

Review of Research on Sharing Economy

Based on CiteSpace Visual Literature Analysis

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Abstract—Recently, the development of sharing economy had a significant impact on human life and national economy. This paper took 480 literatures in the CNKI database from 2013- 2019 with themes or topics related to the sharing economy, analyzed the hot issues and evolution path of China's sharing economy by CiteSpace. The results showed that the research are focused on sharing economy, collaborative consumption, business model, shared development, collaborative governance, government regulation, operation model and resource allocation. "Sharing economy" is the hot spot of the concerns. The future research should focused on the mechanism of sharing economy impacts on traditional industries, the change of behavior of sharing economy participants and the macro structure of sharing economy.

Keywords—*sharing economy; CiteSpace; visual analysis*

I. INTRODUCTION

With the development of 5G communication technology and Internet of things technology, sharing economy has influenced and changed people's life in many aspects. According to the annual report on the Development of China's Sharing Economy (2019), the number of participants in China's sharing economy reached 760 million in 2018, and the transaction volume of the sharing economy market was 2942 billion yuan. The report predicts that in the next three years, the sharing economy will continue to contribute to the national economy at an average annual growth rate of 30% [1]. The sharing economy plays an irreplaceable role in the reform of China's economic sectors, the transformation of enterprise operation mode and the transformation of consumption pattern. At the same time, the scholars also pay attention to and study the sharing economy. The sharing economy first appeared in the American Behavioral Scientist in 1978. It means to share the right of use between the resource owner and the resource demander under the condition of the separation of the ownership and right of use. Under the sharing economy, people enjoy social resources equitably through the medium of Internet, and the resource owners and the resource demanders pay and benefit in different ways, so as to achieve common economic dividends [2]. Some domestic scholars have conducted relevant studies on tourism, transportation, consumption pattern and other fields under the sharing economy environment, but their focus is mostly confined to a specific industry, and they lack direct and overall analysis of the sharing economy field. This paper intends to make a systematic analysis of China's

sharing economy by means of Citespace software, and objectively reflect the development trend and research direction of the sharing economy by means of cluster analysis of relevant literature and visualization analysis of time zone co-occurrence. It provides reference for the future research.

II. DATA SOURCES AND RESEARCH METHODS

A. Data Sources

The data in this paper were obtained from CNKI journal database, and the journal source was CSSCI journal, from 2013 to April 2019, 512 literatures were retrieved under the retrieval condition of "subject = sharing economy" and in order to ensure the accuracy of literatures, 480 research literatures were obtained after the retrieved literatures including reports, pictures and other non-research literatures were deleted, which were taken as valid data.

B. Introduction to Methods

In this paper, we use the Citespace software to analyze the retrieved data, analyze the time zone co-occurrence of key words, cluster analysis to study the research hotspot and evolution trend of China's sharing economy. Citespace knowledge visualization software is information visualization software developed by Dr. Chaomei Chen. It is a measurement and analysis of scientific literature data Mapping out the key paths of this field with visual maps, revealing the mechanism of the scientific evolution of this field and predicting the frontiers of science, Citespace for its ease of use, scientific and other advantages, at present, it has become one of the most popular knowledge mapping software at home and abroad, and has been rapidly disseminated and applied [4].

III. SHARE ECONOMETRIC ANALYSIS OF ECONOMIC RESEARCH

A. Annual Trend of Literature

"Fig. 1" is based on the recent years of online journals published in the chart, it is clear that the sharing of economic research for the earlier literature started in 2013, the overall publishing trend showed an upward trend year by year. According to "Fig. 1", the research on sharing economy in China can be divided into three stages: initial stage (2013-

2015), rapid development stage (2015-2016) and explosive stage (2016-2019). As this data is selected for the full year up to April 2019, the data are not fully statistical and therefore do not reflect the distribution of publications for that year.



Fig. 1. Annual distribution of knowledge sharing related literature.

B. Keyword Co-occurrence Analysis

Keywords are the core of the research. In the visual analysis, the research of keywords is usually used to determine the research problems in a scientific field. The research problem of this paper is the sharing economy. Therefore, this paper takes the sharing economy as the keyword and carries on the visualization analysis by the Citespace software. In the generated knowledge graph, each node represents the object of study, and the larger the node icon, the higher the frequency of the object of analysis. The lines between nodes represent the co-occurrence relationship, and the thicker the lines, the stronger the co-occurrence. In the analysis of co-occurrence of keywords, the importance depends on the frequency and degree of center of the keywords, the higher the frequency and degree of center of the keywords, the more important the node is, the more attention it receives. (See "Fig. 2")

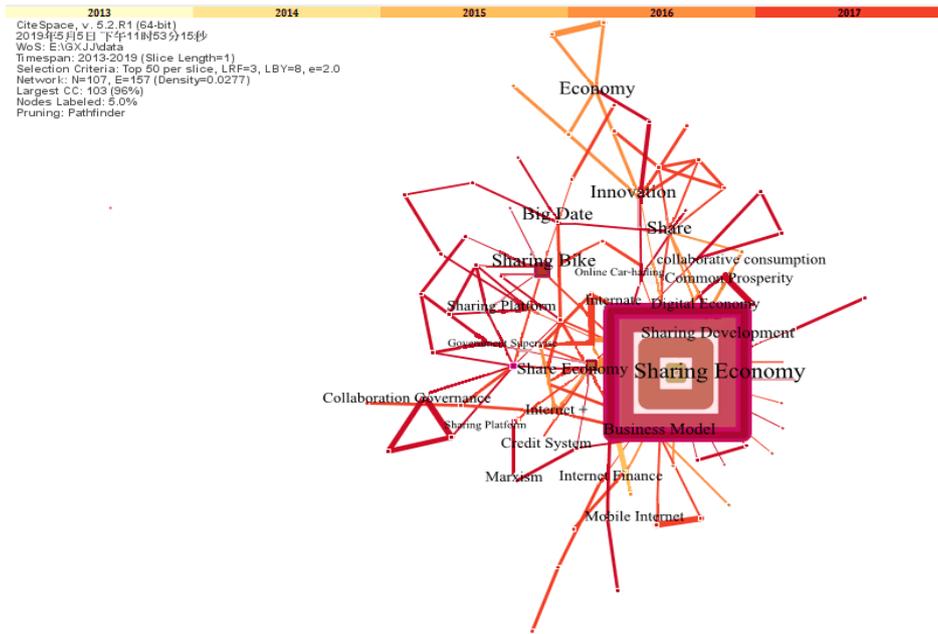


Fig. 2. Sharing economy keywords sharing knowledge map.

As can be seen from the knowledge graph in "Fig. 2", there are 107 keyword nodes and 137 connections among nodes, and the network density is 0.0242. The largest nodes in the graph are Sharing Economy, followed by Sharing Bike, ShareEconomy, Business Model, Government Regulation,

Innovation, Digital Economy, Internet +, etc. To some extent, the frequency of these large nodes also indicates the research hotspot in the field of sharing economy by ranking the top 20 most important keywords in the frequency of contributions, as shown in "Table I".

TABLE I. 2013-2019: FREQUENCY AND CENTRALITY STATISTICS OF THE TOP 20 KEYWORDS IN CHINA'S SHARING ECONOMY RESEARCH

| Sequence Number | Frequency | Centrality | Keyword | Sequence Number | Frequency | Centrality | Keyword |
|-----------------|-----------|------------|----------------------|-----------------|-----------|------------|--------------------------|
| 1 | 286 | 1.26 | Sharing Economy | 11 | 9 | 0.12 | Digital Economy |
| 2 | 36 | 0.19 | Sharing Bike | 12 | 9 | 0.3 | Innovation |
| 3 | 35 | 0.34 | Share Economy | 13 | 9 | 0.05 | Online Car-hailing |
| 4 | 35 | 0.08 | Sharing Development | 14 | 7 | 0.12 | Sharing Platform |
| 5 | 14 | 0.15 | Business Model | 15 | 6 | 0.12 | Collaboration Governance |
| 6 | 11 | 0.13 | Internate of Things | 16 | 5 | 0.04 | Internet Finance |
| 7 | 10 | 0.32 | Government Supervise | 17 | 5 | 0.01 | Common Prosperity |
| 8 | 10 | 0.18 | Internet + | 18 | 5 | 0.01 | Credit System |
| 9 | 10 | 0.12 | Share | 19 | 5 | 0.01 | Marxism |
| 10 | 9 | 0.09 | Big Date | 20 | 5 | 0.07 | Economy |

C. Cluster Analysis of the Research Hotspots of Sharing Economy in China

The results are shown in "Fig. 3". The cluster analysis is mainly based on the module value m and the average profile value S , and the module value M is used to indicate whether the data is suitable for clustering. When the data value is between 0.4 and 0.8, it can better reflect the clustering effect. The average profile value S indicates the internal similarity of the index. In general, the data value is between 0 and 1. When the value is higher, the clustering effect is better. When S value 0.7 shows that clustering is effective and convincing [5]. According to the clustering effect of the keywords in this study, the Q value is 0.661, S value is 0.725, which shows that the graph effect of the software on the sharing economy clustering is good. These include: Sharing Economy, Sharing Bike, Digital Economy, Sharing Development, Economy, Credit, Business Model and Human Resources.

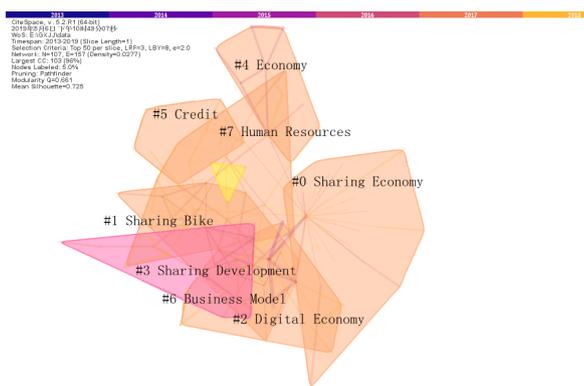


Fig. 3. Clustering analysis of sharing economy keywords.

IV. ANALYSIS ON THE EVOLUTION OF THE RESEARCH HOTSPOTS OF SHARING ECONOMY

By means of Citespace, the co-occurrence time-zone map of keywords can be obtained, and the time-zone map can be used to reveal the co-occurrence of keywords and the co-occurrence relationship among keywords in order to grasp the research frontier and development in this field [6]. According to "Fig. 4", we can see that the research of sharing economy in our country has gone through the following stages.

First, Inception Phase (2013-2015). The National Information Center task group concluded that China's sharing economy has gone through three stages: the embryonic stage before 2008, the initial stage from 2009 to 2012, and the rapid growth stage since 2013 [7]. During the rapid development of sharing economy, the research on sharing economy in China is still in the exploratory stage. From the time zone chart, we can also see that in 2013 and 2014, the keyword co-occurrence of the sharing economy did not show the results, indicating that theoretical research began only after the practice. The development of China's sharing economy is marked by sharing travel. Mostly Uber and DidiDache. Uber was first used in Shanghai in 2013, then in Beijing in 2014, soon afterwards blanketed major

cities across the country. Scholars begin to study the sharing economy more with the sharing behavior. Yang Xuecheng and others take Uber as an example to study the co-creation mechanism of user value in the sharing of travel which provides a new perspective for enterprises to create value in the development of sharing economy [8]. Wang Hongli et al. study the influence of trust on car-hailing willingness in sharing economy with quantitative research methods [9]. Since the beginning of 2015 years, the literature on sharing economy has gradually increased, and the research on sharing economy in China has entered a rapid development stage.

Second, Rapid Development Phase (2015-2016). The hot keywords are "collaborative consumption, business model, sharing economy, sharing development" and so on. This paper mainly discusses the transformation of manufacturing and service industries driven by sharing economy engine. In October 2015, the fifth plenary session of the 18th Central Committee of the Communist Party of China (CPC) and the 13th five-year plan called for the development of sharing economy, which means that the development of sharing economy has risen to the level of national strategy. At this stage, the practice of sharing economy is gradually popularized in the fields of product sharing, knowledge and skills sharing, labor service sharing, capital sharing and so on, more than half of China's unicorn enterprises have the property of sharing economy, and the related literature of theoretical research also shows a trend of rapid growth. Chen Jiakui et al. have studied how to use intellectual property to promote innovation in small and medium-sized enterprises under the sharing economy by means of empirical test [10]. Juyanhui et al. explored the theoretical model of rural library crowdfunding driven by sharing economy through empirical research on four rural library crowdfunding projects [11]. Zhang Yuming et al. study the new development of the business model of sharing office space under the background of "sharing economy + innovation and entrepreneurship" [12]. Liang Xiaobei et al. systematically expounded the concept, classification and influencing factors of collaborative consumption behavior in sharing economy, and put forward the future research direction in the field of collaborative consumption in sharing economy in China [13]. It can be seen the sharing economy plays a role in more areas of national economic life, but the problems in the development process have gradually emerged under the guidance of the national policy.

Third, Outbreak Phase (2016-2019). The keywords of this period are "cooperation governance, government supervision, sharing platform, operation mode and resource allocation". With the explosive growth of sharing economy, the sharing field is constantly deepening and expanding, constantly changing the development pattern of traditional industries and posing great challenges to the development of existing laws and regulations. In March 2016, for the first time, the sharing economy was formally included in the Government Work Report, which stated clearly that it should "support the development of the sharing economy, improve the efficiency of resource utilization" and "promote the development of the sharing economy with the innovation of

institutional mechanisms" [14]. The sharing economy, as a new driving force, plays an increasingly important role in promoting innovation, leading industries and pulling the development of the national economy. At the same time, the drawbacks brought by its explosive growth have gradually emerged, and the corresponding system, laws and regulations and other problems of inadequate supervision have also triggered social discussion. Some scholars put forward the normative development path of sharing economy in the new era from the perspective of innovative governance, and proposed how to develop the sharing economy in the face of many risks such as incomplete laws and tax loss [15]; He Minghua study the effect of government regulation on consumer trust and adoption under sharing economy model by empirical research [16]; Peng Huatao and others take sharing bicycle as an example based on the grounded

theory, this paper studies the internal logic of the abnormal imitation behavior of the start-up of the sharing economy, and puts forward a cooperative governance mechanism of "three systems-three supervision" [17]; Hu Yaohua and others studied the optimization of community sports resources allocation in Shanghai by means of literature analysis, logical analysis and so on [18]. The sharing economy is changing the development pattern of traditional industries while continuously improving the national life, but problems such as the lag of laws and regulations will bring certain perplexities to the development of the sharing economy such as Chongqing, Shanghai and other provinces and cities have issued a series of documents on the sharing of economic development, the government, enterprises through various competitions to promote local, enterprise development.

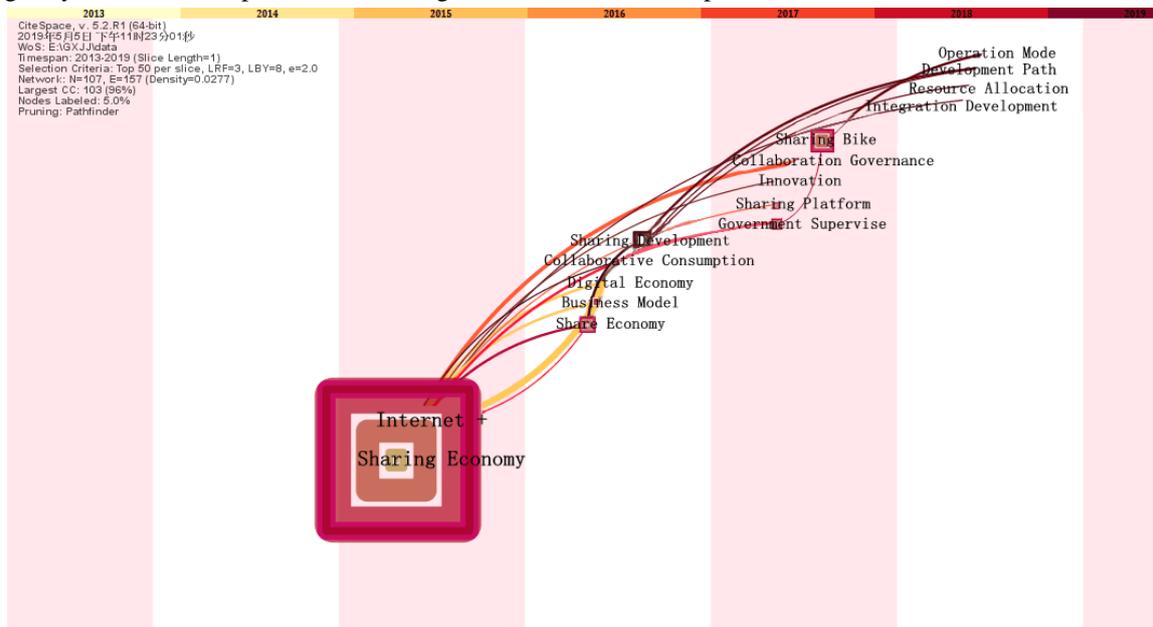


Fig. 4. Time zone atlas of shared economy research keywords.

V. CONCLUSION AND OUTLOOK

A. Conclusion

The explosive growth of the sharing economy has made the academic research on the sharing economy more abundant. This paper, from the perspective of Bibliometrics, this paper analyzes the research achievements of CSSCI source journals published in China Knowledge Network from 2013 to 2019 by using Citespace software, draws knowledge atlas, combs the research status of domestic sharing economy development, and provides reference for future sharing economy research.

First of all, "sharing economy" has always been the focus of domestic research in the field of sharing economy. The research on "Internet +" and Innovation, which are indispensable to realize the sharing economy, has become a hot spot. Chen Chuanhong and other scholars have explored the influencing factors of citizens' willingness to share bicycles through empirical methods [19]. He Jixin and other

scholars have made a systematic study on the essence, origin and development mechanism and ecological evolution of "Internet +", Public Service, expounding the evolution law of it.

Secondly, the research focus is the government regulation, social governance, social policy legal service system and other related issues brought about by the development of sharing economy. On the basis of the total system theory and the resource allocation theory, Wang Yu put forward that under the background of "Internet +", the government should construct the pluralistic governance system to realize the accurate governance of the sharing economy.

Finally, from the perspective of time zone evolution, the development of domestic sharing economy research has gone through three stages, the first stage marked by the concept, meaning and characteristic development law of sharing economy. Zhang Jinsong combines the sharing economy platform with the sharing platform to analyze the connotation,

core elements and service strategy of the sharing platform with the case method [23]. The second stage is marked by how the sharing economy and the real economy achieve coordinated consumption, and the development of its business model, Dai Keqing and other scholars explore the path of innovation and upgrading of traditional industries driven by the sharing economy with a multi-level analysis framework [24]; In the third stage, marked by the model of social governance based on the construction of the sharing economy platform and its social influence, Zhang Hongbin proposed that in the era of sharing economy, after great changes had taken place in the pattern of social governance, we need to strengthen the social credit system to meet the needs of the people for a better life [25]. The evolution of the time zone of sharing economy shows that the study of sharing economy is gradually becoming systematized, and the study of sharing economy is more in-depth from different disciplines and fields scholars such as Zeng Xiaoqiao have focused on tourism sharing economy: tourism sharing economy, global tourism, smart tourism and so on [26].

B. Outlook

With the sustainable development of China's sharing economy and the continuous innovation of information technology, it will have a far-reaching impact on the production, consumption and other aspects of national life. In the future, it is necessary to further study how China's sharing economy specifically affects the traditional industrial model, and to carry out in-depth analysis of the impact mechanism of different industries such as medical, tourism, housing, travel, etc. In addition, we can also study the influence of sharing economy on the participants' interests (resource owner, resource user and sharing platform construction) and the change of participants' participation in sharing economy. The framework and design structure of the sharing economy are explored from the macro-strategic level. Compared with the European and American countries, China's sharing economy has started relatively late but developed rapidly, so it needs the strategic development direction and top-level design of the sharing economy to guide the promotion and development of more sharing economic practices.

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