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Evaluation of Satisfaction of Residents in Spongy Reconstruction of Old Community based on Social Network Analysis

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Abstract: In order to improve the popularity of sponge city construction, urban rainwater storage capacity and urban toughness, and improve the waterlogging problem in urban built-up areas of old residential areas, this project, combined with the background of urbanization construction, intends to construct an evaluation index system from the satisfaction of residents in the reconstruction of old residential areas in three aspects: resident benefit, reconstruction effect, and facility construction and maintenance. Taking a community in Bengbu City as an example, social network analysis is used to analyze the factors affecting residents' satisfaction, further explore the residents' willingness to participate in different situations, and put forward targeted suggestions to improve the level of renovation of the old community and residents' satisfaction.

Keywords: Old Residential Area; Spongy Transformation; Social Network Analysis; Resident Satisfaction.

1. Introduction

By the end of 2022, China's urbanization rate reached 65.22% [1], exceeding the global average level of 50%, which marks that China's urbanization development has entered a new era characterized by the enhancement of the connotation of land stock [2]. The old residential area is the basic unit of urban production and life, and the improvement of the quality of urban built-up area depends on the transformation of the old residential area. The sponge transformation of the old community can enhance the rainwater collection capacity of the community and improve the living environment of the community. In the renovation process, residents participate in the decision-making and construction process, discuss and solve problems together, which can enhance the cohesion and sense of belonging of the community. The transformed community can provide better living environment and public services, and improve residents' life satisfaction and happiness.

2. Theoretical Basis

2.1. Sponge City Concept

Sponge city is an emerging urban planning concept that aims to solve the problems of water resources management and natural environment protection in the process of urbanization. Its core idea is to imitate the sponge of nature, through a variety of means to achieve the collection, storage, purification and utilization of rainwater, in order to reduce urban flooding disasters and water shortages. The sponge city concept can effectively improve the water management and environmental quality of cities, and enhance the resilience and sustainability of cities. However, the implementation of sponge cities requires the joint efforts of the government, enterprises and residents, and requires scientific planning and management. In practice, it is necessary to take into account the natural conditions and socio-economic conditions of different regions to develop local sponge city schemes.

2.2. Social Network Analysis

Social network analysis is a method of studying interpersonal relationships, organizations, and social structures. It is primarily concerned with the relationships between individuals (people or organizations) and how these relationships affect aspects of information dissemination, resource control, and decision-making. The social network analysis method builds a network diagram by collecting the information transmission relationship of stakeholders in the project, and then quantifies the influence of the status of each participant and their strategic behavior on the network structure and function [3]. Previously, many scholars have studied the influence of different strategy choices of stakeholders in sponge city construction on the structural characteristics of relationship networks based on the method of social network analysis, but most of the research objects are participants in the center of the network, but there are few studies on public participation and residents' satisfaction. Therefore, this paper constructs an evaluation index system based on the concept of sponge city, and uses social network analysis method to evaluate residents' satisfaction, hoping to provide reference for promoting the sustainable development of sponge transformation of old residential areas in China.

3. Construction of Evaluation Index System of Satisfaction of Residents in Old Residential Areas

China's sponge city construction does not pay enough attention to public participation, which will affect the residents' understanding of it. Based on the social network analysis method, to evaluate the satisfaction of residents in the reconstruction of old residential areas, it is necessary to first sort out the factors affecting the satisfaction of residents, determine the research evaluation index according to the existing literature, analyze the index weight according to specific cases, comprehensively evaluate the satisfaction of

residents, and finally put forward rectification measures and suggestions.

In order to construct an effective index system for the satisfaction evaluation of residents in the reconstruction of old residential areas, the evaluation index system of residents' benefit, reconstruction effect and facility construction and maintenance is selected by comprehensively referring to the research results of the academic circle, so as to truly reflect the demands of residents.

Figure 1. Evaluation index system of residents' satisfaction

4. Case Study on the Evaluation of Satisfaction Degree of Residents in the Reconstruction of Old Residential Area

In order to understand the effect of the reconstruction, it is very important to carry out field investigation on the typical old residential area. In order to thoroughly implement the relevant decision-making and deployment of the Party Central Committee and implement the basic point of letting the people live in peace, Bengbu City began to transform the old urban communities from 2016. The old residential area of Longhu 1, 2 and 3 villages in Bengbu City officially started the renovation project in September 2022. Before the start of construction, the relevant departments and community personnel carried out on-site research in Longhu Village 1, 2 and 3, listened to the voices of the people, and made the transformation "ask the people what they need"; At the same time, the planning of road, drainage and pipeline in the community is carried out by field investigation, which greatly increases the toughness of the old community.

In order to make the result more real, the method of field questionnaire survey was used to determine the proportion of each index. The questionnaire survey includes residents' understanding of the situation and problems of the old community, residents' willingness and ability to participate, the impact and evaluation of the renovation work, and opinions and suggestions on the renovation plan. Through the survey of the above contents, the needs and opinions of residents can be fully understood.

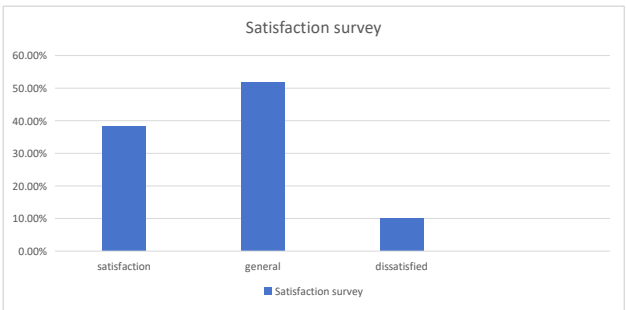

Figure 2. Whether residents are satisfied with the greening, environment and public space utilization of the old residential area

According to the survey, whether the greening, environment and public area space utilization of the old community are satisfactory, more than 35% of the population is satisfied, more than 50% is general, and the rest of the population is dissatisfied.

5. Conclusion and Suggestion

Through the above case analysis, the satisfaction analysis of residents in the sponge transformation of old residential areas shows that residents are still dissatisfied with infrastructure, greening and natural environment, waterlogging and cost resource constraints. Through the rational use of science and technology and social resources, strengthening publicity and training, and promoting residents' participation, the spongy transformation of old residential areas can be gradually improved, and the sustainable development of sponge cities can be achieved.

The sponge transformation of the old residential area is an important environmental protection project, which aims to improve the flood resistance ability of the city, improve the water environment and enhance the quality of life of the residents. This paper mainly draws the following conclusions: (1) The factors affecting the satisfaction of residents in the reconstruction of old residential areas are mainly the benefits of residents, the reconstruction effect, and the construction and maintenance of facilities; (2) Based on the perspective of residents, the satisfaction of residents in the renovation of old residential areas in Bengbu City is obtained, and 10% of residents are still dissatisfied.

In view of the above conclusions, the following suggestions are put forward:

(1) Community involvement. Encourage community residents to participate in the sponge transformation, establish a community volunteer service team, guided and managed by professional personnel, and jointly participate in the sponge transformation work of the community. At the same time, the establishment of community feedback mechanism, timely collection of residents' opinions and suggestions, and constantly improve the renovation plan.

(2) Policy support. Strengthen policy support, encourage and guide enterprises, social groups and individuals to participate in the sponge transformation. Through the introduction of relevant policies and incentives, more people will be guided to participate in the sponge transformation and promote the sustainable development of the city.

(3) Supervision and management. Strengthen the supervision and management of the sponge transformation, establish a sound supervision mechanism to ensure the quality and effect of the transformation work. At the same time, strengthen the technical guidance and training of sponge transformation, and improve the technical level and service quality of relevant personnel.

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