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Research on Sustainable Spatial Governance in Rural Revitalization: A Case Study of the Most Beautiful Courtyard Design Competition and Renovation Practices in Fujian Province

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Abstract: As a pivotal component of rural revitalization, effective management of rural courtyard spaces is crucial for improving environmental quality and economic development. Utilizing the 2023 "Most Beautiful Courtyard" design competition in Guangze County as a backdrop, this study investigates the specific circumstances and practical challenges encountered during the courtyard transformation process. Based on a comprehensive literature review, this research establishes a unified indicator evaluation system; investigates the perspectives of villagers, designers, and managers; and conducts an in-depth analysis of the challenges faced in rural courtyard transformation practice. The goal is to offer substantial reference points for policy formulation and practical implementation, alongside recommendations for effective courtyard transformation. At the construction management level, the government should develop detailed operational guidelines for rural courtyard transformation, closely monitor construction progress, manage funds scientifically, and ensure efficient communication among the three groups. At the localization level, villagers' daily production and life should be integrated with village cultural symbols, respecting and exploring localization factors. Adequate consideration of the ecological environment and climatic conditions is crucial to promoting the sustainable development of rural courtyards.

Keywords: rural revitalization; courtyard transformation; space governance; sustainable development; transformation challenges; localization

Citation: Meng, L.; Wu, J.; Liu, Q.; Xu, W. Research on Sustainable Spatial Governance in Rural Revitalization: A Case Study of the Most Beautiful Courtyard Design Competition and Renovation Practices in Fujian Province. *Buildings* **2024**, *14*, 2587. https://doi.org/10.3390/buildings14082587

Academic Editor: John Z Lin

Received: 19 July 2024
Revised: 18 August 2024
Accepted: 19 August 2024
Published: 22 August 2024

1. Introduction

The theme "Cities: Engine of Rural Development" [1] was highlighted on World Habitat Day. It underscored the importance of coordinated urban and rural human settlement development. The report specifically emphasized the need for China to advance research on rural human settlements. China's rural areas have long underpinned the nation's rapid industrialization and urbanization [2]. Currently, China has entered a phase where cities actively support rural areas. The country is now pursuing a novel path of urbanization focused on coordinated urban–rural development [3]. After Wen Tiejun articulated the three rural issues, a series of policies aimed at repaying the countryside were introduced, aligning with the five-year plans, including Building a Socialist Countryside, Beautiful Village, and the Rural Revitalization Strategic Plan 2018–2022 [2,4–10]. Rural revitalization has emerged as a pivotal national strategy to foster rural development in China's new era. Indeed, to stimulate rural development, the European Union initiated the LEADER approach over 30 years ago [11], while India introduced the National Rurban Mission (NRuM) [12]. The coordination of rural development has consistently garnered significant scholarly attention, with rural development policies in Japan [13], Germany [14], and the United States [15] attracting substantial research interest. As urbanization advances, an increasing number of countries and regions are focusing on the development of urban–rural integration. Rural tourism serves as a vital conduit for advancing rural

development, agricultural transformation, and farmers' wealth creation and as a crucial avenue for driving rural revitalization. As spaces for both production and living, rural courtyards are integral to villagers' spatial happiness and the sustainable development of the countryside. They are also among the first rural spaces encountered by tourists, making them significant in showcasing local culture and the rural image. In the context of China's comprehensive modernization, the optimization of rural courtyards is pivotal in creating picturesque countryside and realizing rural revitalization [16]. Research on rural courtyard transformation, which preserves environmental sustainability while perpetuating local culture, has consistently been a focus of academic interest.

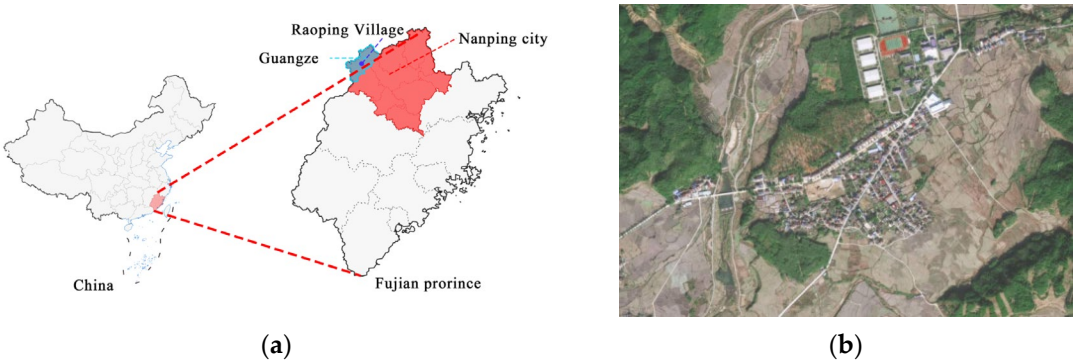
Courtyard research boasts a long history, emphasizing the integration of natural resources and the utilization of geographical advantages [17]. American residential courtyards emphasize nature, energy, and vitality and strive for harmony with human activities [18]. French residential courtyards feature a meticulous regular layout complemented by a rich variety of plantings [19]. Greek courtyard design applies Maslow's hierarchy of needs theory to foster emotional resonance between residents and their courtyards [20]. South Korean courtyard design advocates harmonious coexistence with nature, predominantly adopting open spaces to pursue natural beauty [21]. Japanese residential courtyards embody the Zen principles of the "ethereal" and "mysterious", emphasizing spiritual connotations [22].

Traditional courtyards highlight regional cultural characteristics and spiritual significance. Current research on rural courtyards predominantly focuses on traditional courtyard space, modern courtyard landscaping, and economic aspects of rural courtyards. In existing research on traditional courtyard spaces, Zhao has detailed the combination court style, limited court style, and blend court style [23]. Li et al. have examined the courtyard spaces of traditional residential houses in terms of cultural background, regional characteristics, spatial system, and function [24]. Mohammad et al. have explored the combination forms of Islamic traditional courtyard spaces in hot climates [25]. In the domain of modern courtyard landscaping, Lu et al. have summarized four typical rural courtyard greening models, natural greening type, garden sketch type, economic forest fruit type, and sunshine field type, and conducted ecological environment effect analyses and comprehensive benefit evaluations [26]. Zhu et al. have proposed strategies and recommendations for the plant configuration model of new rural courtyards in the Yangtze River Delta region [27]. Wu has elaborated on greening methods for different spatial units such as the front and rear courtyards, left and right courtyards, courtyard peripheries, and roofs [28]. Kerimova et al. have explored the emotional impacts of green plants on courtyard residents [29]. In the realm of rural courtyard economy, Cui has analyzed the characteristics of the "courtyard economy" tailored to local conditions, proposed a model adaptable to local development, created various forms of land transfer, and enhanced the utilization rate of rural land [30]. Kang has proposed strategies such as integrating production, courtyards, and scenery to achieve high-quality development of the new courtyard economy, thereby promoting rural revitalization [31]. Rabeya has proposed a renewal design strategy for rural courtyards in Seoul, focusing on community revitalization [32]. However, studies on the resistance encountered in the practice of rural courtyard transformation are relatively scarce.

Currently, the transformation of rural courtyards under China's rural revitalization policy is confronted with challenges, including a superficial pursuit of form, significant homogenization, and insufficient consideration of local characteristics. Additionally, the absence of standardized guiding principles, well-defined construction processes, and effective management measures in the construction and renovation phases hinders the assurance of successful rural courtyard transformations. Research on the transformation of rural courtyards constitutes a vital component of advancing rural transformation. Preserving rural characteristics while progressively advancing courtyard transformations has emerged as a focal point of research.

2. Materials and Methods

In recent years, Guangze County, located in Fujian Province, China, has actively engaged in integrating itself into the development corridor surrounding Mount Wuyi National Park to facilitate the creation of aesthetically pleasing villages. This initiative encompasses a comprehensive renovation of the village environment, enhanced greening of both villages and courtyards, and a systematic transformation of rural housing styles. Currently, Guangze County is endeavoring to leverage its resource advantages to gain developmental benefits and to cultivate a rural tourism brand with distinctive regional characteristics in Raoping Village (Figure 1).



(**a**) (**b**)

Figure 1. Location analysis of Raoping Village (image source: created by the authors). (**a**) Location of Raoping Village, Nanping City, Fujian Province. (**b**) Satellite map of Raoping Village.

2.1. Research Subjects

This study centers on the early [33], middle [34], and later stages [35] of the 2023 "Most Beautiful Courtyard" design competition in Raoping Village, Fujian Province, with a focus on 33 completed entries and the practical challenges faced during the construction process. The outcomes of this competition and renovation have been extensively covered by the Nanping Municipal Government [36] and media outlets like Minbei Daily [37]. These efforts represent a significant practice in advancing rural revitalization. The entries were developed by designers from Chinese universities and design firms, offering valuable insights into contemporary perspectives on courtyard decoration within the design profession and academic settings. Through a comprehensive analysis of these 33 entries, this research examines the challenges associated with practical construction management and local design practices, aiming to offer insights into rural courtyard renovation design and to support the sustainable development of rural construction.

2.2. Research Method

Optimizing rural courtyards is a critical aspect of rural revitalization, significantly contributing to the improvement of the rural environment and fostering the advancement of the rural economy. In light of the challenges faced during the rural courtyard transformation in Raoping Village, including issues related to construction management, scheme coordination and communication, and the localization of rural courtyards, this study investigates resistance to rural renovation through on-site investigations, questionnaire surveys, indicator extraction, and analysis. Firstly, the study involves selecting cases from the "Most Beautiful Courtyard" competition for detailed analysis to examine specific situations and challenges encountered during the transformation process. Secondly, we used questionnaires based on actual construction scenarios to identify sources of resistance. We collected feedback from rural residents, village leaders, project managers, and other relevant stakeholders to evaluate the rural courtyard transformation. The questionnaire primarily employs a 5-point Likert scale to assess satisfaction, with the resulting data weighted using the AHP method. Following this, the reliability and validity of the collected data are rigorously analyzed to ensure the accuracy of the study's conclusions. Then, this

study analyzes the courtyard transformation in Raoping Village to assess the impact of localization indicators on construction schemes. Finally, the multi-dimensional scoring results, along with the actual case conditions, are utilized to analyze the resistance encountered during rural courtyard transformation, leading to the formulation of conclusions. The study framework is illustrated in the figure below (Figure 2).

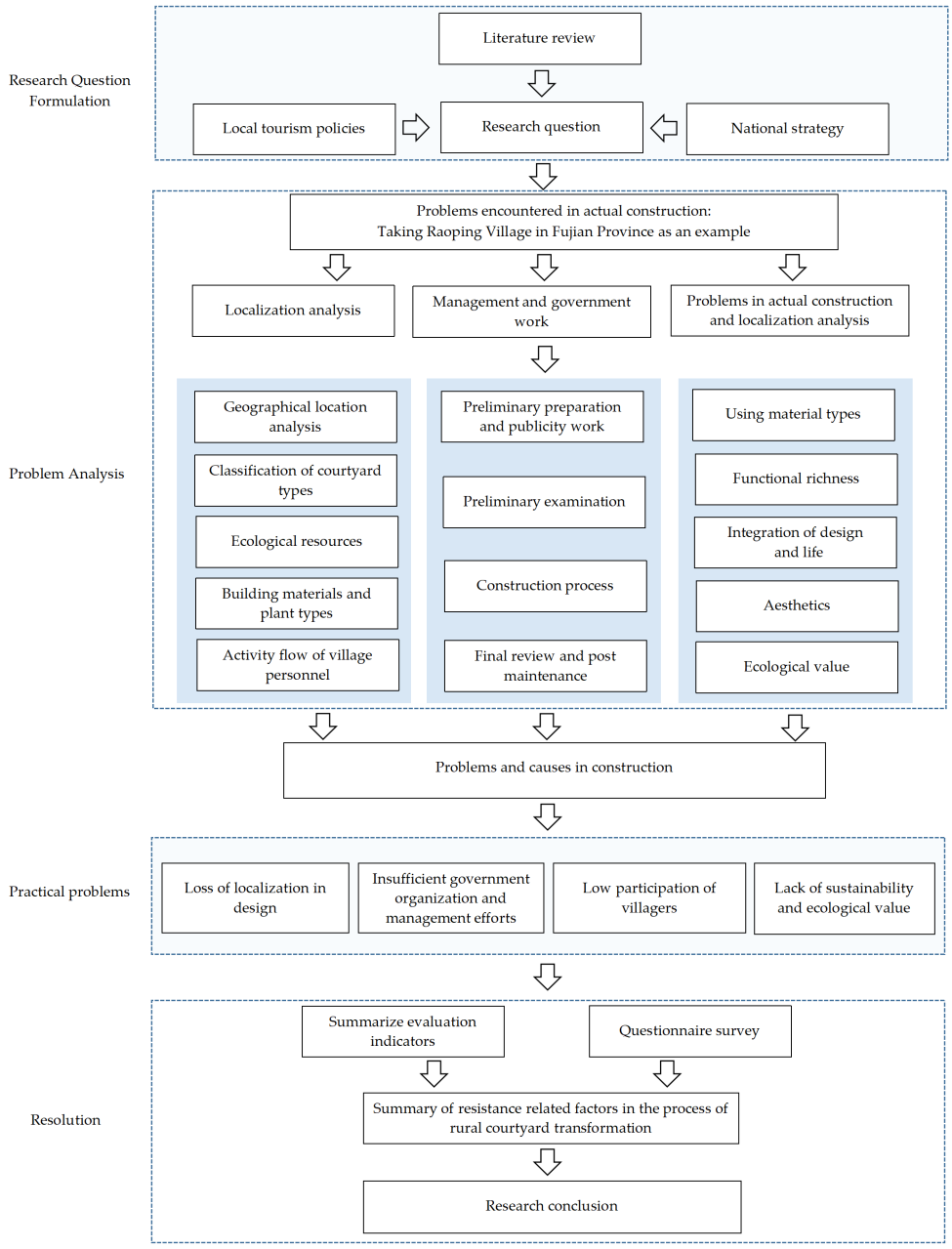


Figure 2. Research framework of courtyard transformation (image source: created by the authors).

3. Practice Analysis of the Courtyard Transformation Competition

3.1. Overview of the Competition and the Courtyards

The 2023 "Most Beautiful Courtyard" competition, supported by the county government and the School of Architecture and Civil Engineering at Xiamen University [38], introduced modern design concepts into rural revitalization efforts. This initiative aimed to optimize public spaces, enhance the quality of village living environments, meet the daily needs of villagers, provide tourist attractions in Guangze County, and develop functional, economical, and aesthetically pleasing courtyard constructions. Nearly 100 universities

from across the nation participated in the competition. During the preliminary stage, 50 teams were selected, 33 teams advanced to the actual construction phase, and awards were subsequently given based on their performance (Figure 3).

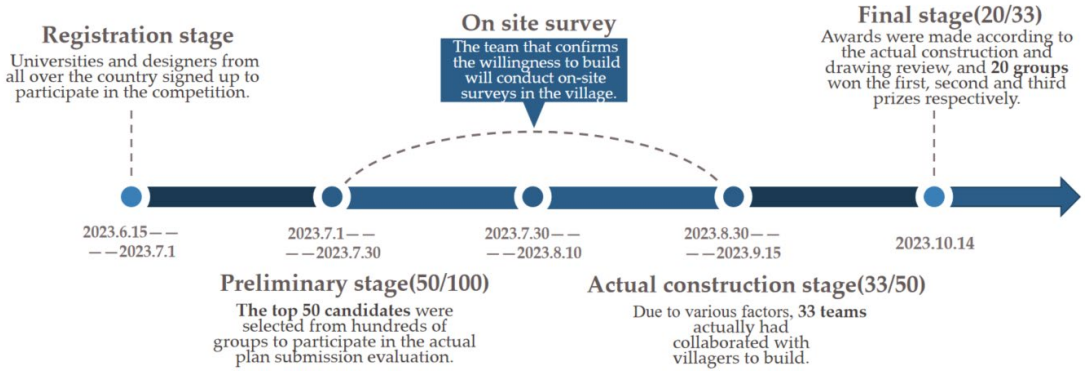


Figure 3. Flow chart of the "Most Beautiful Courtyard" competition (image source: created by the authors).

The site, located in Raoping Village, Guangze County, Fujian Province (Figure 4a), comprises a total of 50 courtyards arranged along both sides of the road (Figure 4b). Following registration, each team conducted a lottery to determine which courtyards they would transform. The courtyards are shaped according to the road and house configurations (Table 1), with most being individual forms, while some are joint forms, irregular forms, or dual forms. Currently, the materials used for the courtyard walls predominantly include rough stones, pebbles, and bricks, while the flooring is primarily concrete. The courtyard space serves multiple functions for villagers, including drying crops, processing grain, and small-scale planting.

(**a**) (**b**)

Figure 4. Appearance map of Raoping Village (image source: created or taken by the authors). (**a**) Overlooking view of Raoping Village. (**b**) Distribution map of courtyards to be transformed.

Guangze County prioritizes high-quality "beautiful countryside" construction, adhering to an ecological and green development path and comprehensively promoting high-quality development with tangible results [39]. The primary issues in the courtyards before transformation included disorganized zoning, lack of functionality, hidden security risks, insufficient greening, and unclear stylistic identity (Table 2). Against the backdrop of rural contraction, there is a noticeable decline in the vitality of rural public spaces and the deterioration of architectural spaces [40]. Currently, the courtyard spaces in Raoping Village are inadequate for modern life needs, such as parking motor vehicles and providing playgrounds for children. Additionally, the original courtyards lack interactive and private functional spaces, such as areas for neighborhood interaction, dining, tea breaks, and

drying crops. Field investigations revealed that many courtyards have unstable drying supports, haphazard layouts of wires and pipes, and damaged courtyard wall structures, necessitating transformation. Courtyard greening is limited, with few planting areas and landscape plants that have not formed a cohesive system, and the courtyards lack a clear stylistic identity.

Table 1. Number and characteristics of courtyards to be transformed.

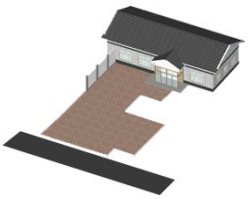
Type	 Individual form	 Joint form	 Irregular form	 Dual form
Characteristic	The individual courtyard offers flexible construction conditions, making it easy to manage the overall style.	The joint courtyards need to carefully consider neighborhood connections and maintain a cohesive overall style.	The courtyard's irregular shape necessitates careful coordination with the site to achieve effective functional zoning.	The dual courtyard necessitates careful consideration of the spatial relationship between the front and rear sections.
Number	20	4	4	5

Table 2. Existing problems in the courtyard of Raoping Village.

Problem	**Chaos of Partitions**	**Lack of Function**	**Dangerous Structure**	**Insufficient Greening**	**Undefined Style**
Courtyard photo					

3.2. Management Problems in the Construction Stage

Through interviews with contestants, villagers, and village committee officials, the issues encountered during the construction stage were identified and summarized (Figure 5). During the preliminary stage, the government and related organizations failed to protect the existing conditions of the courtyard, resulting in villagers at No. 2 cutting down three ancient trees without approval (Figure 5a). Consequently, the designer had to alter the original plan, which negatively impacted the construction progress of the courtyard. Additionally, the accumulation of stone materials throughout the project at No. 26 has significantly impeded the construction progress at this site (Figure 5b). The government and relevant organizations, as the managing entities, should implement effective site management during the construction process to prevent the disorganized use and loss of building materials. Additionally, the absence of effective communication mechanisms during the construction stage constitutes a significant factor influencing the progress of construction. The designer of No. 16 dismantled the structure due to a lack of understanding of the villagers' needs (Figure 5c). Effective communication helps determine the villagers' actual needs, allows for prompt adjustments and improvements to projects, and prevents the escalation of hidden dangers or conflicts. The government and relevant organizations, as coordinators, should actively guide villagers to participate in the construction to ensure the design scheme meets their needs. This approach helps avoid conflicts and resource wastage, promoting the sustainable development of courtyard transformations.

(**a**) (**b**) (**c**) (**d**)

Figure 5. Management problems existing in the construction stage. (**a**) There is a notable lack of awareness regarding ecological protection. (**b**) The management of construction materials lacks standardization. (**c**) Communication and coordination with the villagers are insufficient. (**d**) Inefficient allocation of funds.

Significant differences exist in the area and construction difficulty of various courtyards, yet the allocated funds are uniformly CNY 30,000 (CNY 20,000 for building materials and CNY 10,000 for labor), leading to relatively unreasonable fund allocation. As shown in Figure 6, the budget difference between the No. 5 courtyard and the No. 29 courtyard is approximately CNY 105/m^2. This significant variation in cost per unit area directly leads to differences in the effectiveness of the transformations (Figure 5d). The actual cost of some courtyards is significantly lower than the financial budget. For instance, in the No. 20 courtyard, issues with construction materials and labor coordination resulted in a relatively low completion rate, reflecting non-standard construction management. The organizer stipulated that the transformation cost of each courtyard should not exceed CNY 30,000, otherwise the final score would be deducted accordingly. Consequently, the financial budget and the actual cost curve showed a good overall fit, but the limited renovation funds also restricted the scope of design ideas for each courtyard to some extent.

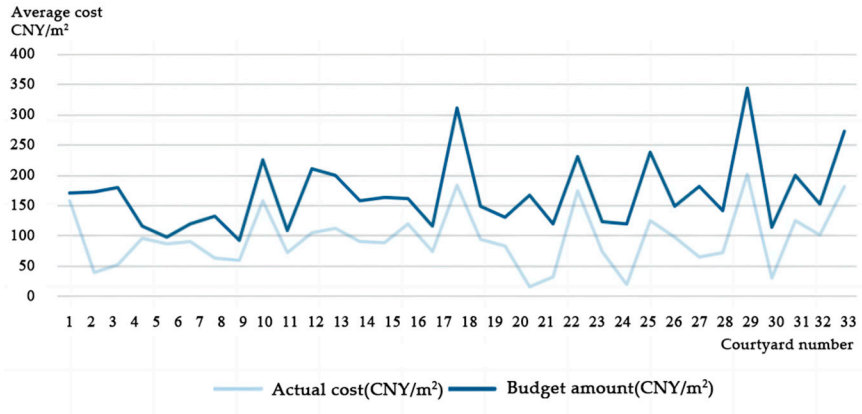


Figure 6. Comparison between the actual cost of courtyard construction and budget amount (image source: created by the authors).

3.3. Challenges Faced during the Scoring Process

Based on the preliminary stage score, voting stage score, and construction stage score (Figure 7), the experts made the final selection of 33 transformed courtyards. The preliminary stage score was based on the design drawings, while the construction stage score was based on the actual completion level and evaluations from expert judges. The voting stage score was collected via a WeChat mini-program and converted into a 100-point system. Due to the presence of vote manipulation, the voting score significantly deviates from reality and cannot objectively reflect the true situation of the schemes. For instance, in the No. 2 courtyard, the actual completion is entirely inconsistent with the voting results, showing serious discrepancies, whereas the No. 14 courtyard had a low voting score despite a high level of actual completion. Despite the vote manipulation, the alignment between

the preliminary and final scores of most schemes to some extent reflects the fairness and professionalism of the final evaluation mechanism.

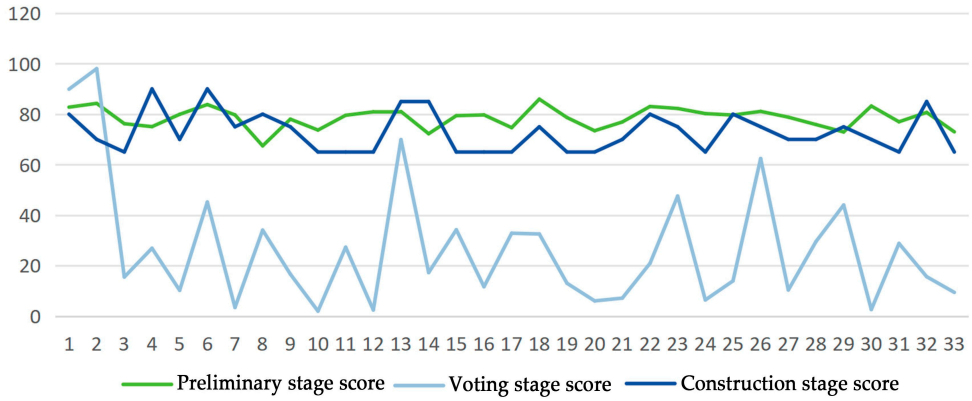


Figure 7. The score for each stage of the courtyard (image source: created by the authors).

4. Analysis of the Localization of the Scheme

4.1. Analysis of the Localization Problems in the Construction

In recent years, to cater to the demands of rural tourism economic development, the countryside has gradually lost its local cultural heritage [41]. To achieve high-quality and sustainable development of rural tourism, it is crucial to focus on the preservation and promotion of local culture [42]. Based on field investigations of 33 schemes and interviews with villagers, issues of inadequate localization are prevalent (Table 3). In the themes of the schemes, most do not fully consider the local production and lifestyle or the original ecological landscape. For instance, Courtyard No. 3 and Courtyard No. 4 introduced a Japanese "Zen" garden landscape theme, which starkly contrasts with the original style of Raoping Village. There are also numerous deficiencies in uncovering and integrating the cultural symbols of Raoping Village. For example, Courtyard No. 14 reduced the planting space along the courtyard wall, diminished the osmanthus tree landscape, and adopted a pure stone courtyard wall.

Table 3. Localization issues during the construction stage.

Problem	Description	Photos of the Related Scheme			Photos of the Original Situation
Inadequate integration of traditional elements.	The design scheme fails to align with the village aesthetic, instead introducing a modern style.				
		No.3 and No.4	No.9	No.38	Traditional rural courtyard style.
The planting spacing is suboptimal.	The failure to consider the daily planting needs of villagers results in a lack of rural landscape value in green spaces.				
		No.30	No.8	No.22	A tradition exists of cultivating plants on the courtyard wall.

Table 3. *Cont.*

Problem	Description	Photos of the Related Scheme			Photos of the Original Situation
The configuration of daily living spaces is not optimal.	The daily needs of the villagers are not adequately met.				
		No.39 and No.40	No.15	No.26 and No.27	Crop drying and parking space.
Absence of tailored design solutions.	The needs and individual preferences of diverse groups are inadequately addressed.				
		No.36	No.17	No.7	The space lacks adequate partitioning.
Absence of communication spaces facilitating interaction between visitors and villagers.	The available space for villagers to interact with neighbors and visitors is constrained.				
		No.12	No.14	No.31	Absence of adequate communication space.
The materials fail to account for local context and characteristics.	Insufficient utilization of local materials and construction techniques.				
		No.42	No.35	No.2	The courtyard walls have sustained partial damage.
Construction styles fail to account for localization.	The construction style does not align with the original rural aesthetic.				
		No.47	No.5 and No.6	No.11	Absence of aesthetic value.

4.2. Formulation of Localization Evaluation Indicators for Courtyard Transformation

Considering the specific local resources of Raoping Village, an evaluation index system was established, factoring in the scientific research and tourism value of courtyard spaces. The systematic analysis identified the key factors influencing the localization assessment of Raoping Village courtyards, including the integration degree of culture and tradition, sustainability and ecological value, villagers' daily production and life, personalized customization requirements, tourist attraction, materials and techniques, and aesthetic perception. Building on this foundation, and drawing from relevant scholars' research on courtyard renovation indicators [20–22], the 7 primary indicators were further subdivided into 17 secondary indicators (Table 4).

The development of the localization evaluation indicators emphasizes the following factors:

(1) The differences in perception of the same indicator among different interviewees. The same indicator is independently investigated according to three categories: courtyard owners, designers, and managers, with users playing a dominant role. This approach not only verifies and reflects the objectivity of the evaluation indicators but also accurately identifies existing design issues. Furthermore, the questionnaire, combined with interviews, is designed to accommodate the lower education levels of the elderly, ensuring both the villagers' engagement and the quality of their responses.

(2) Establish multiple indicators to reflect the participation of villagers in the construction process. By incorporating cultural symbols, daily production and life, personalized

needs, and other multi-dimensional indicators, the satisfaction of the primary users of the courtyards can be reflected.

(3) Develop indicators related to tourist attraction. By examining the interactive and aesthetic qualities of the courtyard space, it can be assessed whether the design effectively enhances tourism value and meets the organizer's goal of creating a rural tourism attraction.

Table 4. The indicators of evaluation on localization.

The integration degree of culture and tradition	Degree of adaptation of the style to the village's overall historical characteristics
	The extent to which there is integration with traditional residential architectural characteristics
	The extent of integration with local cultural elements
Sustainability and ecological value	Rationality of planting space
	Rural and aesthetic qualities of plant arrangement
Villagers' daily production and life	Comprehensiveness of the life scene spatial arrangement
	Connection with neighbor's courtyard
	Planning of agricultural space and other space
Personalized customization requirements	Correlation degree of the villagers' social relations
	The balance between privacy and openness
	Completion of the other specified requirements
Tourist attraction	Interactivity of space
	The recreational value of space
Materials and techniques	Environmental sustainability and local origin of the materials used
	Feasibility and refinement of design
Esthetic perception	The accuracy and presentation of the style
	Aesthetic experience and visual appeal

4.3. Developing Evaluation Models and Assigning Weighted Values to Indicators

The Analytic Hierarchy Process (AHP), developed by Thomas L. Saaty in the early 1970s, is a hierarchical decision-making method for determining weight assignments. AHP is particularly suited for multi-factor and multi-objective evaluation systems, enabling more rational decision-making in complex scenarios. As one of the most widely used and effective methods, AHP offers an accurate approach to quantifying the weights of decision criteria.

Through the construction of a pairwise judgment matrix, the relative importance of each indicator is determined, followed by a consistency test. In matrix $A = (a_{ij})$ where $i, j = 1, 2, \ldots, n$, each pair of factors is compared to judge their relative importance with values assigned to a_{ij} based on the 1–9 scale (Table 5).

The Analytic Hierarchy Process (AHP) was employed to compare the seven primary indicators individually, determining their relative importance and calculating their respective weight values (Table 6).

A consistency ratio (CR) of 0.089, less than the threshold of 0.1, was obtained through the consistency test on the matrix of these seven indicators, ensuring the credibility of the weighted criterion layer values. Similarly, AHP is applied to calculate the importance and weight of each indicator layer.

Table 5. Scale of rectangular proportion.

Scale	Qualitative Result	Quantitative Result
1	U_i and U_j are equally important.	U_i:U_j = 1:1
3	U_i is slightly more important than U_j.	U_i:U_j = 3:1
5	U_i is significantly more important than U_j.	U_i:U_j = 5:1
7	U_i is strongly important compared to U_j.	U_i:U_j = 7:1
9	U_i is extremely important compared to U_j.	U_i:U_j = 9:1
2, 4, 6, 8	Represents the middle value of the adjacent judgment above.	U_i:U_j = 2, 4, 6, 8:1
Reciprocal	If the importance ratio between U_i and U_j is denoted as a_{ij}, then the reciprocal relationship is expressed as $a_{ji} = 1/a_{ij}$.	U_i:U_j = 1:1, 2, . . ., 9

Table 6. The comparison result and weighted value of the first-level indicators.

	B_1	B_2	B_3	B_4	B_5	B_6	B_7	Weighted Value
B_1	1	2	1/3	1/3	1/2	2	2	0.1237
B_2	1/2	1	1/4	1/3	1	1	1	0.0771
B_3	3	4	1	2	4	4	4	0.3333
B_4	3	3	1/2	1	2	2	2	0.2045
B_5	2	1	1/4	1/2	1	1	2	0.1174
B_6	1/2	1	1/4	1/2	1/2	1	1	0.0720
B_7	1/2	1	1/4	1/2	1/2	1	1	0.0720

4.4. Source of Samples and Analyses of Reliability and Validity

To accurately reflect the impact of the courtyard transformation, interviews were conducted with villagers, village officials, designers, and construction workers in Raoping Village, Fujian Province during and after construction. A total of 73 questionnaires were collected, of which 68 were valid, including 33 from villagers, 8 from village officials, 17 from designers, and 10 from construction workers. All satisfaction measures were measured using a 5-point Likert scale in the questionnaire.

4.4.1. Reliability Analysis

The current paper utilized Cronbach's reliability coefficient (Cronbach) as presented in Table 7. The data indicate that the questionnaire's reliability coefficient was 0.779, surpassing 0.7 and approaching 0.8. Therefore, it can be inferred that the responses' consistency is relatively high, and the survey's reliability is deemed acceptable.

Table 7. Result of the reliability analysis.

Sample Size	Item	Cronbach
68	17	0.779

4.4.2. Validity Analysis

Both the Kaiser–Meyer–Olkin test and Bartlett's test of sphericity were employed to assess the construct validity in this study, as shown in Table 8. Ten samples were randomly chosen for data calculation, resulting in a KMO value of 0.654 in this study, indicating a strong correlation between the score of each question and the total score. Simultaneously,

the *p*-value of Bartlett's test of sphericity approached 0.000, falling below 0.005, signifying a desirable structural validity of the survey.

Table 8. Result of the validity analysis.

Parameter		Value
KMO		0.654
Bartlett's test of sphericity	χ^2	1031.054
	df	136
	p	0.000

4.5. Scoring of the Scheme and Summary of the Courtyard Transformation Problems

According to the seven aforementioned indicators, 33 courtyards were evaluated (Figure 8). In terms of esthetic perception, most schemes scored between 4.25 and 4.5, indicating a higher degree of recognition compared to other indicators. The high median score of 4.37 for materials and techniques indicates respondents' satisfaction with the materials and processes used in the transformation, while the scores are relatively concentrated, reflecting the prevalent use of local bamboo and stone materials in most courtyards. The median score for tourist attraction was 3.31, with most schemes scoring below this average, indicating that the schemes did not fully consider interactive design elements for tourists, focusing primarily on the villagers. The average correlation between the scheme and villagers' daily production and life was 3.63, and the average value for personalized customization needs was 3.61, indicating low satisfaction among respondents regarding the direction of courtyard transformation. This indicates a lack of communication between the designers and the villagers, leading to low efficiency in the schemes. The median score for sustainability and ecological value was 3.96, indicating respondents' low satisfaction with the types and extent of greening in the courtyard renovations, highlighting the need to enhance the construction and integration of natural landscapes. The average score for the integration of culture and tradition was 3.47, with a relatively wide distribution, indicating that some designers have explored the localization of the courtyards to some extent, but significant differences exist overall.

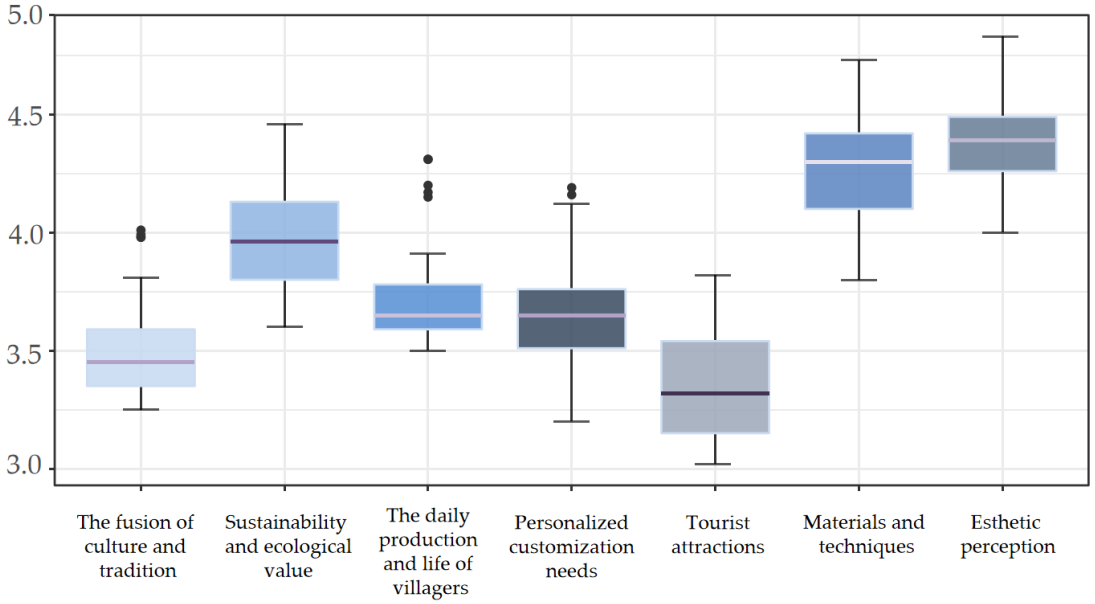


Figure 8. The score of the courtyard transformation scheme in the localization indicator (image source: created by the authors).

In conclusion, the following primary issues were identified (Figure 9):

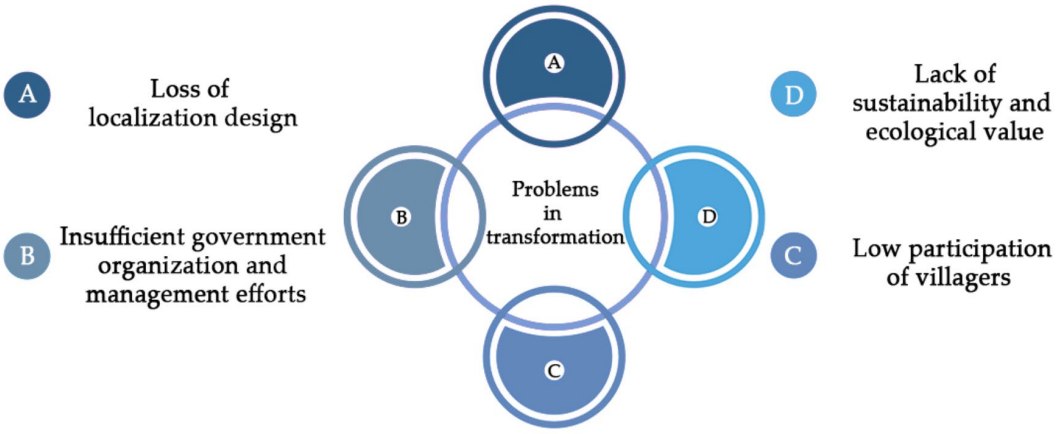


Figure 9. Problems in construction (image source: created by the authors).

(1) Loss of localization in design

From the perspective of cultural inheritance, courtyard transformations should extract cultural genes and propose protection and development strategies for historical culture, allowing it to thrive with renewed vitality in modern society [43]. In practice, although local materials are predominantly used, the design techniques and transformation strategies often lack thoughtful consideration, deviating from local cultural characteristics. For instance, Courtyard No. 38 adopts a modern minimalist style, neglecting the villagers' needs for planting and crop drying. With the acceleration of urbanization, the unique characteristics of rural courtyard design are gradually being lost, often replaced by standardized design concepts that lack sustainability.

(2) Insufficient government organization and management efforts

In rural construction, government agencies often have limited personnel, making it challenging to fully meet the needs of rural planning projects [44]. This courtyard transformation competition highlights the shortage of personnel for transformation, making it difficult to fully control construction management. Additionally, the lack of specific rural design and transformation policies results in ineffective communication mechanisms between the construction party, designers, and villagers and an unfair and inefficient capital control mechanism. Consequently, there is a significant gap between the outcomes of the courtyard transformations and the original intention of building a rural tourism business image.

(3) Low participation of villagers

Organic renewal should focus not only on the physical space but also on the inner and spiritual aspects of the experience, including the villagers' sense of identity and belonging [19]. Designers should consider the needs of villagers' production and daily life when devising transformation plans for rural courtyards. However, due to the lack of an efficient communication mechanism, villagers' participation in the transformation schemes is low. For example, in the joint courtyard of No. 15–16, the landscape wall was demolished by villagers because it failed to meet the actual needs of the two families.

(4) Lack of sustainability and ecological value

Most schemes fail to preserve or utilize the original planting walls and osmanthus trees from Raoping Village, and the courtyard greening lacks a systematic design approach. For instance, Courtyard No. 14 and the joint Courtyards No. 3–4 neglect fundamental attributes of rural courtyards, diminishing greening and planting functions. This deviation from villagers' daily life also reduces the attraction for tourists.

5. Discussion

An examination of the "Most Beautiful Courtyard" competition in Raoping Village, Fujian Province, reveals several issues in rural courtyard transformation, including disorganized zoning, functional deficiencies, hidden security risks, inadequate greening, and undefined stylistic identity. The courtyard transformation process is plagued by a series of issues, including disorganized construction management, inefficient communication mechanisms, inadequate and inequitable use of funds, insufficient consideration of localization, and minimal villager participation. These issues not only compromise the effectiveness of the transformation but also impede the sustainable development of rural construction.

Within the framework of rural revitalization, transforming rural courtyards serves not merely as a superficial renewal but also as a reflection of cultural heritage and ecological stewardship. The practice of courtyard transformation has highlighted several urgent issues requiring resolution:

(1) The competition organizers and relevant government departments, as the managing entities, failed to adequately oversee construction progress, resulting in some courtyards not being completed on schedule. It is imperative to establish comprehensive standards and policies for rural transformation, standardize construction management processes, ensure efficient use of project funds, and guarantee the timely and high-quality completion of courtyard transformations.

(2) Voting stage scores are vulnerable to manipulation. Although most schemes exhibit a strong correlation between preliminary and construction stage scores, this suggests a degree of fairness and professionalism in the competition's expert evaluation. Future research should investigate the impact of manipulation and other influencing factors on the fairness of competition results.

(3) In the realm of rural tourism development, there is insufficient emphasis on preserving local culture. Several transformation schemes neglect traditional cultural elements, leading to courtyard designs that diverge from the village's style and lack original cultural symbols, thereby reducing local distinctiveness. The findings align with the existing literature [25,26], affirming that preserving the local character of courtyards is crucial for achieving high-quality development in the courtyard economy and driving rural revitalization. Design schemes should integrate historical, cultural, ecological, and humanistic factors comprehensively to address practical issues, such as inadequate drying space for crops and planting walls that do not meet villagers' needs.

(4) The transformation of rural courtyard landscapes exhibits a lack of systematization. Effective rural garden landscaping should not only include the arrangement of plants and accessories but also address villagers' specific planting needs. The findings suggest that the strategic allocation of green plants is vital to enhancing villagers' happiness, corroborating Kerimova et al.'s conclusions on the emotional influence of courtyard greenery on residents [29]. Designers must improve communication with villagers, strike a balance between aesthetic enhancement and functional requirements, and prevent resource wastage due to rework.

The analysis of this rural courtyard renovation competition indicates that China's rural revitalization remains in its nascent stages. Despite prioritizing the "three rural issues," China's rural development continues to confront challenges, including deficiencies and imbalances. From a global perspective, the evolution of modern rural policies in Japan, Germany, and the United States reveals shared characteristics of similarity, continuity, and diversity. These policies extend their focus beyond rural infrastructure to encompass environmental and ecological concerns. As the economy continues to develop, it is imperative for China to persist in issuing policies to enhance rural development while simultaneously exploring development models tailored to its unique national conditions during rural transformation.

5.1. Practical Implications

This study offers crucial practical insights for accelerating rural revitalization and enhancing rural living environments, with a strong emphasis on preserving and reinforcing the norms of rural locality. It is recommended to swiftly develop comprehensive policies and regulations for rural living environment renovation, aimed at enhancing the quality of rural housing construction and shaping a distinctive rural architectural style. The findings of this study suggest that the local character of rural areas is not only the foundation of villagers' sense of happiness and identity but also a key attraction for tourists. During the renovation process, the continuity of rural locality must be thoroughly considered.

In renovation practices, managers should coordinate the construction process and ensure effective communication among all stakeholders. Throughout the competition process, issues such as non-standard construction procedures, inefficient use of funds, poor communication mechanisms, and inadequate incorporation of rural local design have been exposed. These issues reflect the ongoing challenges in rural transformation, highlighting the need for collaborative efforts to establish sound standards and norms to advance rural revitalization. Without such efforts, rural revitalization risks becoming a mere slogan, leading to inefficient use of transformation funds and the erosion of rural locality.

5.2. Limitations and Future Research Directions

Given the study's focus on specific Chinese cities, the generalizability of the findings is inherently limited. Future research could explore additional domestic and international rural renovation cases to identify common challenges and derive broader renovation principles. Additionally, this study did not include long-term observations, offering an opportunity for future longitudinal research to track villagers' recognition and the utilization of courtyards post-renovation. Finally, investigating the impact of rural courtyard location on tourist attraction remains a promising avenue for future research.

6. Conclusions

This study offers significant reference points for policy formulation and practical implementation, presenting targeted recommendations for effective courtyard renovation. At the construction management level, the government should develop detailed operational guidelines for rural courtyard transformation, closely monitor construction progress, manage funds scientifically, and ensure efficient communication among the three groups. At the localization level, villagers' daily production and life should be integrated with village cultural symbols, respecting and exploring localization factors. Adequate consideration of the ecological environment and climatic conditions is crucial to promoting the sustainable development of rural courtyards. At the competition level, reasonable allocation of renovation funds and emphasis on preserving courtyard locality are key to shaping a strong rural tourism image. Moreover, this study serves as a valuable reference for relevant policy formulation and similar rural transformation practices, advancing the goals of rural revitalization.

Rural courtyard transformation is a multifaceted and prolonged process necessitating the collaborative efforts of government bodies, construction teams, designers, and villagers. The localization of rural courtyards is fundamental to this process, and the establishment of a standardized construction management system alongside an effective communication mechanism is essential for ensuring the success of rural transformation. This study underscores the pressing need for the development of rural renovation processes and standards. Nevertheless, the establishment of such standards is a gradual process, requiring ongoing research and continued practice.

Author Contributions: Conceptualization, methodology, investigation, L.M.; conceptualization, methodology, investigation and writing—original draft, J.W. and Q.L.; investigation, writing—review and editing, L.M. and W.X.; investigation, L.M., J.W., Q.L., and W.X.; formal analysis, J.W and Q.L. All authors have read and agreed to the published version of the manuscript.

Funding: This research was co-funded by Internal Science Research Fund of Wuhan Institute of Technology, grant number K2023033; the Philosophy and Social Sciences Research Project (Youth Project) of the Department of Education of Hubei Province, grant number 23Q174; and the Science and Technology Plan Project of the Department of Housing and Urban-Rural Development of Hubei Province, grant number 2023088.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: The authors wish to acknowledge Li Yuan'ai, the Secretary of Raoping Village Committee in Nanping City, China, for supporting the relevant research and data.

Conflicts of Interest: The authors declare no conflicts of interest.

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