Research on Big Data of Traditional Villages in Southern Hunan under the Background of Rural Revitalization Strategy

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Abstract: This paper will start from the theoretical construction to explore the theoretical system of the protection and development of traditional villages in southern Hunan; Then to the method system research, put forward the feasibility and necessity of big data technology as a means of protection, adhere to the combination of theory and practice in the research, and the combination of paper research and promotion and application; Finally, it is the application of achievements to explore the new way of local culture rescue in the strategy of Rural Revitalization in southern Hunan.

1. Introduction

The report of the nineteen National Congress of the CPC put forward the implementation of the "Rural Revitalization Strategy" for the first time, and put the "implementation of the Rural Revitalization Strategy" as one of the seven strategies of building a socialist modern power into the party constitution, giving it a prominent position. To implement the strategy of rural revitalization [1], the protection of traditional villages is one of the core. The protection of traditional villages is still facing many difficulties, such as urbanization leading to "hollow villages"; The wrong understanding of the new rural construction as the new village construction movement, trying to seek new and foreign [2], leading to the situation of "one side of ten thousand villages".

The data of traditional villages in southern Hunan covers a large number of historical, cultural and economic information, showing the characteristics of large capacity, many sources and many types. It is a typical big data. Big data thinking has an important practical significance in improving the people's cognitive level of Chinese traditional village characteristic resources and realizing the sharing, development and utilization of traditional village cultural resources [3-5].

2. Related Research at Home and Abroad

2.1. Domestic Related Research

The research on traditional villages in China can be roughly divided into three stages: (1) embryonic period: in the 20-70's of the last century, the representative research including Fei Xiaotong and other sociologists started the research on rural sociology; Liang Sicheng, Liu Dunzhen, Zhu Qiqian and other architectural scholars brought traditional village houses into the perspective of

architectural research. (2) Development period: in the 80-90's of the last century, the important value of traditional villages was recognized and rediscovered by the domestic academic community. Liu Peilin (1,998) put forward the idea of establishing a historical and cultural village protection system to protect ancient villages [6, 7]. (3) Prosperity period: in the twenty-first Century, traditional village research ideas and means have greatly developed. Cultural scholar Feng Jicai (2,017) pointed out that traditional villages are a complex of material and intangible cultural heritage [8]; Hu Binbin and Wu can (2,014) believed that Chinese village culture is the root culture of the Chinese nation. The traditional village big data mainly includes three parts: the material cultural heritage big data, the intangible cultural heritage big data, and the network big data. Due to the earlier research on the cultural heritage in traditional villages, a number of mature academic achievements have been formed. The development of "digital cultural heritage" has become one of the important signs of evaluating a country's information infrastructure (Huang Yonglin, 2,015; Song Junhua and Wang Ming month, 2,015); Zheng Wenwu and Liu Peilin (2,017) believe that digital emphasis on "shape" and light on "spirit" are the main obstacles to the digital protection of traditional villages; Zhang Hongji et al. (2,017) studied the relevant technologies of digital protection of traditional villages; Fir (2,014), Zhang Zhiyong (2,014), Zhao Yuqi (2,015) and Guo Chongmin (2,017) explored a new way to protect and inherit traditional villages in the era of big data. In recent years, with the rapid development of the Internet, the main aspects of traditional villages are gradually affected by the rapid spread of network information, and the research on traditional village network big data is gradually being paid attention to [8-10]. Zhang Ying (2,016) conducted a research on rural tourism image perception through the analysis of the network style content of Zhujiayu traditional village in Ji'nan; Guo Chongmin and Li Minqian (2,108) explored the scientific evaluation of traditional village network information resources by using the ranking aggregation method.

2.2. Foreign Related Research

In the face of the plight of rural decline, countries around the world have also taken measures. Developed countries and regions such as the United States and the European Union were the first to try to promote agricultural development and farmers' income through a single agricultural policy. Japan and South Korea have successively implemented the plan of rural rehabilitation. In recent years, foreign traditional village research mainly focuses on the following three aspects: (1) protection and development research. Kwanda (2,010) pointed out that the protection of Asian rural architectural heritage is different from that of western countries. Shahrul et al. (2,013) believed that the protection of traditional village heritage should focus on improving the public protection awareness. Nakamura (2,013) pointed out that independent participation is more conducive to the protection of local cultural heritage. (2) Local architecture and landscape research. The protection of traditional villages is discussed from the architectural level and the landscape level. Tassinari et al. (2,007) systematically discussed how to integrate architecture and village landscape. (3) Perception level research. Ghanaian (2,014) carried out a study on the perception of indigenous people on tourism development; Chi Tseng (2,015) found that tourists' image perception of ancient villages as tourism destinations from online texts.

3. Research Methods

3.1. Field Work

It includes questionnaire survey, discussion, comprehensive survey, interview, etc. Visit the traditional villages in southern Hunan on the spot, deeply understand the traditional village culture and its historical background, and master the first-hand information.

3.2. Literature Research

Many aspects of the collection of domestic and foreign traditional village protection design and digital related research theory and practice results, to provide a theoretical basis for this study.

3.3. Spatial Analysis

The spatial location, distribution, shape, formation and evolution of traditional villages were obtained from the spatial data and analyzed.

3.4. Classification Research

All kinds of professional data collected are sorted out and classified according to certain categories to facilitate the statistical analysis of later data, and further research and design work is carried out on this basis.

3.5. Interdisciplinary Study

According to the knowledge attributes and cultural characteristics of "interdisciplinary", "cross-cultural" and "cross field" in the research of traditional village cultural heritage big data, multi-level discussions such as method crossing, theoretical reference, problem pulling and cultural blending are adopted to achieve the integration of research on the problem.

3.6. Empirical Research

Based on the theoretical framework of literature research and data classification, this paper studies the digital practice of traditional villages in southern Hunan, and demonstrates the theory scientifically.

4. Research on Big Data of Traditional Villages in Southern Hunan

Big data resources of traditional villages in southern Hunan obtained through investigation and collection; Through the information office layer, the big data resources of traditional villages in southern Hunan were classified and integrated to form traditional village information resources, and realize the efficient management of structured and semi-structured massive data; Using big data analysis and knowledge mining methods to further analyze and mine, forming traditional village knowledge resources, so as to provide information and knowledge services for the protection of traditional village cultural resources; Explore the network big data user portrait of traditional villages in southern Hunan, and then display and spread the various types of data obtained,The flow chart is shown in Figure 1.
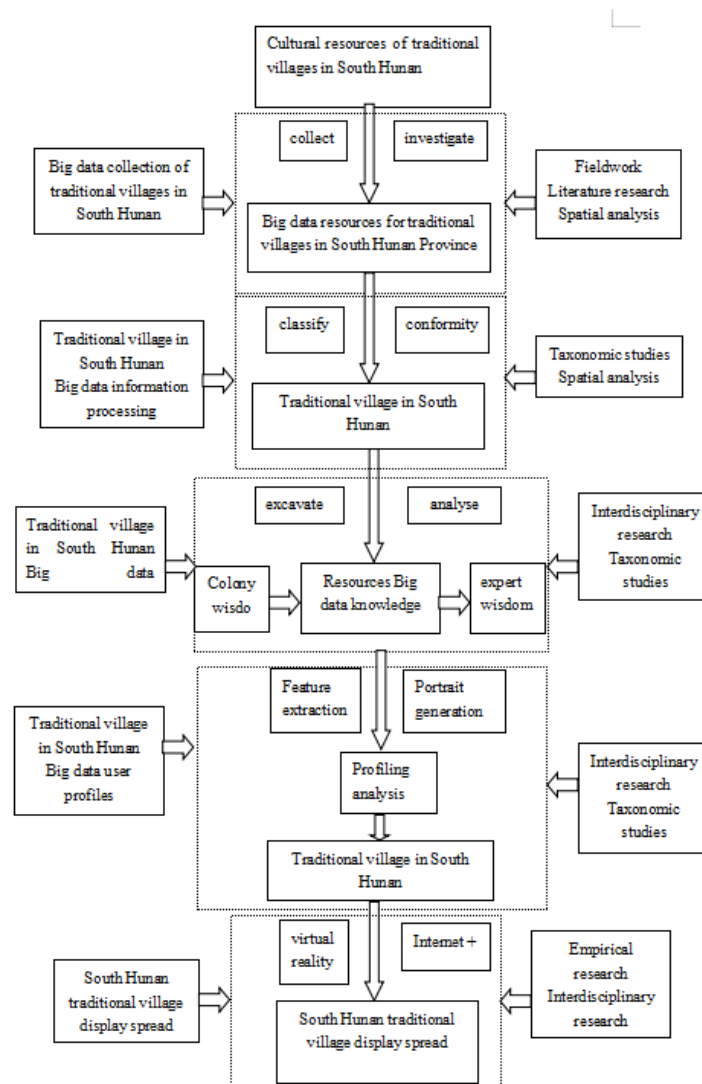
Cultural resources of traditional villages in South Hunan

collect   investigate

Big data collection of traditional villages in South Hunan

Fieldwork
Literature research
Spatial analysis

Big data resources for traditional villages in South Hunan Province

classify   conformity

Traditional village in South Hunan
Big data information processing

Taxonomic studies
Spatial analysis

Traditional village in South Hunan

excavate   analyse

Traditional village in South Hunan Big data

Interdisciplinary research
Taxonomic studies

Colony wisdo   Resources Big data knowledge   expert wisdom

Feature extraction   Portrait generation

Traditional village in South Hunan Big data user profiles

Interdisciplinary research
Taxonomic studies

Profiling analysis

Traditional village in South Hunan

virtual reality   Internet +

South Hunan traditional village display spread

Empirical research
Interdisciplinary research

South Hunan traditional village display spread

Figure 1: Flow chart

4.1. Big Data Collection of Traditional Villages in Southern Hunan

(1) Image acquisition. The landscape, residential buildings, cultural relics, performances and other resources in the traditional villages in southern Hunan are digitally recorded through graphics and images. The village landscape, residential buildings and cultural relics appearance can be recorded by HD photography, and the cultural performance and inheritor description can be collected by using the recording technology.

(2) Spatial data acquisition. Using the remote sensing mapping technology of low altitude UAV to carry out the spatial data collection of traditional villages in southern Hunan; the spatial data of ancient buildings and cultural relics in traditional villages in southern Hunan were obtained by 3D laser scanning.

4.2. Big Data Information Processing and Knowledge Mining of Traditional Villages in Southern Hunan

(1) Information processing. The big data resources acquired by the traditional villages in southern Hunan were timely classified, indexed, integrated, and the data management system and information

retrieval system were established to form the information resources of traditional villages in southern Hunan.

(2) Knowledge mining. Data analysis and data mining technology are applied to the data of traditional villages in southern Hunan to mine valuable knowledge and form the knowledge resources of traditional villages in southern Hunan. To provide information and knowledge services for the public, experts and scholars.

4.3. Big Data User Portrait of Traditional Villages in Southern Hunan

(1) Traditional village feature extraction. Select the network documents of traditional villages in southern Hunan to build the corpus, and then select the network text mining keywords as the characteristics of traditional villages in southern Hunan to build and analyze the village portraits of traditional villages in southern Hunan.

(2) The generation of traditional village portraits. The weight of all the specific traditional villages in southern Hunan is calculated from the network text information, and the specific weight information is sorted according to the weight size, then the traditional village characteristics in southern Hunan can be visualized into a word cloud.

(3) Analysis of traditional village portraits. The characteristics of traditional villages in southern Hunan are divided into three dimensions: basic information, material culture and intangible culture.

4.4. Research on the Display and Dissemination of Traditional Villages in Southern Hunan

(1) Virtual display technology. The virtual reality technology is combined with space-time data of different time and space scales, and the panoramic immersion experience is carried out in a dynamic interactive way, so as to achieve the purpose of effective display and inheritance of traditional villages in southern Hunan.

(2) "Internet +" traditional village communication technology. Through the "Internet + traditional villages" communication technology to improve the interaction of information display and cultural communication in traditional villages in southern Hunan.

5. Conclusions

Using big data to study the personality characteristics of traditional villages, learn from each other's strong points and make up for each other's weak points, precise their own direction, avoid repetition with other traditional villages, and build a "community of traditional village destiny" big data. From the major decision of "implementing the strategy of Rural Revitalization", find the entry point, and explore new ways to rescue local culture, so that in the process of revitalization of local culture, the rural people not only enjoy the sense of access to public cultural services, but also enjoy the pride of local cultural heritage and development. Solve the common theoretical problems in the current digital communication of cultural heritage, build the digital communication method evaluation index system, build the traditional village digital resource sharing and application cloud platform and conduct demonstration research.

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