A bibliometric analysis of poverty alleviation researches in China during the 13th Five-year Plan

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Abstract. From the end of 2012 to 2019, 93.48 million population were lifted out of poverty in China. In 2020, which was the final year for poverty alleviation, absolute poverty is eliminated. China have realised a great achievement in poverty reduction. According to the World Bank report, 689 million people living on less than $1.90 a day. At higher poverty lines, 24.1 percent of the world lived on less than $3.20 a day and 43.6 percent on less than $5.50 a day in 2017. Hence, this research was designed to synthesise and represent a comprehensive understanding of the existing Chinese scholars’ articles in poverty alleviation field during the 13th Five-year plan by utilising bibliometric techniques. The result demonstrated the state-of-art of researches in this field. The fundamental articles were identified. The prosperous themes were revealed. Sustainable development and multidimensional poverty are the motor themes.

1. Introduction
From the end of 2012 to 2019, 93.48 million population were lifted out of poverty in China[1]. In 2020, which was the final year for poverty alleviation, absolute poverty is eliminated. China have realised a great achievement in poverty reduction. According to the World Bank report, 689 million people living on less than $1.90 a day. At higher poverty lines, 24.1 percent of the world lived on less than $3.20 a day and 43.6 percent on less than $5.50 a day in 2017. Furthermore, climate change will drive 68 million to 132 million into poverty by 2030[2]. The experience and practice of China would be helpful counter poverty in other countries. Hence, this research was designed to synthesise and represent a comprehensive understanding of the existing Chinese scholars’ articles in poverty alleviation field by utilising bibliometric techniques to identify the most impact articles, research themes and its evolution, and explore the motor themes for future research. The main objectives of this research are designed as following:
- What was the general trend in this field?
- What were the cornerstone publication?
- What were the major themes?
- What will the motor themes future research?

2. Methods and data

2.1. Corpus retrieval
This study was designed to retrieve scholar publications information from the Web of Science database, which is reputable index with a wide inclusive of peer-reviewed database and provision of reliable bibliographical data. The Bibliometrix tool package requires the raw data to have citation data. Thus,
the Web of Science core collection was selected as article pool of this research, which is able to provide all bibliographical data, including title, authors, journal, abstract, keywords, keywords-plus and citations etc. Poverty alleviation was used as the keyword to search in the theme from 2015 to 2020. 2016 was the commencement of the 13th Five-Year Plan of China, one year added to ensure all related publications were obtained. The affiliated address was restricted to China. The document type was set as article. Initially, 366 publications were retrieved. A manual check was conducted to ensure only articles were in corpus, 1 proceeding papers were removed. This research followed a recommended standard workflow of bibliometric analysis[3]:

- Research design;
- Data collection;
- Data analysis;
- Data visualization;
- Interpretation

2.2. Data analysis
The general research trend was revealed by basic statistics. Co-citation analysis was utilized to explore the cornerstone publications. Co-occurrence analysis was also used to represent the conceptual structure and research themes, which answers the third and fourth questions of this research. Data washing was performed to orient data align to Bibliometrix tool package requirements.

3. Results

3.1. The overview of research development
Figure 1. shows the annual scientific production within the investigated time span. The number of publications was keeping increase with a tiny fluctuation occurred in 2016. Notably, the number was blew in 2019, because poverty alleviation program was approaching final year (2020), and more scholar achievements were obtained based on works in previous years. Furthermore, 366 articles were published in 177 journals, which indicates poverty alleviation received interests from wide and broad scholars.

In term of journal performance, the most productive journals were listed in Table 1. Sustainability was the most prolific, with 44 publications. Land Use Policy was the most impact, with 12 publications and 229 citations. Table 2. and Table 3. provided an overview of article published by authors and its affiliations.
Table 1. 10 most productive journals

| Journal                        | Total Citations | Total Articles |
|--------------------------------|-----------------|----------------|
| Sustainability                 | 64              | 44             |
| Land Use Policy                | 229             | 21             |
| Journal of Cleaner Production  | 96              | 15             |
| Social Indicators Research     | 31              | 11             |
| IEEE Access                    | 4               | 8              |
| Energy                         | 51              | 6              |
| Energy Policy                  | 46              | 6              |
| Habitat International          | 38              | 6              |
| Journal of Geographical Sciences | 37          | 6              |
| Plos One                       | 24              | 6              |

Table 2. 10 most impact authors.

| Author  | Total cited | No. of Articles | PY_start |
|---------|-------------|-----------------|----------|
| LIU Y   | 271         | 20              | 2016     |
| ZHOU Y  | 195         | 9               | 2017     |
| LI Y    | 171         | 23              | 2015     |
| LIU J   | 119         | 16              | 2016     |
| LO K    | 93          | 7               | 2016     |
| WANG M  | 91          | 7               | 2016     |
| LI J    | 76          | 17              | 2017     |
| WANG J  | 74          | 15              | 2017     |
| ZHANG W | 67          | 3               | 2015     |
| YANG X  | 66          | 5               | 2015     |

Table 3. 10 most productive institutions

| Institutions                                               | No. of Articles |
|-----------------------------------------------------------|-----------------|
| INST GEOG SCI AND NAT RESOURCES RES                       | 69              |
| UNIV CHINESE ACAD SCI                                     | 41              |
| CHINESE ACAD SCI                                          | 38              |
| BEIJING NORMAL UNIV                                       | 32              |
| UNIV HONG KONG                                            | 29              |
| XI AN JIAO TONG UNIV                                      | 29              |
| PEKING UNIV                                               | 27              |
| RENMIN UNIV CHINA                                         | 27              |
| CHINA UNIV GEOSCI                                         | 25              |
| NORTH CHINA ELECT POWER UNIV                              | 20              |

3.2. The cornerstone articles

This section explored the fundamental articles in this field. The co-citation analysis was utilized to reveal the fundamental publications. The 20 most co-cited papers and co-citation relationship were shown in Figure 2. Each node denoted an article, the size of which and the thickness of links among them represented the proximity of two articles. The journal of *Land Use Policy* was the dominant journal of these most impact articles.
3.3. Keywords analysis

The co-occurrence analysis was applied on author keyword of corpus. The Figure 3. represented the author keywords performance and its clusters. The red colour cluster was dominant. Its research theme focused on rural restructuring, vulnerability, poverty instrument development and poverty alleviation management etc. The blue clusters mainly focused on land and policy in poverty alleviation. The Figure 4. showed the most contributed articles accordance with keywords clusters. Blue cluster didn’t have any notable article.
3.4. **Thematic map**

The research themes were distributed according to their centrality and density which were denoted by X-axis and Y-axis, and were grouped into four quadrants. The centrality measures the degree of interaction between theme clusters[4]. The density measures the internal connection strength of theme cluster. The first quadrant was motor-theme, which means the themes were important and developed well. The second quadrant were well-developed but unimportant. The third quadrant themes were either emerging or disappearing, weakly developed and marginal themes. The fourth quadrant themes were important but not well-developed themes. As shown in Figure 5. sustainable development and multidimensional poverty were the motor themes in poverty alleviation.
4. Discussion and conclusions
This research presented a comprehensive understanding of research development in poverty alleviation in China during the 13th Five-year plan. Statistic and bibliometric methods were utilised to analyse the corpus which was retrieved from the Web of Science core collection. The result demonstrated the state-of-art of researches in this field. The fundamental articles were identified. The prosperous themes were revealed. Sustainable development and multidimensional poverty are the motor themes.

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