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Research and Analysis of Urban Renewal and Renovation Strategy under the Concept of "Urban Acupuncture"

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Abstract: In this paper, the strategy of urban renovation and renewal under the concept of "urban acupuncture" is deeply analyzed, and the new methods to deal with the problems of urban decline and functional imbalance in the development of modern cities are discussed. By comparing the traditional methods of large-scale urban renewal with the micro-intervention strategies of "urban acupuncture", this study finds out the shortcomings of traditional methods in terms of society, culture and environment, and also emphasizes the importance of refinement, participation and sustainability in urban renewal. In the experimental stage, this paper puts forward a series of experiments to deeply explore the urban renewal projects that adopt the "urban acupuncture" strategy. Through the experimental evaluation of "urban acupuncture" renewal strategy in different fields, this paper shows its positive influence in many aspects of urban old reform. In the evaluation experiment of residents' satisfaction, the satisfaction of living environment increased from 2.8 to 4.2, the satisfaction of infrastructure increased from 3.0 to 4.5, the satisfaction of public service increased from 3.1 to 4.3, and the vitality of community increased from 2.5 to 4.0. In the evaluation of community vitality index in experiment 2, community participation increased from 60 points to 85 points, the frequency of public space use increased from 50 points to 75 points, and the number of community activities increased from 30 to 60 points. In the ecological benefit assessment experiment, the green coverage rate increased from 30% to 45%, the air quality index decreased from 120 to 80, and the rainwater recycling rate increased from 20% to 35%. From the above experimental data, it can be seen that the renewal strategy of "urban acupuncture" has improved the quality of life of residents, enhanced the vitality of the community, enhanced the urban ecological environment and promoted economic development, and has significant benefits, but there is still room for improvement in cost-effectiveness.

1. Introduction

With the acceleration of urbanization, people begin to deeply reflect on the negative impact of traditional large-scale development mode on society, culture and environment. In this context, a new urban renewal strategy known as "urban acupuncture" has emerged. Compared with traditional

development, "urban acupuncture" takes a micro-intervention and high-efficiency way to improve urban space, activate community vitality, improve residents' quality of life through fine, point-to-point small-scale intervention, and pay attention to the protection and improvement of ecological environment. The purpose of this paper is to explore the practical application of the concept of "urban acupuncture" in urban old transformation and renewal, and to provide new ideas and methods for urban sustainable development.

The purpose of this study is to evaluate the effectiveness of "urban acupuncture" as a renewal strategy through various experiments. It delves into how these research strategies increase resident satisfaction, enhance community vitality, and improve the ecological environment of the city. It is found that "urban acupuncture" can not only protect the history and culture of the city, but also promote economic development and effectively solve the problems of urban decline and functional imbalance. However, it is also found that the implementation process may face economic challenges, and these findings provide an important reference for future strategy optimization and practice improvement.

Firstly, the paper briefly introduces the background of the study and the theoretical basis of the renewal strategy of "urban acupuncture". Then in the experimental stage, the paper uses the evaluation of residents' satisfaction, the measurement of community vitality index and the analysis of ecological benefits to analyze the implementation effect of this strategy in detail. In the discussion section, the application value of "urban acupuncture" in urban renewal and the challenges it faces are discussed in depth. In the last part, the research results are summarized, and the future research direction is prospected.

2. Related Works

In recent years, many scholars and urban planners have begun to seek more humane and sustainable methods of urban renewal. In this context, the concept of "urban acupuncture" came into being, which emphasizes small-scale, precise interventions in specific areas of the city to promote organic renewal and natural growth of the entire area. For example, from the perspective of "urban acupuncture", Jin Ying proposed a series of small-scale and small-scale vitality regeneration strategies to solve the problem of insufficient vitality of historical and cultural districts in Changchun's commercial port. She hoped that through the implementation of these strategies, a new development path could be explored to change the current situation of the low vitality of historical and cultural blocks [1]. Taking Yulin Community in Chengdu as an example, Yang Xinyu introduced the theory of "urban acupuncture". She screened the space that could be transformed in the community, and put forward the transformation strategy of community micro-renewal from three aspects of street network, aging facilities and space activation for existing problems. These strategies can provide useful references for reactivating community vitality [2]. Liu Linding took Zhuzhou Car Factory tea garden community as a case study, combining landscape ternary theory and urban acupuncture theory. He selected three important nodal spaces in the community, and proposed strategies and countermeasures for landscape micro-renewal from the aspects of landscape environmental image, environmental ecological greening and public behavioral psychology. These strategies aim to provide experience and new ideas for landscape transformation of residential areas [3]. Based on the concept of "urban acupuncture and moxibustion", Zhang Renmei et al. analyzed the current situation and conducted an in-depth discussion on the existing problems. They used the method of action observation and questionnaire survey to understand the frequency of residents' behavior and activities and their satisfaction with community functions. Eventually, they identified acupuncture sites that needed to be micro-updated [4]. Taking the public space renewal of Yinghua Community in Beijing as an example, Bai Chunxue studied the application of "urban acupuncture"

theory in public space renewal, and put forward corresponding design strategies. She finally proposed a new way of thinking, aiming to add vitality to the community and build a harmonious community [5]. The above research shows that this method has significant advantages in improving the quality of urban space, activating community life and protecting historical context. However, the current research on the strategy of "urban acupuncture" still has many shortcomings, such as the specific scope of application of the method, the establishment of residents' participation mechanism and the evaluation of the effect need to be further discussed.

In order to make up for the shortcomings of existing studies, this paper will refer to successful cases, combined with urban planning theory and sociological principles, in-depth analysis of the implementation process and effectiveness of "urban acupuncture" strategy. Past studies, while attempting different approaches to similar problems, have often ignored the active participation of community residents and respect for the existing urban fabric. This study argues that urban renewal can be implemented more effectively by enhancing community participation, preserving cultural heritage, and incorporating Eco design principles to achieve sustainable development in the true sense of the word.

3. Methods

3.1 Construction of Community Participation Mechanism

When it comes to updating the "urban acupuncture and moxibustion" strategy, it is very important to develop a community participation mechanism with good performance. This not only enhances the acceptability and implementation effectiveness of the project, but also brings community members closer together, promoting their interaction and cohesion. This article provides a detailed study on how to establish a community participation mechanism to ensure that all community members can actively participate in the process of urban renewal and work together to create their own living environment [6-7].

Firstly, it is necessary to regularly organize community meetings and workshops, allowing everyone to share their ideas. Such activities allow project planners and community residents to discuss the goals, design, and effectiveness of the project together, ensuring that the plan fully takes into account the needs and expectations of the community. This not only makes it easier for community residents to accept the project, but also provides researchers with valuable local experience and insights. Secondly, in order to further encourage everyone to participate, a community volunteer group can be established to motivate everyone and personally participate in the implementation of the project. Under the guidance of project planners, these volunteers can participate in various practical activities, such as environmental beautification and public space renovation, in order to promote community development and make more efforts. Such participation not only makes community residents feel closer, but also promotes cooperation and communication within the community [8-9].

The community participation mechanism established through these measures not only provides a solid foundation for the successful implementation of the "urban acupuncture and moxibustion" renewal strategy, but also injects new vitality into the sustainable development of the community. This way of community participation treats community residents as very important things, not only emphasizing their importance in urban renewal, but also promoting democratic decision-making and cohesion within the community. In this way, urban renewal projects can bring broader and more profound social impacts.

3.2 Historical Context Protection Measures

In this study, measures for the protection of historical context were studied in detail. Firstly, this article believes that the key to protecting historical context lies in conducting a comprehensive survey of historical and cultural resources in urban areas. This work covers the identification of buildings, neighbourhoods and landscapes of historical, cultural and artistic value, as well as those intangible cultural heritage that are closely linked to the city's history and community identity. By establishing detailed archives of historical resources, we can understand the role of these elements in the history of urban development, and provide a solid foundation for subsequent conservation planning and activities [10-11].

This article proposes a series of specific protection measures based on the survey results. For example, for buildings and neighborhoods with significant historical value, we have taken some measures to protect them. We plan to restore and maintain the original architectural style, and restrict new buildings and renovation activities that do not conform to the historical style. In addition, we also plan to establish historical education centers and museums to help the public better understand the value of these historical heritage sites. Intangible cultural heritage can be inherited and revitalized through cultural activities, skills training and community participation projects.

At the end of this study, a multi-stakeholder management mechanism is established to ensure the effectiveness and sustainability of historical context conservation. This management mechanism includes the extensive participation of government departments, professional bodies, community organizations and the public. This multi-party management system ensures that historical heritage conservation work can adapt to changes in the times while maintaining its original value and significance through regular evaluation and updating of conservation plans. By implementing comprehensive protection measures, not only the historical and cultural heritage of the city is protected and inherited, but also the vitality and economic development of the community are promoted, indirectly achieving a harmonious coexistence between history and modernity, as well as protection and development. This process emphasizes the importance of protecting historical context in urban renewal, providing valuable experience and inspiration for future urban development.

4. Results and Discussion

4.1 Resident Satisfaction Evaluation Experiment

The residents' satisfaction evaluation experiment evaluated the changes of residents' satisfaction before and after the implementation of the renewal strategy of "urban acupuncture and moxibustion". In the experiment, satisfaction ratings were compared in terms of living environment, infrastructure, public services, and community vitality before and after project implementation. To this end, a questionnaire survey was specially adopted to collect feedback from 100 residents. Through analyzing the feedback data collected, the effect of "urban acupuncture" concept on improving the quality of life of residents in old urban areas and the overall vitality of the community was quantified. In the current experiment, there is a calculation of the comprehensive index of resident satisfaction, which takes into account the satisfaction of different dimensions such as living environment, infrastructure, public service and community vitality to obtain an overall satisfaction score. The details are shown in formula (1):

$$S_A = \frac{\sum_{i=1}^{n} w_i \times S_i}{\sum_{i=1}^{n} w_i} \tag{1}$$

In formula (1), S_A is used to represent the overall satisfaction index, S_i is used to represent the satisfaction score of the i dimension, w_i is used to represent the weight of the i dimension, and the total number of dimensions is represented by n.

As can be seen from Figure 1, after the implementation of the "urban acupuncture" update strategy, the average score of living environment satisfaction increased from 2.8 to 4.2 before the implementation. Infrastructure satisfaction increased from 3.0 to 4.5. Public service satisfaction increased from 3.1 to 4.3. Satisfaction with community vitality also increased from 2.5 to 4.0. The above data show that the application of the concept of "urban acupuncture" not only improves residents' satisfaction with the living environment, but also promotes the improvement of community infrastructure and public services. The specific data is shown in Figure 1:

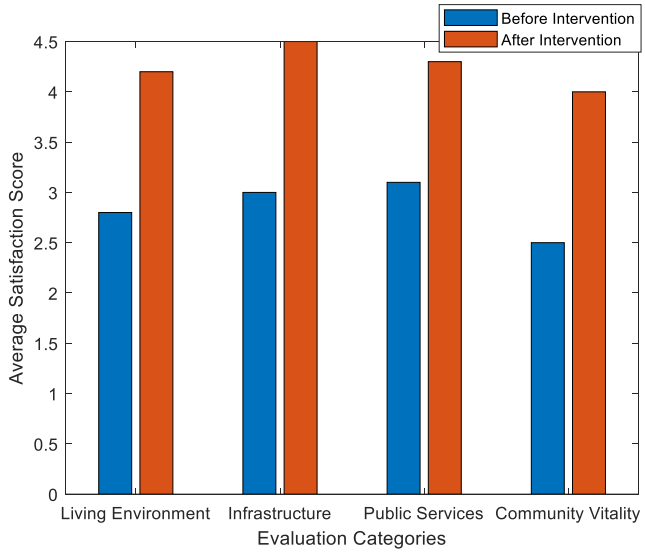

Figure 1: Satisfaction assessment

4.2 Community Vitality Index Measurement and Analysis

The purpose of the community vitality index experiment was to evaluate the effect of the renewal strategy of urban acupuncture on community vitality. This study collected data to evaluate the effectiveness of renewal strategies, focusing on three indicators: community engagement, frequency of public space use, and number of community activities. We used questionnaire survey and community observation to collect data before and after the experiment to quantify the impact of the strategy. In the current experiment, the community vitality index combines the indicators of community participation, the frequency of public space use and the number of community activities to calculate a comprehensive community vitality index. The details are shown in formula (2):

$$V = \alpha \times P + \beta \times U + \gamma \times A \tag{2}$$

In formula (2), V represents the community vitality index, P represents community participation, the use frequency of public space is U in the formula, the number of community activities is A, and α, β, γ represent the weight coefficient of corresponding indicators respectively in the formula. The specific comparison is shown in Figure 2:

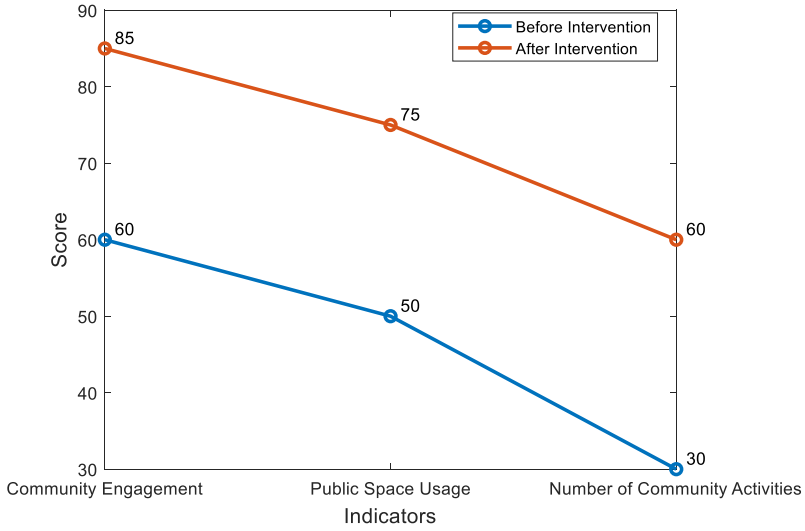

Figure 2: Community vitality Index measurement

As can be seen from Figure 2, after the implementation of the "urban acupuncture" update strategy, community participation increased from 60 points before the implementation of the project to 85 points, the frequency of public space use increased from 50 points to 75 points, and the number of community activities also increased from 30 to 60 points. From the above data conclusions, it can be seen that the application of the concept of "urban acupuncture" effectively promotes the enthusiasm of community members and enhances the use of public space and the richness of community activities, thus significantly improving the overall vitality and cohesion of the community.

4.3 Ecological Benefit Analysis

In the ecological benefit analysis experiment, the purpose of the experiment is to analyze the impact of the renewal strategy of "urban acupuncture" on the urban ecological environment. Three key indicators, namely green coverage rate, Air Quality index (AQI) and rainwater recycling rate, were emphasized in the experiment. By recording these data, this experiment will draw these data into data charts, in order to be able to intuitively compare the specific value changes of these indicators. The cost-benefit analysis can help to evaluate the economic efficiency of the project, and the specific form can be shown in formula (3):

$$\mathrm{CER} = \frac{E_A}{C_A} \tag{3}$$

In formula (3), CER represents the cost-benefit ratio, the total economic benefit is E_A, which includes direct and indirect benefits, and then the total cost of the project is C_A in the formula.

As can be seen from Figure 3, after the implementation of the "urban acupuncture" renewal strategy, the green coverage rate increased from 30% before the renewal to 45%, an increase of 50%. The air quality index dropped from 120 to 80, a 25% improvement. In addition, rainwater recycling increased from 20% to 35%, an increase of 75%. These data conclusions can fully prove the effectiveness of the concept of "urban acupuncture" in improving the urban ecological environment. The specific display is shown in Figure 3:

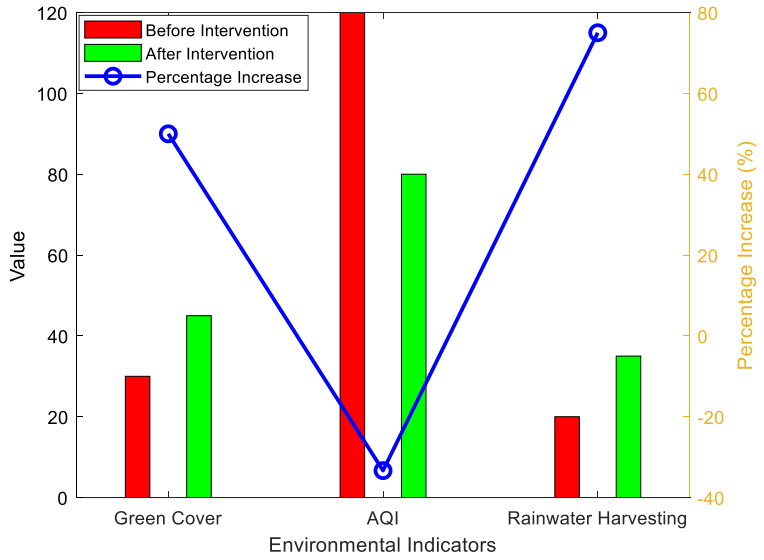

Figure 3: Ecological benefit analysis

4.4 Economic Benefit and Cost-Benefit Analysis

In the economic benefit and cost-benefit analysis, some data were recorded and data tables were generated in order to evaluate the impact of the "urban acupuncture" renewal strategy on the urban economy. The current table compares changes in key economic indicators such as real estate values, business revenue, job opportunities, tourism revenue before and after implementation. The aim is to visually demonstrate the economic benefits of the research strategy. In addition, the table also includes the implementation costs and total economic benefits of the project, as well as the cost-benefit ratio calculated based on these data. Through these collected data, we can clearly understand the positive contribution of the "urban acupuncture" strategy to the economic vitality and sustainable development of the city. Detailed data are shown in Table 1:

Table 1: Economic benefit and cost-benefit analysis

Index	Before Intervention	After Intervention
Real Estate Value ($)	1000000	1200000
Business Income ($)	200000	250000
Employment Opportunities	100	150
Tourism Revenue ($)	50000	80000
Implementation Cost ($)	0	300000
Total Economic Benefit ($)	280000	280000
Cost-Benefit Ratio	-	0.9300

As can be seen from Table 1, after the implementation of the "urban acupuncture" update strategy, the urban economy has significantly improved. Real estate values increased by 20%, business revenue increased by 25%, job opportunities increased by 50, and tourism revenue increased by 60%. But it actually cost $300,000 to implement this strategy, resulting in a cost-benefit ratio of 0.93, less than 1. There is no cost input before the project is implemented, so the cost-benefit ratio cannot be calculated. These data conclusions suggest that while research projects have made some progress in promoting the economic vitality and attractiveness of cities, the cost-effectiveness needs to be improved.

5. Conclusion

In this study, the strategy of urban redevelopment and renewal is discussed in depth. In the experimental stage, a variety of experimental methods are adopted, such as the evaluation of residents' satisfaction, the measurement of community vitality index and the analysis of ecological benefits. After conducting experiments, we found that the research strategy we adopted really helped to improve the quality of life of residents, make communities more dynamic, and improve the ecological environment of cities. However, through cost-benefit analysis, we found that there were still some areas that needed improvement in controlling costs, such as optimizing the cost-benefit ratio if it was lower than expected. Although we have achieved some results in urban renewal, there are also some limitations, such as a more in-depth and extensive cost-benefit analysis. In the future, we need to use more dimensional methods to evaluate, such as looking at the psychosocial impact and tracking long-term economic benefits, so as to more comprehensively evaluate the effect of the "urban acupuncture and moxibustion" strategy. At the same time, we need to continue researching methods for cost control and efficiency improvement in order to ensure the sustainable development of urban renewal projects in terms of society, environment, and economy.

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