. In the field of

electronic commerce, a total of 21 research papers on the blockchain in the field of electronic commerce were obtained after the literature was eliminated one by one, of which 7 were core documents. It is found that the proportion of the area chain in the field of e-commerce accounts for 2.05% of the total literature in the area chain, and the proportion of the core literature in the field of e-commerce accounts for 3.66% of the total amount of the core literature. It can be seen that the blockchain is not involved in the field of e-commerce in the 2016. There are few literature in the area of the blockchain in the field of e-commerce, and the blockchain is less concerned to the field of e-commerce. In order to further understand the research characterization and the hot topics in the field of e-commerce in China, this paper takes the CNKI database as the data source, takes the literature of the journal and blockchain in the field of e-commerce as the analysis object, and uses the bibliometric method and visual analysis method of the scientific knowledge map to analyze the data. The purpose of this study is to summarize the energy distribution situation of China's block chain in the field of electronic commerce, and to analyze the hot topics in the frontier, and provide reference for the subsequent academic research and practical application.

2 Research ideas.

The sample is taken from the CNKI journal database, and the keyword search and subject retrieval are carried out by key words. The key words are "blockchain" and "e-commerce", and the retrieval time is February 28, 2018. After excluding literature related to e-commerce, 21 articles were obtained. From the aspects of subject distribution, research level, source journals, author distribution, research institutions, fund projects and other aspects, this paper analyzes the energy distribution of China blockchain in the field of e-commerce, and analyzes the hot spots and forward trends of China's block chain in e-commerce domain from the high frequency key words and key words social network. This paper analyzes the research status quo of China's blockchain in the field of e-commerce, and provides reference for the research direction, topic selection and practical activities of China's blockchain in the field of e-commerce.

The method of knowledge atlas is mainly used in the measurement method. As one of the main research methods of scientific metrology, the analysis of knowledge atlas is mostly used in the evolution and development of subject knowledge and the research of the characteristics of the scientific community. Since the introduction of China's academic research field in 2005, the analysis of knowledge map was first used in the field of Library and information science, and then it was introduced into many fields, such as computer, economics, management, finance, sociology and so on, but the application of the blockchain research is relatively small. Compared with other software, CiteSpace software has the functions of frequency, CO citation, frequency, social network and so on. It focuses on the evolution of the subject frontier and the analysis of knowledge relations. It is the most commonly used software for the analysis of knowledge atlas.In this paper, the integrated use of the CiteSpace V、SPSS21.0、Excel2010 software to assist in the visual analysis of

CNKI, with a view to a comprehensive analysis of the academic focus and pulse of the block chain in the field of e-commerce.

3 The energy distribution of blockchain in the field of electronic commerce

3.1 Statistical analysis of total sample

The overall analysis of the literature obtained from the blockchain in the field of e-commerce is shown in Table 1. According to the annual distribution, the research literature of blockchain in the field of e-commerce appeared in 2016, later than the beginning date of blockchain research. There were 2 in 2016, 16 in 2017, and 3 in 2018. The earliest literature was published in August 2016 by Hong Tao in "the application of accelerated block chain in the field of agricultural products in our country" published in "agricultural engineering technology", which has been cited more frequently, 5 times, and table 2. In September 2016, Hong Tao published the research on the application of blockchain in the field of agricultural products in China, which was published in the Chinese market. It has been the highest cited literature at present. There are 7 times, and also one of the earlier literatures on the area chain in the field of e-commerce.

Table 1.Statistical analysis of total sample

Number of paper	Total number of references	Total citation	Total downloads	Per reference number	Per citation	Per downloads	Download the cited ratio
21	188	14	5349	8.95	0.67	254.71	382.07

Table 2 List of cited documents

Author	Title	Journal	Year	Total citation	Total downloads
Hong T	Research on the application of block chain in the field of agricultural products in China	China Market	2016	7	670
Hong T	Accelerating the application of block chain in the field of agricultural products in China	Agricultural Engineering Technology	2016	5	352

Wu B.Z	Design and application of block chain technology in C2M mode of agricultural products business	Science Mosaic	2017	1	306
Lv W., Tang L.	The development of block chain technology to promote cross-border e-commerce business	China Credit Card	2017	1	113

3.2 Literature discipline and research level distribution

On the subject distribution, according to the default classification standards of the CNKI platform, there are 2 kinds of Science in which the number of documents is more than 10, namely, economic and Management Science (21, 41.2%) and information technology (17, 33.3%), and the basic science (3, 5.9%), agricultural Science (3, 5.9%), and social science. (1 articles, 3.9%), where the literature review is more than 21, because some documents are subject to cross disciplinary distribution.

In the research level distribution, the largest distribution is industry guidance (social science) (13, accounting for 61.9%), followed by policy research (social science) and Engineering Technology (2, accounting for 9.5%), industrial technology guidance (natural science), basic research (social science) each 1, and 2 papers can not inquire its research level information.

3.3 Distribution of source journals

A total of 20 kinds of journals are involved in the total sample. The total number of journals with the largest number of papers is China's circulation economy, with a total of 2 articles, accounting for 9.5%. There are 19 common journals and 1 articles.

Based on the CSSCI source (2017-2018) Journal catalogues (including the Extended Edition) and the CSCD source journal catalogue (2017-2018), the total samples are further classified. It is found that the two catalogues involve 4 journals, accounting for 20% of the total number of journals, 5 articles in total text, and 23.8% of the total quantity ratio, and 1 of the CSSCI journals, namely Huxiang Forum. The 2 versions of CSSCI are Contemporary Economy & Management and China Business and Market; and CSCD journals 1 kinds, namely Journal of Frontiers of Computer Science & Technology. In contrast to the general list of Chinese Core Journals (2014 Edition), 2 other journals are the core of Chinese language, namely, Reformation & Strategy and Journal of Commercial Economics. See Table 3. It can be seen that the ratio of the sources of the source of the core journals is 33.5%.

Table 3. List of core journals

Order	Journal name	Classification	Article number	Proportion	Cumulative proportion
1	China Business and Market	CSSCI Extended Edition, Chinese core	2	9.5%	9.5%
2	Huxiang Forum	CSSCI Extended Edition, Chinese core	1	4.8%	14.3%
3	Journal of Frontiers of Computer Science & Technology	CSCD, Chinese core	1	4.8%	19.1%
4	Contemporary Economy & Management	CSSCI Extended Edition	1	4.8%	23.9%
5	Reformation & Strategy	Chinese core	1	4.8%	28.7%
6	Journal of Commercial Economics	Chinese core	1	4.8%	33.5%

3.4 Author distribution

3.4.1 Analysis of high yield authors

According to the statistical analysis of the authors, the total sample includes co authors, involving 27 authors, and only 21 of the first author. According to the author's volume, the author of the 2 articles is 2, namely Hong Tao and Zhang Yanbin, who are also prolific authors in the field. 1 other authors have published 1 articles. According to Lokat's law and Preiss's law[1][2], Blockchain has no core authors in the field of e-commerce, and is in the initial stage of development. The depth of research needs to be strengthened.

3.4.2 Analysis of Co-authors

Author cooperation is of great significance for improving the gold content of scientific research achievements, reducing the difficulty of scientific research and improving output efficiency[3]. Cooperation degree and cooperation rate are two bibliometric indicators to measure the author's cooperation. Among them, the cooperation degree refers to the number of authors, indicating that the scale of cooperation reflects the difficulty of research to a certain extent[4]. Cooperation rate refers to the proportion of Co-authored literature in total literature. According to the

statistical analysis, the cooperation degree and cooperation rate of the blockchain in the electronic commerce literature are 1.29 and 0.19 respectively. There are 17 independent research achievements, accounting for 81%, and the 2 cooperation is the most fruitful cooperation, with 4 most writers. It can be seen that the research on blockchain in the field of e-commerce is short of cooperation scale, the scale of cooperation is very small, and the frequency of cooperation is very low.

3.5 Research organization distribution

Excel software is used to collect and collate the information of the total sample research institutions. Some of the information of the two level institutions is incorporated into the first level institutions for the same treatment. According to the analysis, a total of 24 first level research institutions were involved, with the largest number of publications being Beijing Technology and Business University and Dongbei University of Finance and Economics, each with 2 articles. Other institutions, such as Beihang University, Central University of Finance and Economics, the people's Bank of China, the Ministry of agriculture and Chinese Academy of Agricultural Sciences, issued 1 papers.

3.6 Fund project distribution

Through statistical analysis of the total sample involving fund projects, a total of 6 articles were supported by relevant funds, accounting for 28.6%. Limited to some fund, project information representation is not standardized, not unified and other issues, this paper normalization processing, only reservations of primary fund information. Statistics found that the documents involved 11 levels of national, provincial, ministerial and school funds. Among them, the school fund is the largest, that is, 5 times; the national level only 1 times, that is, the National Natural Science Foundation of China. On the whole, the scope of fund support is very small, and the high level fund is less. This is in line with the development of the blockchain in the field of e-commerce.

4 Research hot spots and trend insight

4.1 Research hot spot analysis

4.1.1 High frequency keyword analysis

Using CiteSpace V software, Node Type chooses "Keyword" to cluster analysis. Through the "ex port network Summary Table" function, the total sample key word frequency can be obtained. Combined with the use of Excel software to count the total sample key words, we found that the total number of key words is 99, and there are 68 key words after the repetition of key words. There are 1 key words that appear more than 10 times. There are 0 key words in 6-9 frequency. There are 8 key

words in 2-5 times, and there are 1 times. There are 59 key words. Among them, the highest frequency appeared as "blockchain", which occurred 19 times, accounting for 19.2% of the total sample. According to the g index of word frequency as the standard method to determine the number of key words[5], that is, the frequency of key words is sorted in order of size, the cumulative frequency of calculating g key words is not less than g2, and the cumulative frequency of g+1 key words is less than (g+1)2. It can be seen from g=5 that the first 5 key words should be chosen as high-frequency words. As the frequency of fifth to ninth keywords is the same, the first 9 key words are taken as high-frequency keywords, see Table 4. The frequency of these keywords was 40 times, accounting for 40.4% of the total sample frequency.

Table 4. High frequency key words

Order	Frequency	Key word	Initial year
1	19	Blockchain	2016
2	4	E-commerce	2016
3	4	Electronic business	2017
4	3	Cross-border e-commerce	2017
5	2	Bitcoin	2017
6	2	Good money	2016
7	2	Bad money	2016
8	2	Agriculture products	2016
9	2	Centralization	2017

4.1.2 Key words social network analysis

Using CiteSpace V software, node filtering is set as "1", cluster analysis is set to "3", and the visual analysis is carried out, and the social network relationship map of key words is obtained. The larger the node, the greater the function of the key word in the whole network, and the stronger the ability to control the co occurrence of other keywords. Ignoring the general key word "blockchain", high-frequency key words constitute a social relationship network centered on "de centralization" and "electronic commerce". The key words of the payment system, the supply chain, the e-commerce and the commodity logistics are in the network center, which shows that the hot spots of the blockchain in the field of electronic commerce are mainly concentrated in the areas of these central nodes. The Internet of things, payment mode, third party payment, payment and settlement, payment risk, cross-border trade, data exchange are on the edge of the network map. These edge points are relatively less associated with other keywords. It is a weak point in the field of blockchain research in the field of electronic commerce, and may become a future research trend.

4.1.3 Hot content analysis

Comprehensive high-frequency keyword, social network analysis, cluster analysis and so on, the research status of block chain in the field of e-commerce has shown the research hotspots in this field. Comprehensive analysis of the above research found that the hot topics of China's block chain in the field of e-commerce can be summed up as follows: (1) the application of agricultural products e-commerce, including the development path of agricultural products e-commerce [6], agricultural product e-commerce model [7], the specific application of agricultural products e-commerce[8]; (2) e-commerce payment, including E-commerce payment optimization model [9], cross-border payment specific application of [10], and so on; (3) the source of the e-commerce field traceability, including the cross border traceability system [11], product information tracing and anti-counterfeiting [12]; (4) e-commerce related regulatory aspects, including the government to the e-commerce trade supervision [13], the Sino European trans boundary e-commerce ecosystem regulatory system [14].

4.2 Research trend

According to the statistical analysis of the key words in the year, the key words are extracted and merged for the synonyms and synonyms, and the key words of the "blockchain" are removed. The high frequency key words of 2016-2018 years are obtained, and table 4 is shown, and then the forward content of the future research is reflected. Based on the above analysis and comprehensive combing of relevant literature, the future research trend of block chain in the field of e-commerce is divided into the following aspects: (1) e-commerce subdivision areas, including electronic commerce of agricultural products, cross-border e-commerce, mobile e-commerce, medical e-commerce and so on; (2) e-commerce related fields, including logistics, payment, e-commerce platform, information network, customs, talent, law and so on; (3) e-commerce payment refinement, including mode, security, traceability, trust, forensics and so on; (4) e-commerce logistics refinement, including consumer privacy protection, logistics information traceability, logistics risk management, logistics chain collaboration trust and supervision; (5) e-commerce finance, including block chain financial application, financing, financial security, capital risk, etc. (6) new technology or concept related aspects, including shared economy, large data, new retail, artificial intelligence and so on.

Table 5. 2016-2018 year high frequency key words

Year	Key words
2018	Ecosphere, payment, credit, certificate of deposit
2017	Internet of things, information traceability, cross-border providers, financing, credit, agricultural products, anti-counterfeiting, payment
2016	Agricultural products, credit

5 Conclusion

In this paper, the CNKI database block chain in the field of e-commerce research literature as the sample, the comprehensive use of CiteSpace V, SPSS21.0, Excel2010 and other software and the CNKI platform to analyze the sample.

(1) Compared with the study of block chain, its research in the field of e-commerce has not yet started completely, and the research results and the high level of achievements are very few. The research of blockchain has not yet paid attention to the field of e-commerce.

(2) The focus of China's blockchain in the field of e-commerce mainly includes the application of the agricultural products, the payment of e-commerce, the traceability of the e-commerce field and the regulatory aspects related to the e-commerce.

(3) The main research trend of China's blockchain in the field of e-commerce is: e-commerce subdivision, e-commerce association, e-commerce payment refinement, e-commerce logistics refinement, e-commerce finance, new technology or concept related aspects.

(4) Compared with Lokat's law and Preiss's law, it is found that the sample information does not conform to the law distribution. It also shows that the research of the blockchain in the field of e-commerce has not been completely started, and the research needs to be paid attention to. The research on the field of subdivision, the scale of research, the depth of research and so on need to be promoted.

This paper uses bibliometrics and knowledge atlas to analyze the current research status and trend of China's blockchain in the field of e-commerce. The results have certain objectivity and credibility. However, limited to the limitations of bibliometrics software, the system processing data and the actual data will have errors, more limited to the total number of literature is still inadequate, to a certain extent, the accuracy of the research results will affect the development trend analysis and the actual situation may lead to some deviation.

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