Research Status and Hot Spots in the Field of Domestic Rural E-commerce

——Based on Bibliometric Visualization Analysis

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Abstract—In order to understand the current research status and hotspots in the field of rural e-commerce in my country, we adopted bibliometric visualization analysis and comprehensively used NoteExpress, SPSS, UCINET and other software to conduct multi-dimensional scale analysis and social network analysis, and came to the following conclusion: the research field can be generalized to help rural e-commerce Targeted poverty alleviation and rural revitalization, "Internet + e-commerce" to promote rural economic development, and rural e-commerce development; three major categories; research hotspots mainly focus on "rural e-commerce", "e-commerce", "rural", "e-commerce platform" , "Agricultural Products", "Targeted Poverty Alleviation" and other aspects. Large-scale and diversified research in the field is gradually taking shape, but its degree of relevance is low, and there is still room for further research.

Keywords-rural e-commerce; current status and hot spot; bibliometric analysis; social network analysis

1 INTRODUCTION

Rural e-commerce is an important means to change the agricultural development mode. By accelerating the development of rural e-commerce, it is conducive to promoting agricultural upgrading, rural development and increasing farmers' income. In July 2015, The State Council issued the Guiding Opinions on Actively Promoting the "Internet +" Action and put forward 11 "Internet +" actions, and rural e-commerce took the brunt in the "Internet + e-commerce Action". In October of the same year, Premier Li Keqiang presided over an executive meeting of the State Council, deploying to accelerate the development of rural e-commerce, and to promote consumption and benefit people's lives by expanding new forms of business. Subsequently, the General office of the State Council issued the guidance on accelerating the development of rural e-commerce, clearly put forward innovative rural business model, cultivate and strengthen the rural e-commerce market subject, strengthen infrastructure construction, improve the policy environment, speed up the development of online integration, covering the whole, comprehensive, safe, efficient, convenient and affordable modern rural commodity circulation and service network[1]. As of 2020, the central government has issued the No.1 document of

the central government focusing on agriculture, rural areas and farmers for 17 consecutive years. Under the background that the central government attaches great importance to rural development, rural e-commerce has occupied an increasingly and increasingly important role in China.

In the field of academic research, the research on rural e-commerce on electricity platform, agricultural products, taobao village and precision poverty alleviation from a single perspective of scattered analysis, and few in the field of research situation, hot spots and development trend and social network analysis, especially after the comprehensive win against poverty in 2020, the lack of rural electricity plays a key role in the system summary, leading to rural electricity research results can not be highlighted. In view of this, the article based on the perspective of social network, for the past 10 years of rural electricity literature measurement analysis and word analysis, and combined with the visual network diagram and central analysis of the three index system combing its research status, hot spots and development trend, in order to provide theoretical guidance and experience for the future rural electricity research and industrial development.

2 MULTIDIMENSIONAL SCALE ANALYSIS

In order to clearly see the status of various research hotspots in the field and their structural relationship, a multidimensional scale analysis using SPSS software is needed. Multidimensional scale analysis is a data analysis method [2] that reduces the research objects in the multi-dimensional space to locate, analyze and classify in the low-dimensional space on the basis of ensuring the constant relationship between the original object data. Through multi-dimensional scale analysis, the distance between the research hotspots can be measured to identify the structural relationships between the data, reflect the degree of association between the two points, and compensate for the methodological deficiencies. The pedigree map was obtained by importing the high-frequency keyword phase difference matrix into the SPSS software, using the multidimensional scaling function, as shown in Figure 1.In the multidimensional scale lineage map, the X axis is centrality (Centrality), indicating the degree of interaction between the research fields, the greater the centricity, indicating themore core; the Y axis is the density (Density), indicating the degree of connection within the research field, the greater the density, the more mature[3]. From Figure 1, the multidimensional scale analysis pedigree roughly rural electricity research divided into three categories, in all kinds of internal research density is highly concentrated, but at the same time between mutual influence is low, that the domestic rural electricity research field has the characteristics of high density and low centripetal, shows that the research in the field of research has formed scale and more mature, but the degree of correlation between the hot areas is still not strong.
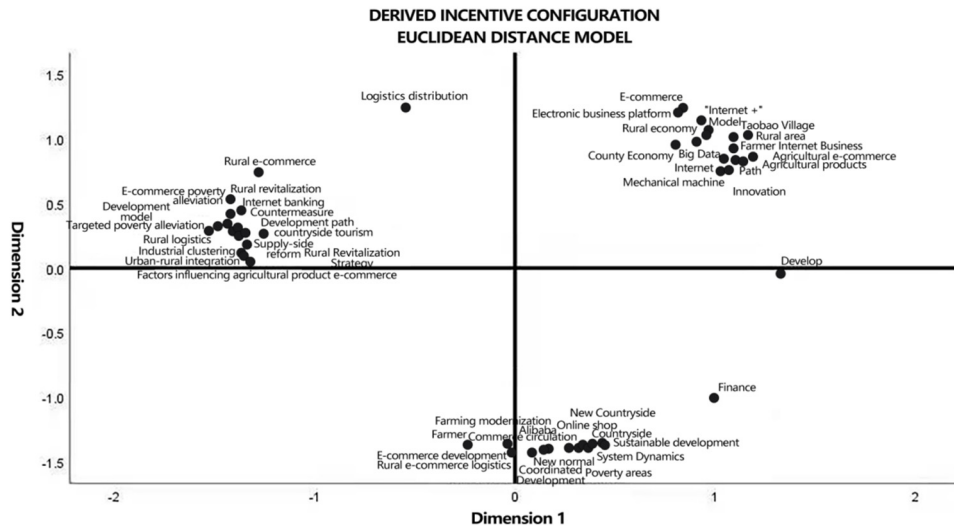
Figure 1. Multidimensional-scale lineage map

2.1 Rural e-commerce will help with targeted poverty alleviation and rural revitalization.

Under the category including electricity for poverty alleviation, targeted poverty alleviation, rural revitalization strategy, industrial cluster, supply side reform, urban and rural integration, agricultural e-commerce, development path, influencing factors, such as 17 keywords, and the distance is very close to each other, shows that this kind of research in the field is the most mature, internal correlation is the most stable. In terms of rural e-commerce helping with targeted poverty alleviation, the academic research mainly focuses on the mechanism and path, role and effect of poverty alleviation by e-commerce. Through qualitative research method, Zhang Xiaheng proposed that rural e-commerce should focus on the collaborative [4] of industrial poverty alleviation, education and e-commerce; Yang Shuyan used empirical research to show that rural e-commerce poverty reduction is significant, but also faces problems such as small scale, e-commerce environment lag and agricultural enterprise interest connection mechanism has not been effectively established. In addition, some scholars have taken Anhui, Shaanxi, Hebei and Southeast Chongqing as the research subjects of e-commerce poverty alleviation, and have studied the poverty alleviation modes and strategies, influencing factors of e-commerce. In terms of rural e-commerce helping rural revitalization, scholars' research is mainly manifested in the discussion of the development mode of rural e-commerce under the background of rural revitalization. In the face of poor areas rural electricity facing the development bottleneck, Du Yonghong put forward from talent, the mode of production, brand strategy, industrial structure, circulation network, improve the agricultural quality traceability system, rural logistics service system, rural electricity public service system, to promote the rapid development of e-commerce into rural [5].Liu Dai and others specifically put forward the rural e-commerce development model [6] based on urban and rural joint distribution and regional public brands in the western region.

2.2"Internet + e-commerce" will promote rural economic development.

The category includes 16 keywords, including rural economy, county economy, Internet, e-commerce, agricultural e-commerce, e-commerce platform, rural areas, and Taobao village. "Internet + e-commerce", as an important measure to promote the "Internet +" action, scholars maintain a high attention to this. The research content includes the development path, dynamic mechanism, influencing factors, etc. The case research includes Shandong, Jiangsu, Hubei, etc. The research perspective includes the supply-side reform, two-way circulation between urban and rural areas. For example, zhu haibo [7] of "Internet + electricity" to promote the development of rural economic path and effect, zhang hong [8] based on multiple regression model analyzes the impact of e-commerce on the rural economy, zhang state-owned [9] is based on shandong and jiangsu for the case discusses how the Internet mechanism to activate the rural economy.In addition, there are also scholars studying the relationship between rural e-commerce and rural economy. Lei Bing [10] comprehensively discussed the relationship between rural e-commerce development and local economy based on the data of 1,870 counties in China, while Hu Xuan [11] carried out the integration of e-commerce and rural economy under the background of two-way circulation between urban and rural areas.

2.3 Rural e-commerce development.

The classification includes 17 key words, including sustainable development, collaborative development, e-commerce development, rural e-commerce logistics, commercial circulation, new countryside, rural areas, and poor areas. Compared with the first two categories, the research intensity of this category is scattered, and keywords represented by finance and fiscal finance are at the edge, indicating that they are transiting to other fields. The rural e-commerce is a new form of rural industry development in the Internet era and an important carrier of rural economic development. The rural industry here mainly refers to the agricultural-related industrial structure including large-scale agriculture (plantation, animal husbandry, aquaculture and forestry). However, at present, the development level of domestic rural e-commerce is still in the initial stage, and it is still faced with problems such as lack of talents, weak modern logistics system in rural areas, low standardization of agricultural e-commerce, and difficulty in regional coordinated development [12], which have seriously affected the development of China's rural e-commerce industry. In view of this, many scholars have carried out researches on the development of rural e-commerce, including development patterns and trends, development problems and countermeasures, influencing factors and strategies and so on. Research perspectives include "new normal", "supply-side reform", "Internet +", "four modernizations" synchronized development, farmers' participation and other different perspectives. The cases include Jiangxi, Sichuan, Hebei, Heilongjiang, Hubei, Yunnan and Zhejiang provinces. In addition, some scholars also conducted research based on the sustainable development of rural e-commerce.

3 SOCIAL NETWORK ANALYSIS

3.1Consonant network analysis

In the keyword co-word network map, each node represents a keyword, and the size of the node represents the size of its centrality. Centrality is a measure of how much a point is located in the

center and important position of other points in the graph [13]. The larger the node, the greater the ability to control other nodes in the network, so that the position of the node in the network is more important. The connection between the nodes represents the relationship between the two keywords, and the thickness of the connection represents the keyword The degree of closeness between.

In order to further explore the current situation of rural e-commerce research in China, this paper will build a high-frequency keyword co-word network by combining Ucinet and Netdraw software, so as to conduct social network analysis. "Co-word network" is a network built from the perspective of co-occurrence relationship between keywords. "Social networks" refers to the set of social actors and their relationships, explaining the network structure and its properties [14] by analyzing various relationships among different actors. Similarly, the high-frequency keyword co-occurrence matrix was constructed with the first data analysis function of NoteExpress software, and the high-frequency keyword co-occurrence matrix and its corresponding high-frequency key word attribute files were converted into one by using Ucinet software.# # h Type file and then will.# # h files were imported into the Netdraw software to map the coword network, as shown in Figure 2.

It can be intuitively seen from Figure 2 that the overall research in this field points to the two nodes of "rural e-commerce" and "e-commerce", and is in the core layer of the whole network map, indicating that the whole research field is carried around these two core keywords.The key words at the sub-core level are represented by the three keywords: "Internet +", "e-commerce poverty alleviation" and "rural revitalization", They are located in the middle of the two core keywords, "rural e-commerce" and "e-commerce", Studies indicates a close link between them; of course, In addition, it also includes "supply-side reform", "rural logistics", "rural tourism", "industrial cluster", "rural economy", "urban-rural integration", "development model", "targeted poverty alleviation", "e-commerce platform", "Taobao village", "Internet finance" and so on, Explain that the research in the field has formed a scale, Scholars no longer focus only on rural e-commerce itself, It has derived the application and combination of research in different fields of industry, economy, finance and poverty alleviation. And located on the edge of the network keywords, such as "new normal", "rural areas", "new rural", "big data", "agricultural modernization", etc., shows that the field is more and more diversified, but at the same time their correlation is also low, shows that the research is relatively insufficient, there is still room for further research.
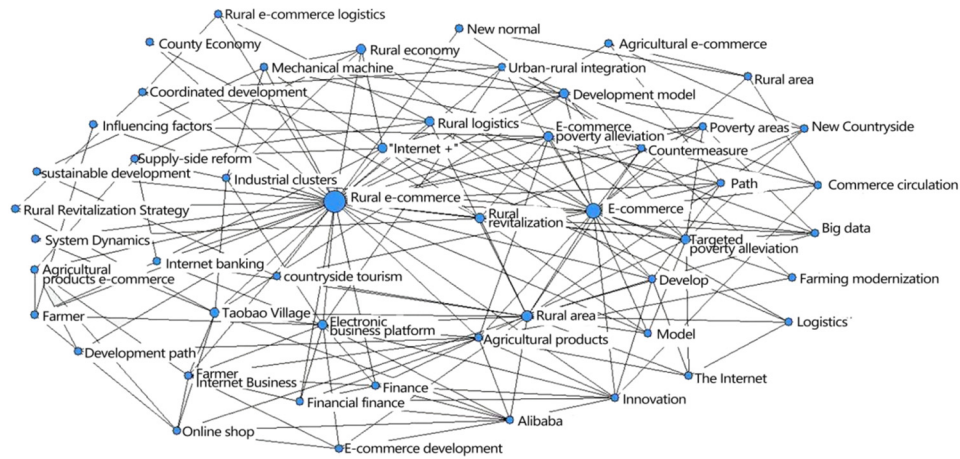
Figure 2. High-frequency keyword co-word network

3.2 Central analysis

Network centrality in social networks is a quantitative study of power and status from the perspective of relationship. If the more connected a node is to the other node, the higher the centrality of the node in the knowledge network, the greater [15] the impact on the other nodes. Generally commonly used network centrality includes point centrality, intermediate centrality and proximity centrality, these three indicators can find not only the research hotspot of a certain research topic, but also can be used to discover future development trends.

The centrality reflects the connection and communication ability between the participants. The higher the centrality, the more the central [16] in the cooperative network. The high-frequency keyword co-word matrix was applied. The # # h file was imported into the UCINET software to obtain the high-frequency keyword point degree centrality according to the menu path, Network-Centrality-Degree, as shown in Table 1.It can be seen from the table that the center of rural e-commerce is 107, which is at the core of the whole network. Among the top ten keywords in the center of points, 8 are the top 10 high-frequency keyword frequency, indicating the correlation between the center of points and the frequency of keywords. In addition, although the top 10 keywords in table 1 center is above the average 13.6, in the network still represents part of the research hot spots, but from the keywords as the whole, the average keywords only 12, once again verified the rural electricity research has not yet formed the core research field. In particular, the keywords where the center is lower than the average, they are at the edge of the whole network, and need to continue to strengthen the connection with the research of rural e-commerce field.

The degree of intermediary center can determine the influence of a key word on the intermediary force of other keywords in the whole network. The higher the degree of intermediary center, the greater the influence of the intermediary force. According to the data results, the average value of the intermediary center is 23.96, and the keywords exceeding the average intermediary degree are only six keywords: "rural e-commerce", "e-commerce", "rural", "agricultural products", "e-commerce platform" and "Taobao village". Among them, the "rural e-commerce" intermediary

center is the highest, far exceeding the average intermediary degree, indicating that it plays a very important intermediary force in the whole network.Of course, the other five keywords also play a certain medium role. For the intermediary center of low keywords, such as "rural revitalization" (20.933), "e-commerce poverty alleviation" (10.898), "supply-side reform" (3.633), in terms of rural e-commerce field research, these keywords themselves have had a more or less impact in this field, and in line with the actual future development direction, but for the present, scholars' attention is not high to these aspects is not high, it is still worth doing further research. The proximity center is a measure of the ability of a node in a network to be independent of other nodes. The higher the proximity center of the keyword, the less it is under the control of other nodes in the network, the farther it is from the core position; on the contrary, the lower the proximity center, the closer it is to the core position, the easier the keyword is to become the core node of the network. The Table 1 lists the top ten keywords in the ascending order, and all of them have low proximity center values, which is basically consistent with the result values of point centrality and intermediary centrality, indicating that these keywords are basically at the core of the network and represent the hot spot of attention of scholars in the field of rural e-commerce. At the same time, the surprise, according to the statistical results, below the center of 96.92 keywords a total of 26, in addition to the above representative keywords, also added new such as "urban and rural integration", "farmers net business", "rural economy", "rural tourism", and other keywords, although the keywords are close to the center is very close to the average. But also accordingly, from the point of view based on the center, the research in the field has gradually from the representative "rural electricity", "electricity platform", "agricultural products", "rural revitalization", "precision poverty alleviation" and other core key words extend more areas, shows that the research in the field of research is gradually infiltrating, the degree of correlation between the keywords is gradually strengthened.

TABLE 1. HIGH-FREQUENCY KEYWORD CENTRALITY DATA (TOP 10)

Frequency ranking	keyword	Point center degree	Frequency ranking	keyword	Intermediary center degree	Frequency ranking	keyword	Close to center degree
1	Rural e-commerce	107	1	Rural e-commerce	533.628	1	Rural e-commerce	60
2	Electronic Commerce	69	2	Electronic Commerce	177.357	2	Electronic Commerce	73
3	rural area	39	3	rural area	96.853	3	rural area	83
6	e-commerce platform	30	13	produce	47.847	13	produce	85
5	targeted poverty alleviation	28	6	e-commerce platform	36.819	6	e-commerce platform	86
4	rural revitalization	23	9	Taobao village	26.179	4	rural revitalization	87
7	"internet +"	20	5	targeted poverty alleviation	22.987	5	targeted poverty alleviatio	89

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13	produce	19	4	rural revitalization	20.933	28	bring forth new ideas	89
10	E-commerce poverty alleviation	18	16	the way to deal with a situation	20.346	16	the way to deal with a situation	90
11	rural economy	16	7	"internet +"	18.151	8	Rural logistics	90
	average value	13.6		average value	23.96		average value	96.92

4 CONCLUSIONS AND DEFICIENCIES

4.1 Conclusion and discussion

Based on the CNKI database, this paper includes coterm analysis and social network analysis of 533 documents in the domestic rural e-commerce field, and finally draws the following conclusions:

1) Through multi-dimensional scale analysis, the research of domestic rural e-commerce is roughly divided into three fields. The internal research density is highly concentrated, but the degree of correlation between fields is still not strong. The overall research field is characterized by high density and low centricity, and no a prominent research theme is formed.

2) High frequency keywords network, according to the field of research around "rural electricity" and "e-commerce" the two core keywords, with "Internet +", "electricity poverty alleviation", "rural revitalization", "supply side reform", "rural logistics", "industrial cluster", "rural economy", "urban-rural integration" keywords derived in industry, economy, finance, poverty alleviation and other different fields of the application and combination of research. According to the central analysis of the center, center and close to the three indicators, the analysis of the rural electricity research results and the full text, mainly focus on "rural electricity", "e-commerce", "rural", "e-commerce platform", "agricultural products", "targeted poverty alleviation", "rural revitalization", "electricity poverty alleviation", while the scale, diversified research in the field is gradually formed, but the degree need to continue to strengthen, there is still further research space.

In recent years, with the continuous evolution of national strategy, the research of domestic rural e-commerce has attracted more and more scholars. From poverty alleviation and industrial poverty alleviation, to the industrial revitalization plan of the great strategy of rural revitalization, China's rural e-commerce plays a great role in it.The year 2021 is the first year for the implementation of the 14th Five-Year Plan, and also a key year for the great victory in poverty alleviation and the rural revitalization strategy. In this special year, the research in the field of rural e-commerce will also usher in an inflection point. As the academic research on the effectiveness of rural e-commerce in poverty alleviation and targeted poverty alleviation will gradually decrease, the research on the role of rural e-commerce in the rural revitalization strategy will be enriched. In addition, the research on the development mode of rural e-

commerce industry and agricultural and rural modernization will also become the focus of scholars.

4.2Not enough

The research of this paper only selected the journal literature of Chinese core and CSSCI database in the field of domestic rural electricity research during 2011-2020 for these 10 years, and did not analyze and comb all the literature in the research field, nor did it join the research results published in international journals, which made the research analysis in this field incomplete. In addition, based on the lack of specific policy suggestions in the domestic rural e-commerce field based on the current research situation and hot spots, the follow-up research can be considered from the above aspects to make up for the deficiencies.

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