Analysis of the Application of Information Technology in the Management of Rural Population Return Based on the Era of Big Data

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ABSTRACT

Based on rural population return management, governance theory, and information technology theory, this paper analyzes the specific performance of rural areas in managing population return and describes the overview, quantity, life status, and demographic characteristics of rural population return, as well as the current situation of rural population return management. A method of managing rural population return based on a rural population return management model constructed by a machine learning algorithm is designed. The empirical results show that the method designed in this paper is low-cost, fast, and highly accurate and is well-suited for improving and expanding the system for managing rural return flows. The research in this paper provides a reference for further promoting the transformation strategy of rural governance in the context of new urbanization.

1. INTRODUCTION

With the rapid development of urbanization and industrialization after the reform and opening up, especially since the new century, the development gap between the east and west has become obvious, and the level of socio-economic development and employment opportunities in the eastern coastal areas have caused a strong siphon effect, resulting in the rapid growth and expansion of the number and scale of the cross-regional migrant population between the east and west and urban and rural areas, which has rapidly set off a large-scale wave of outbound workers (Soneka & Phiri, 2019). The rapidly increasing mobile population, along with the demographic dividend, has become a powerful booster for the country's rapid economic growth, promoting industrial restructuring and rational allocation of labor resources. Some experts and scholars analyze from the perspective of economics that the return of the migrant population is an important manifestation of the emerging wave of innovation and entrepreneurship in the process of transferring labor-intensive and resource-intensive industries to the central and western regions, which will be accompanied by the transfer and better allocation of human resources (AlBar & Hoque, 2019). If analyzed from the perspective of social integration of the mobile population, what are the important correlations between the emergence of the mobile population return phenomenon and the inability of the mobile population to integrate into the inflow

area, and what are the factors affecting the social integration of the mobile population, all these questions need further research and response (Nyangarika & Bundala, 2020).

Based on the definition of the mobile population in existing statistical surveys, this paper defines the concept of population mobility with data and the problem under study, and enriches the theoretical connotation of the mobile population; this paper designs a new method for mobile population size estimation based on existing statistical survey methods, i.e., constructing a mobile population management model based on machine learning classification algorithm through data mining, on which Applying the capture-recapture sampling estimation method to measure the size of the mobile population and extrapolating the information such as the market share of mobile communication operators, this paper provides methodological support to be able to count more accurate data of the mobile population (Saediman et al., 2019). Compared with the existing mobile population survey methods, the population mobility measurement method based on mobile communication big data designed in this paper has been substantially improved in terms of timeliness and saving survey cost while maintaining higher accuracy, so the method can be applied to the practice of statistical survey of the mobile population, which enriches the methodological theory of mobile population survey in the statistical survey, and on this basis, for It also has an important theoretical value for the improvement and perfection of the statistical system of the mobile population. By using data mining and statistical methods, we can analyze the characteristics of communication behaviors of different groups through the use of mobile communication big data resources accumulated by mobile operators in real-time, and find a more accurate, timely, and effective method to obtain information of mobile population, to find a new way for the statistics of the mobile population (Kar et al., 2019).

This paper analyzes the social integration of rural inter-provincial migrant population from economic, social, and psychological dimensions, which is similar to the study on the citizenship of the agricultural migrant population. Therefore, based on the previous studies, we apply the symbiosis theory to analyze the social integration of the migrant population to make up for the lack of research in this field and to lay the theoretical foundation for the subsequent discussion. This paper first reviews the current status of research on mobile population size estimation and research methods. Based on the shortcomings of previous studies, this paper constructs a mobile population management model based on mobile communication big data, based on the behavioral characteristics of the population, and determines and measures the mobility of the population from the user behavior characterized by mobile communication big data. The final mobile population management model is selected by comparing the performance of this model through various classification performance criteria and theoretical analysis; the final mobile population management model is used to classify and identify the unclassified samples in the sample data, and then obtain the mobile population in the entire sample data set.

2. RELATED WORK

Information technology is effective in increasing the rate of urbanization by improving labor productivity and strengthening rural-urban linkages. Weaver M S et al. studied the correlation between the level of computer penetration and the rate of urbanization in rural areas of southern Brazil and pointed out that there is a strong positive correlation between the rate of urbanization and the level of information technology penetration, mainly because the widespread penetration of information technology can greatly improve labor productivity (Weaver et al., 2020). Karahanna E et al. analyzed the specific role of ICT in the local urbanization process by distributing questionnaires to the Newcastle, UK, area in the context of informatization, and suggested that although informatization promoted the overall urbanization development rate, the gap between informatization in different regions widened the gap of urbanization between regions (Karahanna et al., 2019). However, what needs additional attention is that the digital divide problem brought about by the application of information technology is hindering urban-rural population mobility, solidifying the urban-rural dual structure, and slowing down the urbanization process. With the continuous improvement of information technology, the

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