

Research on the Integrated Development of Rural Residence and Rural Tourism Based on Symbiosis Theory—A Case Study of Puzhehei Administrative Village

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Abstract: The shift from tourism to residential tourism hinges not only on ecological environments and climatic conditions but also on the transition toward sustainable and healthy lifestyles. Taking Puzhehei Administrative Village in Qiubei County as the research subject, this study employs participatory observation and semi-structured interviews to explore the symbiotic mechanisms for the integrated development of rural residential tourism and rural tourism from the perspective of symbiosis theory. The findings reveal that Puzhehei Administrative Village has established a three-dimensional symbiotic system of "conditions-industry-society" through differentiated natural resource offerings, functional coupling of industries such as homestays, host-guest interactions, and cultural-governance synergies, thereby providing a novel pathway for the integrated development of rural residential tourism and rural tourism.

1. Introduction

The 2025 government work report of the National Two Sessions emphasized the need to actively respond to population aging, improve the policy mechanism for the development of elderly care undertakings and industries, and vigorously develop the silver economy. Yunnan has a profound historical and cultural heritage, a pleasant climate, and an excellent ecological environment, with an average annual temperature of about 15 °C and an air quality excellent rate of over 98%, making it a natural health resort. The 2025 Yunnan Provincial Government Work Report clearly proposed to "effectively build and promote the new brand of 'Residing in Yunnan'", and introduced 24 supporting policies covering the innovation of cultural and tourism formats and the upgrading of consumption scenarios. The high-quality development of the silver economy needs to achieve breakthroughs through the integration of resource elements. The exploration of Yunnan's rural residence model is an innovative path that adapts to the upgrading of the needs of an aging society and the transformation of traditional agriculture and rural areas. As a benchmark case of the

integrated development of rural residence and tourism in Yunnan Province, the practical exploration of Puzhehei Administrative Village in the fields of ecological protection of karst landforms, clustered development of the homestay industry, and inheritance and innovation of ethnic culture provides an important sample for studying the symbiotic development mechanism between the two.

From the perspective of symbiosis theory, this study internalizes the integrated development of rural residence and tourism into a symbiotic analysis process. Through the symbiotic analysis of rural residence and rural tourism in the case site of Puzhehei Administrative Village, it explores the specific realization paths and internal mechanisms of rural residence and rural tourism at the levels of conditional symbiosis, industrial symbiosis, and social symbiosis, providing theoretical support and case support for clarifying the integrated development path of rural residence and rural tourism and putting forward targeted policy recommendations.

2. Literature Review

2.1. Research on Rural Residence and Rural Tourism

Rural residence, as a product of rural tourism developing to a specific stage, takes rurality as the key driving force [1]. Rural tourism is constantly transforming in the development process, and when pursuing the improvement of all elements and structural optimization, it faces challenges such as social space differentiation and ecological degradation. Elite leadership, market orientation, and institutional changes have become the core driving forces for its high-quality development, with multiple subjects working together with society and the ecological environment [2]. In this context, industrial integration has a profound impact on rural development. It promotes the rise of emerging industries such as leisure agriculture, optimizes the industrial structure, attracts investment and talents, breaks down the barriers to the flow of urban and rural factors, and activates rural cultural resources with the help of science and technology and integrated media [3]. Emerging digital nomads choose mobile residence based on psychological needs such as autonomy, competence (internal drive), relationship, and enjoyment (external attraction), providing new ideas for tourism destination management [4]; the classification of elderly residence shows differences in aspects such as scene switching, providing a new perspective for understanding their behavior [5]. Rural construction is carried out from three aspects: material space, social network, and cultural genes. In terms of material space, there is diversified industrial integration, improved infrastructure, and ecological restoration; in the social network, field repair and community empowerment are realized through capital adjustment and subject mutual assistance; at the cultural gene level, repair and "innovation and entrepreneurship" are carried out, and various mechanisms work together to promote rural revitalization [6]. Rural tourism host-guest interaction includes commodity service type, daily life type, and emotional knowledge type. Villagers' power varies in different interactions, and resources are the core of villagers' potential. Rural empowerment needs to tap resource potential to promote harmony between hosts and guests [7], and research on host-guest interaction is of great significance for optimizing the humanistic environment of tourism. With the deepening of research, placing the integrated development of rural residence and tourism in the context of administrative villages and comprehensively revealing the performance of their integrated development has become an important research direction.

2.2. Research on Symbiosis Theory

Symbiosis theory originated in the field of biology. With the rise of interdisciplinary research paradigms, its theoretical extension has gradually expanded to multiple disciplines such as anthropology, economics, and tourism. "Symbiosis" in the perspective of social sciences

specifically refers to the sustainable coexistence relationship formed by multiple subjects through factor interaction. According to the three dimensions of resource sharing, benefit distribution, and collaborative development, symbiotic relationships show a hierarchical evolution from low to high: parasitic relationship, commensalistic symbiotic relationship, asymmetrical mutualistic symbiotic relationship, and integrated symmetrical mutualistic symbiotic relationship [8]. Among them, the integrated symmetrical mutualistic symbiotic model is recognized as the ideal paradigm of the tourism symbiotic system because it can achieve mutual benefit and win-win among multiple subjects [9]. As a complex system composed of symbiotic units, symbiotic models, and symbiotic environments, the rural tourism symbiotic system continues to show dynamic evolutionary characteristics in promoting the practice of common prosperity [10]. Building an efficient communication mechanism between symbiotic subjects is not only a key measure to resolve conflicts among stakeholders but also an important prerequisite for ensuring the sustainable development of rural tourism [11]. Mutual benefit and win-win constitute the essential core of the symbiotic relationship in rural tourism communities, and building a stable, diverse, and adaptable symbiotic interface is the core path to promote the evolution of the symbiotic system to a higher form [12]. The symbiotic space between scenic spots and communities presents four typical forms: overlapping type (completely overlapping space), containing type (community subordinate to the scenic spot), overlapping type (partial functional intersection), and separated type (relatively independent space). The first two mostly reflect the community-led tourism development model, while the latter two build a tourism network with the scenic spot as the core [13]. The cultural and tourism industries realize the cross-domain flow and in-depth integration of heterogeneous elements through cross-border symbiosis and enabling integration mechanisms, promote the reconstruction of traditional value chains while breaking through industrial boundaries, and finally form a new high-value-added industrial chain ecology [14]. In general, the current research on symbiosis theory in rural tourism mainly discusses symbiotic relationships, stakeholders, etc. Based on the symbiotic perspective, this study discusses the integrated development of rural tourism and rural residence, taking Puzhehei Administrative Village as a case to explore their symbiotic development.

Existing studies on rural residence, rural tourism, and symbiosis theory have provided important theoretical support for this study, but there are certain limitations. Existing research on rural residence and tourism mostly focuses on single dimensions such as industrial integration and host-guest interaction, and has not established a systematic analysis framework to reveal the deep mechanism of their integrated development; although symbiosis theory has been initially applied in tourism research, existing achievements are mostly limited to theoretical interpretation and macro analysis, and have not been deeply embedded in the specific practical scenarios of the integrated development of rural residence and tourism. Based on existing research results, this paper innovatively systematically integrates symbiosis theory into the research on the integrated development of rural residence and tourism, constructs a "condition-industry-society" three-dimensional symbiotic analysis framework, selects Puzhehei Administrative Village as a typical case, and systematically analyzes the specific realization paths and internal coordination mechanisms of the integrated development of rural residence and tourism from multiple aspects such as natural resource endowment, infrastructure configuration, industrial format innovation, reconstruction of host-guest relations, cultural inheritance, and rural governance. The study comprehensively uses qualitative methods such as participatory observation and semi-structured interviews to obtain first-hand data, and systematically demonstrates the practical innovation of Puzhehei case site at the three levels of conditional symbiosis, industrial symbiosis, and social symbiosis.

3. Research Design

3.1. Research Area

Puzhehei Administrative Village is located in Shuanglongying Town, Qiubei County, Wenshan Zhuang and Miao Autonomous Prefecture, in the core area of Puzhehei National 5A-level tourist attraction. It has a moderate altitude and a mild and pleasant climate, with high-quality climatic conditions for the development of health and leisure and wellness vacation industries. Six major landscapes such as "water town, Yi water town" set off each other, presenting beautiful scenery of isolated peaks standing, deep karst caves, connected lakes, and swaying lotus flowers, which not only meets tourists' yearning for natural scenery but also provides an ideal place for residents to get close to nature and relax. Puzhehei Administrative Village has fully tapped the cultural heritage of the Yi people, integrated cultural connotations such as characteristic festivals and traditional techniques into the development of tourism products, created characteristic food and folk activities, and realized the organic coupling of natural and cultural resources. Adhering to the guidance of scientific planning, it has successively completed the compilation of planning and design such as "Master Plan for Puzhehei Tourism Resort", "Village Plan", "Planning and Design Guidelines for Puzhehei Scenic Spot Villages", and "Design Guidelines for Local Residential Buildings in Puzhehei Scenic Spot" to ensure the orderly development of rural tourism and residence formats. At the same time, it practices the concept of ecological priority, promotes the protection and management of the Puzhehei Lake basin, realizes the stable water quality of Puzhehei Lake reaching the national Class II standard, and forms a positive interaction between ecology and tourism. In terms of governance mechanism, through multi-stakeholder collaboration, it improves infrastructure, introduces new business entities, and forms a development pattern with the participation of the government, enterprises, village collectives, and villagers and benefits for multiple subjects. It can be seen that Puzhehei Administrative Village has demonstration value in the field of the integrated development of rural residence and tourism.

3.2. Research Methods and Data Sources

This paper adopts a combination of participatory observation and semi-structured interviews. Firstly, the research team carried out Village - stationed research in November 2024, formed an initial evaluation report through participatory observation, symposiums, and video recording, and refined the "symbiotic relationship cognition-resource collaboration-environment perception" analysis framework. Secondly, the research team participated in rural tourism and rural residence activities in Puzhehei in March 2025, collected data through on-site interviews and telephone interviews, and supplemented the data with participatory observation. The specific collection process is as follows:

Step 1: The joint research team settled in Puzhehei Administrative Village and recorded the spatial distribution characteristics of residence, host-guest interaction, and industrial symbiosis.

Step 2: Sampling interviews. Through participating in local activities such as mountain climbing photography and town fairs, on-site interviews were conducted with tourists and residents.

Step 3: In-depth interviews with stakeholders. Combined with the actual situation of Puzhehei Administrative Village, semi-structured interviews were conducted with village committee cadres, homestay operators, villagers, and other groups. During the interview process, the interview outline was continuously adjusted, the interview content was recorded, and the relevant factors affecting the integrated development of rural residence and tourism in Puzhehei Village were initially understood. The on-site interview and telephone interview outline mainly included the following three parts: first, cognition of symbiotic relationship; second, resource utilization and collaborative

development; third, perception of symbiotic environment.

A total of 24 people were interviewed, including 2 village committee cadres (A1-A2), 3 homestay operators (B1-B3), 5 villagers (C1-C5), 7 tourists (D1-D7), and 7 residents (E1-E7), including 14 males and 10 females. Recordings were made during the interviews, and each interviewee's interview time was about 30 minutes.

To ensure the objectivity and authenticity of the interview content, on the basis of obtaining the interview information, cross-validation was conducted on the interview results of different interviewees, and verified with the information obtained from field research.

Thirdly, the research team also used relevant online text data from government official websites, official media, and self-media to verify and supplement the above interview information. Data sources are shown in Table 1.

Table 1: Data Sources

Research Type	Research Objects and Numbers	Main Interview Content
Semi-structured Interview	2 village committee cadres (A1-A2)	Basic cognition and role positioning
		Development status and resource integration
		Symbiotic relationship and interaction mechanism
	3 homestay operators (B1-B3)	Cognition of symbiotic relationship
		Resource utilization and collaborative development
		Perception of symbiotic environment
	5 villagers (C1-C5)	Cognition of symbiotic relationship
		Perception of community participation
		Evaluation of development impact
	7 tourists (D1-D7)	Attractiveness and experience activities
		Tourism behavior preferences
		Satisfaction and suggestions
	7 residents (E1-E7)	Residence motivation and experience
		Perception of symbiotic value
		Evaluation
Online Text Survey	Information released on government official websites (ZFWZ)	Official websites of Wenshan Prefecture People's Government, Qiubei County People's Government, etc.
	Information reported by official media (GFMT)	Reports on the development of culture and tourism in Puzhehei by media such as China National Radio, Yunnan Network, Yunnan Daily, Yunnan Release, etc.
	Information provided by self-media (ZMT)	User content on platforms such as Douyin, Xiaohongshu, Weibo, etc.

4. Symbiosis Analysis

The symbiotic development of rural residence and rural tourism is a process of systematic collaboration among symbiotic units, symbiotic models, and symbiotic environments. From the perspective of symbiosis theory, a "condition-industry-society" three-dimensional symbiotic analysis framework has been constructed (see Figure 1). At the level of conditional symbiosis, combined with the natural resources and infrastructure of Puzhehei Administrative Village, ecological resources are transformed into experience products, and differentiated supply meets the needs of residence health care and tourism sightseeing, realizing conditional symbiosis; in the dimension of industrial symbiosis, relying on the homestay cluster in Puzhehei Administrative Village, tourism elements are upgraded to tourism attractions, driving the linkage of multiple industries through agriculture-tourism integration formats and digital technology, realizing industrial symbiosis; in the field of social symbiosis, through festival rituals and host-guest interaction in Puzhehei Administrative Village, cultural integration is deepened, and on this basis, a rural governance mechanism with multi-party participation is explored to realize social symbiosis.

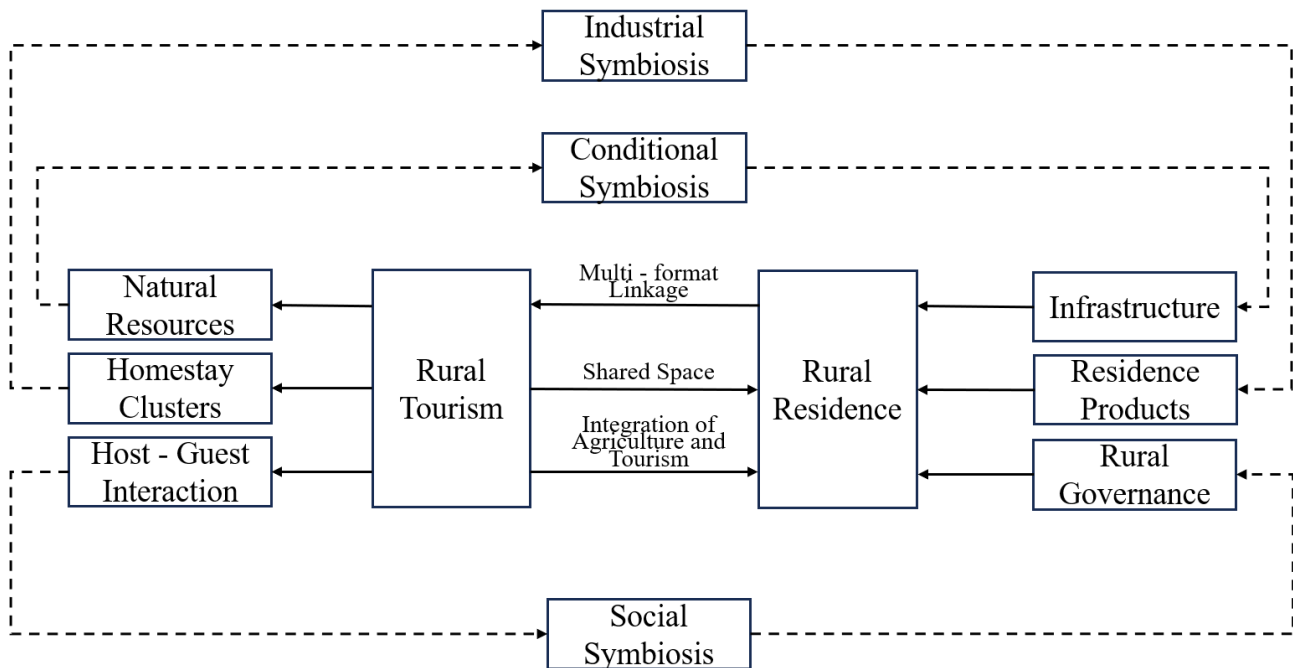


Figure 1: Three-Dimensional Symbiotic Analysis Framework of Rural Residence and Rural Tourism

4.1. Conditional Symbiosis

In the symbiotic system of Puzhehei Administrative Village, rural tourism and rural residence constitute two key symbiotic units, which are interdependent and develop in coordination. The unique natural conditions and gradually improved infrastructure of Puzhehei Administrative Village together constitute the symbiotic environment. The differentiated supply of natural conditions and the role of infrastructure in transportation and public services affect the material and energy exchange and collaborative adaptation between symbiotic units, and determine the development of the symbiotic model.

Puzhehei Administrative Village has an average annual temperature of 16.2 °C, 77% relative humidity, and 3300 negative ions per cubic centimeter, forming a natural health-preserving environment, attracting a large number of elderly residents to live long-term, meeting the demand for a health-preserving environment for rural residence; its "mountains, waters, forests, fields, lakes, and grasslands" composite landscape system provides a good place for short-term tourists to visit and sketch, meeting the demand for natural scenery experience in rural tourism. This differentiated utilization and complementarity of natural conditions realize the coordination of different symbiotic units in resource acquisition, which is an important basis for conditional symbiosis. This reflects the principle in symbiosis theory that symbiotic units achieve their own development and interdependence through different ways of utilizing resources in the symbiotic environment.

Sound infrastructure is a key element of the symbiotic environment. The completion of Puzhehei Station on the Yungui Railway within Qiubei County has significantly improved local transportation conditions. The station connects multiple core scenic spots in the province, taking only 1 hour to reach Kunming, the provincial capital, forming a "1-hour Kunming economic circle" and facilitating the travel of tourists and residents from Guangxi, Guangdong, and other regions. A convenient transportation network reduces the time and space distance between source markets and destinations, improves the efficiency of passenger flow input, lowers the connection cost of

symbiotic units, and promotes the coordinated evolution of the two symbiotic units of rural tourism and rural residence. The degree of transportation convenience directly affects the exchange efficiency of material and information flows at the symbiotic interface, serving as a key link connecting tourists, residents, and service institutions, and promoting the cyclic interaction of resources among multiple subjects, which is in line with the theory that the symbiotic environment promotes the coordinated development of symbiotic units.

However, there are shortcomings in public services within Puzhehei Administrative Village, such as incomplete sign systems and single means of transportation, which restrict its development and affect the experience of tourists and residents. The current situation reflects a "commensalistic symbiosis" state in infrastructure in Puzhehei, where improved transportation mainly benefits certain links of the tourism and residence industries, while tourists and residents benefit relatively less when moving within the village. Nevertheless, the village committee has actively invested over 200 million yuan in the construction of village squares, parking lots, tourist toilets, and other projects. With the continuous improvement of infrastructure, it is expected to transform from "commensalistic symbiosis" to a "mutualistic symbiosis" model, enabling both symbiotic units of rural tourism and rural residence to benefit more equitably from infrastructure construction and providing better conditions for their integrated development. The empirical support for conditional symbiosis is shown in Table 2.

Table 2: Empirical Support for Conditional Symbiosis

Category	Keywords	Empirical Records
Natural Resource Conditions	Karst landform	"The combination of karst landforms and lake wetlands here presents the beautiful scenery of 'mountains above water, caves within mountains'." (D2)
		"The karst landforms in Puzhehei are really spectacular, with those strange peaks and rocks, making it feel like entering a fantasy world." (E1)
	Ecological environment	"You can see small fish and egrets; the ecological environment is very good." (D5)
		"Through the implementation of a series of ecological protection measures in Qiubei County, the ecological environment of Puzhehei continues to improve, with richer biodiversity." (GFMT)
		"In Puzhehei, one can obviously feel the excellent ecological environment, with a wide variety of animals and plants, in great harmony." (E3)
	Suitable climate	"The suitable climate is the greatest advantage for residence." (A1)
		"The climate in Puzhehei is pleasant all year round, making it great for residence at any time." (E7)
Infrastructure Conditions	Insufficient signposts	"Puzhehei has a mild climate with small temperature differences throughout the year, providing comfortable climatic conditions for tourists and residents." (GFMT)
		"There are relatively few signposts in the village. I almost took the wrong path when coming to Qinglong Mountain and had to ask several people to find the way in." (D2)
	Single means of transportation	"The signposts are really not obvious at all; finding scenic spots relies entirely on asking passers-by, which is very inconvenient." (E1)
		"The means of transportation in the village are also relatively single, mainly horse-drawn carriages, and they are not connected to other villages, making internal travel very troublesome." (D6)
		"I hope Puzhehei can have more transportation options. Horse-drawn carriages are uncomfortable to ride for a long time, and traveling to other villages is a hassle." (D7)
		"Looking forward to better transportation in Puzhehei to facilitate tourists' travel." (ZMT)

4.2. Industrial Symbiosis

At the industrial symbiosis level, Puzhehei Administrative Village, with the homestay industry as the core, has constructed a complex and orderly symbiotic model through multi-industry functional coupling, agriculture-tourism integration, and digital technology-driven development, fully embodying the application of symbiosis theory in the integrated development of rural residence and rural tourism.

The homestay industry is a key carrier of industrial symbiosis between rural residence and rural tourism in Puzhehei Administrative Village, with rural tourism and rural residence functionally coupled in the homestay industry. The local area has cultivated 488 characteristic homestays,

covering various types, forming a relatively large-scale and distinctive homestay cluster. In terms of business models, these homestays conduct customer segmentation, service specialization, and revenue maximization according to the different needs of tourists and residents. Taking Shanhe Homestay as an example, it accurately targets retired people as its customer base, providing elderly-friendly services, which are widely welcomed by residents. Shanhe Homestay adopts a unique operation model, recruiting residents on a half-month or monthly basis, attracting customers by showcasing the residence environment through live webcasts, collaborating with residential homestays in other parts of the province to realize linked stays, and equipping professional housekeepers to organize residents to participate in surrounding tourism activities. This operation model not only meets the diverse needs of residents but also drives the development of tourism-related industries such as catering, shopping, and entertainment in the local area, upgrading homestays from a single reception unit to a core node of industrial symbiosis. Homestays gain revenue by providing services to residents while promoting the development of other industries, and other industries in turn attract more customers for homestays. In this process, various industries are interdependent and develop together. This reflects the principle in symbiosis theory that symbiotic units achieve coordinated development through functional complementarity and resource sharing, forming a mutually beneficial and win-win symbiotic model.

Table 3: Empirical Support for Industrial Symbiosis.

Category	Keywords	Empirical Records
Homestay Industry	Accommodation services	"The homestay I stayed in was renovated by locals. From the window, I could see the lake outside.The breakfast included several types of rice noodles, steamed buns, porridge, soy milk, etc., and there was a simple map marking the 'check-in spots' in Puzhehei." (E4)
		"The accommodation experience at this homestay in Puzhehei was excellent, with clean and tidy rooms and enthusiastic and thoughtful service from the boss." (D6)
		"The homestay I stayed in Puzhehei has a quiet environment, and the room decoration has local characteristics, making people feel particularly warm and reluctant to leave." (ZMT)
		"Our homestay provides elderly-friendly services for the elder and equips professional housekeepers to organize tourism activities." (B1)
	Regional cooperation	"Between Guangan County in Wenshan Prefecture and Mile City in Honghe Prefecture, friends will recommend customers to travel and live locally." (B2)
		"Tourism cooperation between Puzhehei and surrounding areas is becoming increasingly close, providing more choices for tourists." (ZMT)
	Industrial integration	"In terms of homestay operation, we cooperate with Ctrip, and also have offline cooperation with nearby farmers or tourism service providers in catering and transportation." (B1)
		"Our homestay cooperates with local handicraft stores to display and sell characteristic products such as Yi sheepskin drums in the store." (B3)
	"The homestay industry in Puzhehei actively integrates with agriculture and cultural industries, launching products such as 'homestay + lotus banquet' and 'homestay + intangible cultural heritage experience'." (GFMT)	
Digital technology	"We attract a large number of customers by selling residential packages through live webcasts, showcasing room environments, catering conditions, and surrounding activities." (B2)	
Catering Industry	Catering consumption	"I tried Wenshan bacon, sour soup fish, roasted tofu, etc. Especially the roasted tofu, it's delicious!" (E7)
		"The roasted tofu in Puzhehei is really a must-try. It's crispy on the outside and tender on the inside, with an excellent taste." (D3)
		"Residents often come to the restaurant for meals. The restaurant has cooperation with homestay operators and drivers, but repeat customers mainly rely on a good reputation locally. Our ingredients are the freshest, and we are constantly learning and improving, enriching our dishes and flavors, focusing on health and deliciousness." (C5)
	Agriculture integration	"Puzhehei has formed a full-chain 'planting-processing-experience' model, where tourists can participate in lotus picking and taste lotus banquets." (GFMT)
Other Industries	Tourism products	"Hope to increase tourist attractions and activities, develop more tourism resources, such as opening the karst caves in the village to attract more tourists to Puzhehei Village, increasing local income and driving local economic development." (B1)

In terms of agriculture-tourism integration, based on the evolution law of the symbiotic system, Puzhehei Administrative Village has constructed a model of "agriculture sets the stage—tourism increases volume—culture creates value", achieving symbiotic win-win among industries. In agriculture-tourism integration, it explores a full-chain development model of "planting—processing—experience". Puzhehei has formed agricultural landscape resources through lotus root

planting, developed characteristic foods such as lotus banquets, organically integrating agriculture with the catering industry. Tourists and residents can also participate in experience activities such as lotus root picking while tasting lotus banquets, forming a value-added chain of "agricultural landscape—experiential consumption". In addition, Puzhehei combines natural and cultural resources to develop leisure vacation products such as ecological agricultural sightseeing, homestay experience, picking, water fights, and bonfire parties, and launches creative tourism products such as flower-face culture, wetland culture, lotus culture, and ecological culture, deeply integrating culture, agriculture, tourism, and other industries. In this process, various industries promote and develop in coordination with each other, achieving symbiosis in the process of industrial chain extension and promoting the diversified development of Puzhehei's tourism industry. This is in line with the principle in symbiosis theory that different industries, as symbiotic units, expand their development space through industrial integration and resource sharing, achieving symbiotic evolution.

Furthermore, the innovative application of digital technology has injected new vitality into industrial symbiosis in Puzhehei, accelerating the flow of energy and information between rural tourism, residence industries, and agriculture. At the physical level, villagers have transformed fishing boats into mobile live broadcast rooms, breaking spatial limitations to showcase the natural scenery and customs of Puzhehei; at the virtual level, live broadcast technology is used to build an immersive communication matrix, achieving two-way empowerment of agricultural product sales and tourism promotion in activities such as "Yunnan Small Yellow Ginger Live Traceability and Puzhehei Customs Experience". Digital technology also plays an important role in tourism services and management. Homestays attract customers through online live recommendations and use internet platforms to provide booking, inquiry, and other services, improving the convenience and efficiency of tourism services. Digitally empowered industries bring new opportunities for industrial symbiosis between rural residence and rural tourism in Puzhehei Administrative Village, promoting the transformation and upgrading of industries towards digitalization and intelligence. This reflects the principle in symbiosis theory that new technological means, as part of the symbiotic environment, can promote more efficient exchange of materials, information, and energy between symbiotic units, driving the symbiotic model to develop into a more advanced form. The empirical support for industrial symbiosis is shown in Table 3.

4.3. Social Symbiosis

At the social symbiosis level, Puzhehei has promoted cultural integration and community participation by building a "festival rituals—host-guest interaction—rural governance" system, creating a good symbiotic atmosphere, and embodying the application of symbiosis theory at the social level.

Traditional festivals in Puzhehei have become an important carrier of host-guest interaction. During the Huadian Festival (Flower-Face Festival), tourists and villagers jointly participate in the "face-painting" ritual, smearing each other's faces to wish for good luck and happiness, establishing a cultural bridge for host-guest interaction. This ritual not only enables tourists and residents to better understand the Yi culture of Puzhehei, enhances the sense of pride of the younger generation in traditional culture, but also promotes cultural exchange and integration between hosts and guests. From the perspective of symbiosis theory, traditional festivals, as cultural resources, promote cultural interaction and emotional communication between hosts and guests, achieving social and cultural symbiosis.

Residents form a host-guest living community of "daily coexistence—cultural co-learning—value co-creation" with villagers through participating in farming experiences, intangible cultural

heritage handicrafts, and other activities. Local villagers have access to new ideas and concepts through communication with tourists and residents, broadening their horizons and promoting their own development. This host-guest interaction has achieved mutual promotion and common development between the two parties, initially forming a good situation of social symbiosis. This is in line with the principle in symbiosis theory that different subjects in the symbiotic environment achieve resource sharing and common development through interaction and communication. The arrival of tourists and residents has brought economic benefits and new development ideas to Puzhehei, while the warm hospitality and cultural display of local villagers have provided a unique experience for tourists and residents. Both parties have taken what they need in the interaction, jointly promoting the development of rural society.

Table 4: Empirical Support for Social Symbiosis

Keywords	Empirical Records
Festival rituals	"I used to think ethnic culture was far away, but after personally participating in activities such as face-painting and string dance, I really understood the vitality contained in these customs." (D7)
	"Puzhehei regularly holds the 'Huadian Festival', where tourists and villagers jointly participate in the face-painting ritual to experience Yi culture." (A2)
	"During the Huadian Festival, we painted faces with tourists, and everyone laughed happily, feeling that the distance suddenly narrowed." (C1)
Daily communication	"The villagers here are very simple, and there is delicious and inexpensive food, so I am willing to live here for a long time." (E5)
	"When walking in the village, villagers warmly invited us to their homes for tea and taught us to identify edible wild vegetables." (D4)
Cultural interaction	"When tourists saw me embroidering insoles, they also introduced Hunan embroidery from their hometown, saying they would promote our culture to friends when they came back, which made me feel particularly meaningful." (C4)
	"Seeing villagers weaving, we followed to learn. Although our skills were not proficient, it was very interesting." (D3)
Community participation	"Tourists' participation in our traditional festivals makes us feel that our culture is recognized." (C5)
	"Villagers and tourists in Puzhehei jointly participate in lotus picking activities, enhancing mutual understanding." (GFMT)

In addition to cultural and life-level interactions, a sound rural governance mechanism is an important guarantee for Puzhehei Administrative Village to achieve social symbiosis. Positive incentive factors such as policy support and human capital agglomeration interact with institutional constraints such as land resource use control and lagging tourism revenue distribution mechanisms, collectively shaping the practical space for symbiotic development. Currently, Puzhehei can build a more ideal social symbiosis state by deepening rural governance reform and promoting cultural integration and innovation. Exploring the establishment of a "host-guest collaborative governance" model, with the large-scale development of the rural residence industry, setting up representative seats for residents to participate in the revision of village rules and regulations and decision-making, and absorbing residents with professional knowledge or rural management experience into the village-level governance system through open selection and democratic voting. This model helps balance the interests of all parties, promote the rational allocation of resources, improve the level of rural governance, provide a more solid social foundation for the integrated development of rural residence and rural tourism, and further promote the development of social symbiosis to a more advanced form. The empirical support for social symbiosis is shown in Table 4.

5. Conclusion and Discussion

5.1. Conclusion

Puzhehei Administrative Village has realized the in-depth integration of rural residence and tourism through the "condition-industry-society" three-dimensional symbiotic system. At the conditional symbiosis level, relying on karst landforms and climate resources, it has realized the differentiated supply of natural endowments for residence and sightseeing tourism, and promoted

the evolution of the symbiotic model towards "mutualistic symbiosis" through infrastructure construction. Industrial symbiosis takes the homestay cluster as the core, forming a pattern of multi-industry coordinated development through multiple business formats such as the homestay industry, full-chain development of agriculture-tourism integration, and digital technology empowerment. Social symbiosis promotes cultural integration and community participation through festival rituals, host-guest interaction, and the future "host-guest collaborative governance" model, providing a replicable practical case for rural revitalization.

5.2. Development Suggestions

(1) Deepen industrial integration: Build a global health and wellness residence ecosystem

Relying on Puzhehei's natural ecology and Yi medicine culture, establish a full-chain health and wellness system of "planting—processing—experience". We should promote the differentiated upgrading of homestay functions for segmented markets such as the silver-haired group and digital nomads. Shanhe Homestay can further optimize elderly-friendly services and develop more "homestay + health courses" packages; at the same time, strengthen linked stays with homestays in Lijiang, Xishuangbanna, and other places, and expand customer coverage through regional cooperation.

(2) Strengthen digital infrastructure: Build an intelligent service system

We will deploy 5G networks in Puzhehei Scenic Area and villages to realize functions such as cloud management of health data and 15-minute response to emergency rescue. Meanwhile, Authorities will use live broadcast technology to build an immersive communication matrix, real-time display natural scenery and folk activities, and attract remote customers. Partners will cooperate with universities and enterprises to carry out digital skills training to improve the digital operation capabilities of villagers and practitioners. Through "live streaming with goods + tourism promotion" training, more villagers can be empowered to promote local specialties and cultural and tourism resources using self-media platforms, realizing a closed loop of "traffic—conversion—income increase".

(3) Optimize regional linkage: Improve cross-regional collaboration mechanisms

We will establish a tripartite cooperation mechanism of "government + enterprises + community" to unify service standards and brand images. Parties will jointly formulate rules for the use of cross-city residence annual cards with Dali and Lijiang, clarify the proportion of benefit distribution, and attract long-distance customers through joint marketing activities. Attention should be paid to community participation in cross-regional collaboration to avoid excessive commercialization. Resources will be integrated such as Puzhehei Yi culture, Dali Bai culture, and Lijiang Naxi culture to create a "Southeast Yunnan Ethnic Culture Experience Belt". Stakeholders will jointly develop products such as intangible cultural heritage handicrafts and festival activities to form differentiated cultural IPs, and promote them through platforms such as boutique homestay networks to enhance regional tourism competitiveness.

5.3. Discussion

Although this study uses qualitative research methods to obtain data through multiple channels, ensuring the authenticity and richness of the research, the lack of quantitative analysis makes it difficult to accurately quantify the contribution of each symbiotic element to the integrated development of rural residence and tourism. In the future, a scientific evaluation index system can be constructed to analyze the internal relationships between various factors. In addition, this study only focuses on a single case of Puzhehei Administrative Village. Although it can deeply analyze its integrated development model, the representativeness of the case has certain limitations, and the

universality of the research conclusions needs to be further verified. Future research should expand the research scope, select rural areas with different geographical regions, economic development levels, and cultural backgrounds for multi-case comparative studies, explore the common laws and individual characteristics of the integrated development of rural residence and rural tourism, so as to put forward more universal theories and practical strategies, and provide more comprehensive and in-depth theoretical guidance and practical references for the high-quality development of rural tourism under the background of rural revitalization.

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