

Comprehensive evaluation of the cultural inheritance level of tourism-oriented traditional villages: The example of Beijing

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ABSTRACT

Many traditional villages promote cultural inheritance by developing tourism, and thus develop into tourism-oriented traditional villages (TOTVs). The key to their sustainable development lies in balancing cultural inheritance and tourism development. Based on memory theory, we constructed a comprehensive evaluation system to measure the cultural inheritance level (CIL). Moreover, taking 16 typical TOTVs in Beijing, China as examples, we evaluated their CIL by using the hierarchical-entropy weight model and the weighted TOPSIS model. The results show that the comprehensive evaluation method of CIL of TOTVs constructed in this paper has strong applicability. The comprehensive CIL values in the case villages vary considerably, and the scores of three dimensions show typical characteristics of great differentiation and imbalance. In addition, we summarized four paths for improving the CIL. This study will help promote the scientific inheritance and utilization of TOTVs, as well as their sustainable development, and will help realize rural revitalization.

1. Introduction

Traditional villages are outstanding representatives of rural areas in China because they have plentiful cultural genes of Chinese traditional cultural heritage. However, with the rapid development of globalization, industrialization and urbanization, there are many problems in Chinese traditional villages, such as reduction of the cultural landscape (Huang et al., 2015), deterioration of the living environment (He et al., 2014) and commercialization of the traditional culture (Huang & Huang, 2018). Therefore, the protection and inheritance of the culture of traditional villages has become a hot topic in Chinese society. In addition, the Ministry of Housing and Urban-Rural Development, as well as other ministries and commissions of the People's Republic of China, began to protect traditional villages in 2012. As of March 2023, six batches of Chinese traditional villages had been published, including a total of 8155 villages in the protection category. In order to strengthen cultural protection, China issued the *Guiding Opinions on Strengthening the Protection of Traditional Chinese Villages* in 2014, which clearly pointed out that tourism development should be used to realize the rational protection, inheritance and utilization of cultural heritage. Some traditional villages have gained new economic vitality through rural tourism. These traditional villages that have tourism as their main

industry are called tourism-oriented traditional villages (TOTVs). Studies have shown that tourism development can arouse memories of past events and form collective memories (Liao & Dai, 2020), which is helpful for promoting the cultural inheritance of traditional villages. Therefore, tourism development has become an effective way to inherit and utilize the traditional culture of traditional villages (Gao & Wu, 2017). Furthermore, tourism is also an important carrier that evokes rural memory, rural culture and homesickness (Lyu et al., 2018). With the continuous promotion of China's strategy of the integration of culture and tourism, the relationship between rural tourism development and cultural inheritance in traditional villages has become increasingly closer. On the one hand, tourism development can lead to the preservation and revival of the cultural heritage (Ahmad, 2013), and can add new impetus and choices to cultural inheritance. Promoting cultural inheritance is also one of the critical elements for the sustainable development of TOTVs. On the other hand, with the rapid development of rural tourism in traditional villages, many studies show that there are often conflicts and imbalances between tourism development and cultural inheritance, such as contempt for the content of cultural inheritance, improper selection of the means of cultural inheritance, and marginalization of the participants in cultural inheritance. Therefore, in the face of so many obstacles, figuring out how to scientifically

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coordinate the relationship between the inheritance of traditional culture and the sustainable development of tourism has become an important proposition for many TOTVs.

Currently, many scholars are paying attention to research on the cultural inheritance of traditional villages, but its connotation is still vague. Therefore, it is necessary to explore the logical structure of the cultural inheritance of traditional villages. From the perspective of research content, many studies have focused on the inheritance of tangible culture, such as the tourism utilization of cultural landscapes (Yang et al., 2022) and the commercial transformation of special rural cuisines (Lee et al., 2021). However, traditional villages also have many precious intangible cultural elements, and the memory of tangible culture is not enough to reflect the plentiful information of traditional villages. In addition, traditional village culture is different from other general rural cultures and urban culture, and has more obvious characteristics of fragmentation distribution (Li, Wang & Xin, 2019), geographical variability (Li & Wang, 2018), sharing and collectivity (Li & Hu, 2021), and its cultural inheritance and tourism development are obviously different from other tourist destinations. From the perspective of research methods, case analysis and other qualitative research methods are used most often (Tang et al., 2023), which is relatively subjective and lacks the scientific quantitative measurement of CIL. Although a small number of scholars have evaluated CIL by constructing index systems and analytic hierarchy process models (Liu & Yu, 2012; Yang & Liu, 2017), their applicability, completeness, continuity and authenticity for measuring the CIL of TOTVs need further verification. In addition, numerous studies have shown that the cultural inheritance of traditional villages in the situation of tourism intervention is facing new challenges, including changes in traditional culture (Gao & Wu, 2017; Wang & Yotsumoto, 2019), the difficult process of inheritance (Huang et al., 2015), the capitalization of cultural possession (Cepeda-Caceres, 2019), and the conflict between tourists and villagers (Ahmad, 2022). It is worth considering that the resolution of these problems should be based on a clear understanding of the CIL of TOTVs. However, to the best of our knowledge, the existing literature has not explored the CIL of TOTVs.

From the perspective of evolution and genetics, Sukhoverkhov and Fowler (2015) proposed that culture can be regarded as a deductive system, which is inherited and depends on the internal development of organisms, individuals and societies; and the precondition of its re-occurrence and the evolution of culture is their retention and accumulation in memory. Memory is largely framed and facilitated by social factors (Hobuß, 2011), and has multiple functions such as politics (Kubik & Bernhard, 2014; Subotic, 2018), identity (Megill, 1998) and cultural identity (Assmann & Czaplicka, 1995; Halbwachs, 1992). Driven by rural tourism, tourists have learned about rural history and culture with the help of various information media, which have generated tourism motivation and behavior. During the tourism process, they would connect with their past and form beautiful memories (Li et al., 2019), promoting the inheritance of rural culture. Memory can be seen not only as an important condition and path for cultural inheritance, but also as playing a vital role in cultural revival (Cowlshaw, 2012). Depending on the channel and order of the transmission of memory, collective memory can be divided into communicative memory and cultural memory (Candia et al., 2019). If we want to realize the “live inheritance” of the traditional culture of villages, we should pay attention to the fact that it is a continuous and dynamic practical process based on communicative memory and gradually transformed into cultural memory. However, research on measuring the CIL based on the memory theory is still lacking. To fill in this knowledge gap, the contributions of our study address three aspects.

Firstly, we proposed a theoretical analysis framework and quantitative index system for the CIL of TOTVs, which clarifies the conceptual connotation of the cultural inheritance of TOTVs and also further expands the previous qualitative research methods to a combination of qualitative and quantitative. Secondly, the previous literature on the

quantitative analysis of cultural inheritance mainly focused on the inheritance of cultural content, particularly the tangible culture, but it neglected the people living around it and their cultural inheritance approaches. However, the existence of rural areas in China is based on a profound farming civilization, which is characterized by strong interpersonal bonding (Zhang et al., 2022). The interpersonal communication in turn enables the memory of the village to be deposited, continued and passed on. In addition, without proper cultural memory, the inheritance of tradition cannot be truly realized (Tang, 2017). Hence, the quality of cultural inheritance is not solely determined by the cultural content, but also by the fact that cultural inheritance is a dynamic process that brings together factors such as the contents, means and participants. Finally, although the impact of tourism on rural culture has been widely discussed by scholars, its specific pathways have not been effectively addressed. This study compares the specific paths of cultural inheritance in different types of the CIL of TOTVs based on a quadrant diagram classification, and provides a reference for the cultural inheritance of traditional villages. The results of this research will help to promote the scientific protection and utilization of the cultural inheritance of TOTVs, and facilitate the implementation of the rural revitalization strategy and the sustainable development of rural areas.

2. Theoretical connotation and research methods

2.1. Theoretical framework

As a carrier of traditional culture, traditional villages carry the memories of villagers who have been living there for generations. A certain way of life in the past does not disappear with the disappearance of the organism, but continues to exist in the environment (Ingold, 2022). One part of these memories is about the unique production and life style of rural areas, while the other part is the gradually internalized ideas and cognitive habits, which are the direct condensation and embodiment of the rural culture (Yang & Su, 2014).

The concept of memory theory comes from the collective memory proposed by Maurice Halbwachs in the book *The Social Framework of Memory*, published in 1925. He divided memory into individual memory and social or collective memory, which was embedded in social interaction and embodied in the individual brain (Olick & Robbins, 1998). Building upon this basic research, Assmann (1998) further stated that historical tradition and collective memory were not always sharply opposed, but had some internal relations. In the process of constant repetition and communication, some memory content is forgotten, and some memory content continues to be inherited. This process mainly depends on two stages. The first stage is the communicative memory that has the risk of being forgotten. With the repeated communicative memory between generations, it will develop into cultural memory that represents some significance of past history and can be stably passed down (Candia et al., 2019). Traditional culture lies between communicative memory and cultural memory, and is constantly being fused and reconstructed (Tang, 2017). Hence, the studies that focus on memory theory address the question of how the “past” is created and recreated within sociocultural contents (Erl, 2011). The formation and inheritance of a society’s culture often goes through three stages: individual memory, collective memory and cultural memory. The shared individual memory gradually develops into the collective memory of the region, and eventually into cultural memory, which is realized and expressed in the memory of the individual (Halbwachs, 1980). The individual memory is in turn influenced by the prevailing cultural memory (Olick, 1999).

A traditional village bearing collective memory can be regarded as a mnemonic community. In the continuous and dynamic memory practice based on communicative memory, the traditional village relies on specific memory content, memory means and memory inheritors, and it ultimately gradually forms cultural memory. Based on the above analysis, the culture of traditional villages mainly refers to the collective

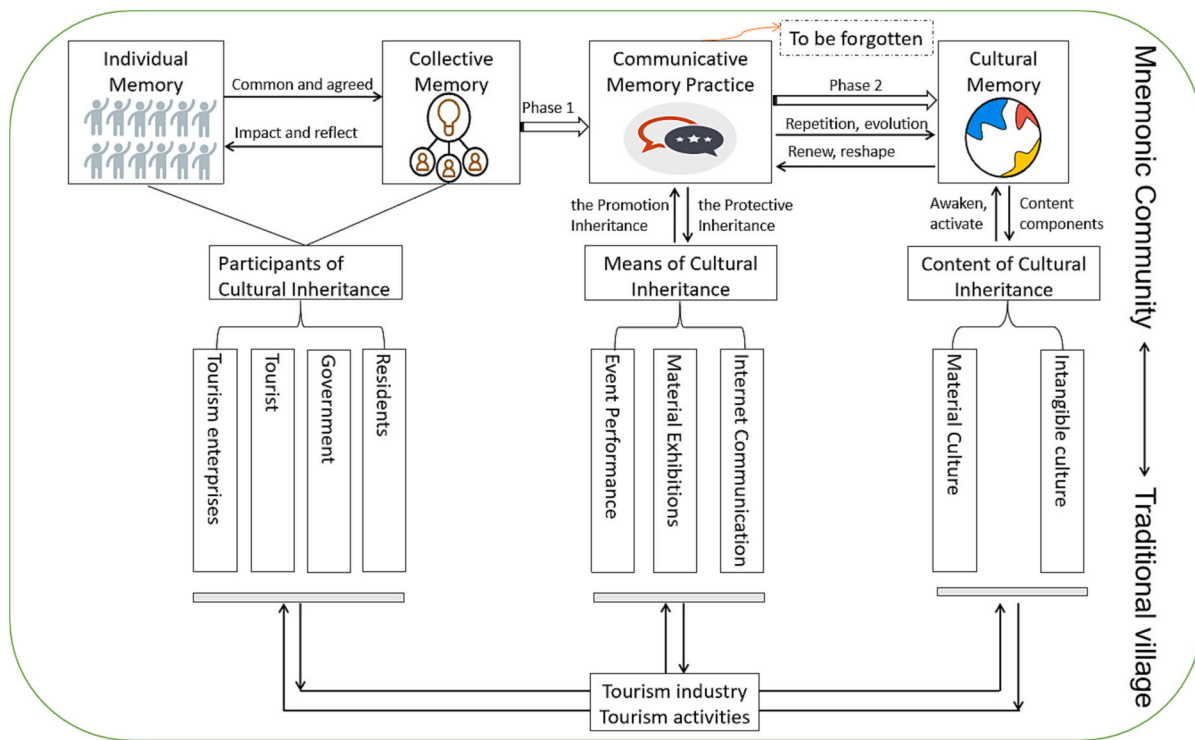


Fig. 1. Theoretical Analysis Framework for the CIL of TOTVs.

memories that can be passed down from generation to generation, and at the same time are updated and evolve with the changes of the times. Therefore, the cultural inheritance of traditional villages refers to the process of transmitting and inheriting rural tangible culture and intangible culture among various participants, which includes not only the protective inheritance aimed at maintaining the authenticity of traditional culture, but also the promotional inheritance of expressing innovative traditional culture in combination with the times. The process of cultural inheritance is based on cultural inheritance contents such as material cultural landscape and intangible folklore, through cultural inheritance means such as material exhibition, activity performance and Internet communication, and with the participation of government, residents, enterprises and tourists as the inheritance participants. This process is carried out continuously and dynamically. By combing the relationship between memory theory and cultural inheritance, we can see that the CIL of TOTVs is the result of the joint interaction of cultural inheritance contents, means and participants. Therefore, we constructed an analytical framework of the CIL of TOTVs (See Fig. 1).

2.1.1. Contents of cultural inheritance

Externalized and materialized cultural memory are understood as memories encapsulated in cultural norms and devices in a certain mean, officially recognized tangible heritage, a society’s “commemorative infrastructure” and deliberate societal mechanisms for the transmission of meanings from the past (Cubitt, 2007). Traditional architecture, existing historical environmental elements, traditional spatial layout, and coordination between the village and the surrounding environment, can be seen as the symbols of material heritage which provide a concrete and special way to perceive, learn and inherit memory. Besides, the role of intangible culture, such as language or dialect, in awakening memory should not be underestimated. The intangible culture can connect people to their living lands, by way of direct experiences such as immersive experiences that invoke memories of their past lives and their families, and establish a strong relationship with the village and its culture (Yelmi, 2016). In conclusion, cultural inheritance can be viewed as one

of the primary means by which humans engage in the universal process of niche construction (Odling-Smee & Laland, 2011). It is also worth mentioning that the tangible and intangible culture of the villages should be integrated into the entire cultural ecosystem, which can achieve unity, integrity, authenticity protection, and vivid dissemination of the traditional culture, and also constitute the main components of the experience that is lived and co-created by tourists, tourism suppliers and the local residents (Kastenholz et al., 2012). To summarize, the content of cultural inheritance based on the memory of TOTVs is represented in Fig. 2.

2.1.2. Means of cultural inheritance

The key to cultural inheritance lies in the continuity of memory, which is the problem of how communicative memory can be transformed into cultural memory. The memory continues to exist when it is inscribed in the community, and particularly in the rhythms of people’s lives (Erl & Nünning, 2008). According to the attributes and characteristics of memory behavior, we find that material exhibitions (Stainforth, 2016) and event performance (Zhao & Zuo, 2022) can deepen the communicative memory to cultural memory, and prevent the possibility of forgetting communicative memory through the repetition and practice of communicative memory. With the intervention of tourism, the traditional culture is gradually capitalized and inter-generational sustainability will be further damaged through the changes in people’s social preferences and effects in specific areas (Shahrier et al., 2017). In order to simultaneously meet the needs of tourists and maintain the normal life of residents, villagers will build a seemingly real staged scene (MacCannell, 1973). Therefore, the original inheritance means can be divided into two forms: the promotion inheritance which provides services for tourists, and the protective inheritance which is not aimed to provide services for tourists. In addition, because the staged scene needs to rely on the actual space, it has strong locality and place restrictions. The removable nature of memory has transformed the memory-based inheritance means into an important breakthrough that allows many traditional villages to adapt to social development. Additionally, the embedding of the Internet has enhanced the extension and sharing of

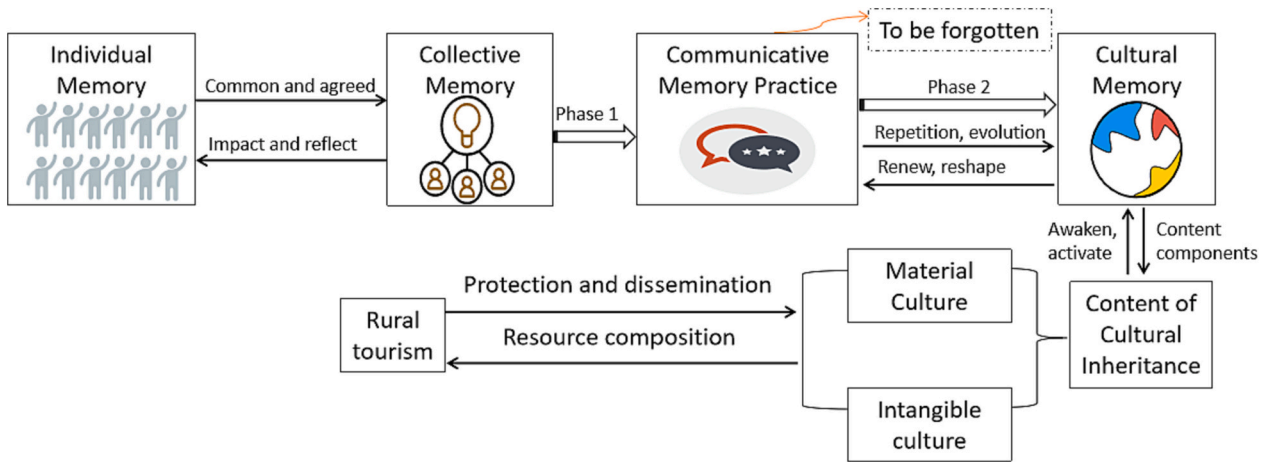


Fig. 2. Cultural inheritance content of TOTVs based on memory theory.

rural memories in time and space (Zheng & Yang, 2021), and effectively promoted the adaptation of traditional culture to social development (Sun et al., 2020). To sum up, the cultural inheritance means of TOTVs mainly include: material exhibition, event performance and Internet communication, as shown in Fig. 3.

2.1.3. Participants of cultural inheritance

A reasonable population size and structure can reflect the identity of the participants of collective memory, which is conducive to the establishment and retention of cultural memory (Laland & Rendell, 2013), thus stimulating the spontaneous inheritance of village culture (Yang, Zang, & Chen, 2022). Cultural inheritance is a systematic project, which requires greater interaction between officials, elites, and the local people to form a joint force in order to inherit the traditional culture (Li & Cheng, 2016). Local memory should be the memory of local people, not the memory imposed or screened by the government (Santa & Tiatco, 2019). The residents are not only the inheritors of the traditional social culture of the traditional villages, but also the main creators of the new culture (Tang, 2015). Therefore, the government should play the role of guarantee and support, including policies, funds and intelligence, during the cultural inheritance. The tourism development of traditional villages attracts tourism enterprises and tourists, and their entry reflects the recognition by these immigrants of the village’s traditional culture (Lai et al., 2021), and is also conducive to the integration of the village’s traditional memory and contemporary memory, thus promoting the inheritance and innovation of the village culture. Finally, with the development of tourism, the individual memory of each cultural

inheritor in the village forms an “interactive memory” by sharing with their group. “Interactive memory” relies on the multi-channel communication form of media to further stimulate more participation, thus promoting the transformation from communicative memory to cultural memory, and promoting the “live inheritance” of traditional culture. In summary, based on the memory of traditional villages, the four main participants of cultural inheritance are the government, residents, enterprises and tourists, as shown in Fig. 4.

2.2. The study area

The traditional villages in Beijing have rich material and intangible culture (Xiao et al., 2022). The People’s Government of Beijing Municipal has always considered tourism utilization as an important measure to promote the protection and inheritance of traditional culture, and it has thus formed many types of TOTVs. The status of cultural inheritance of these TOTVs has shown huge differences. In this study, according to the three considerations of the universality of geographical distribution, the representativeness of village culture and the availability of data, we selected 16 TOTVs as the research cases (Fig. 5).

2.3. Construction of the evaluation index system

Based on the theoretical framework described above, specific indicators were selected by means of literature analysis, document sorting, expert discussions and field research. Firstly, we collected, sorted and summarized relevant literature on traditional villages and cultural

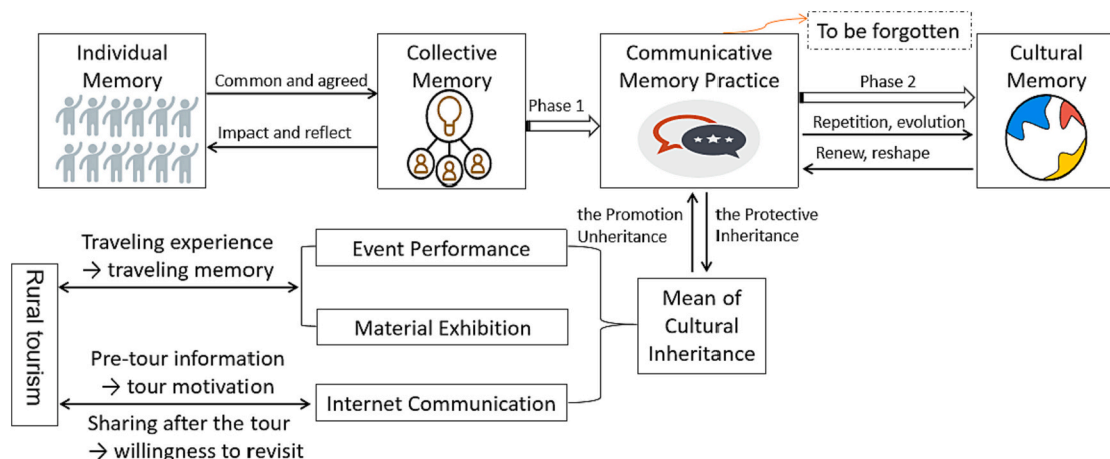


Fig. 3. Cultural inheritance means of TOTVs based on memory theory.

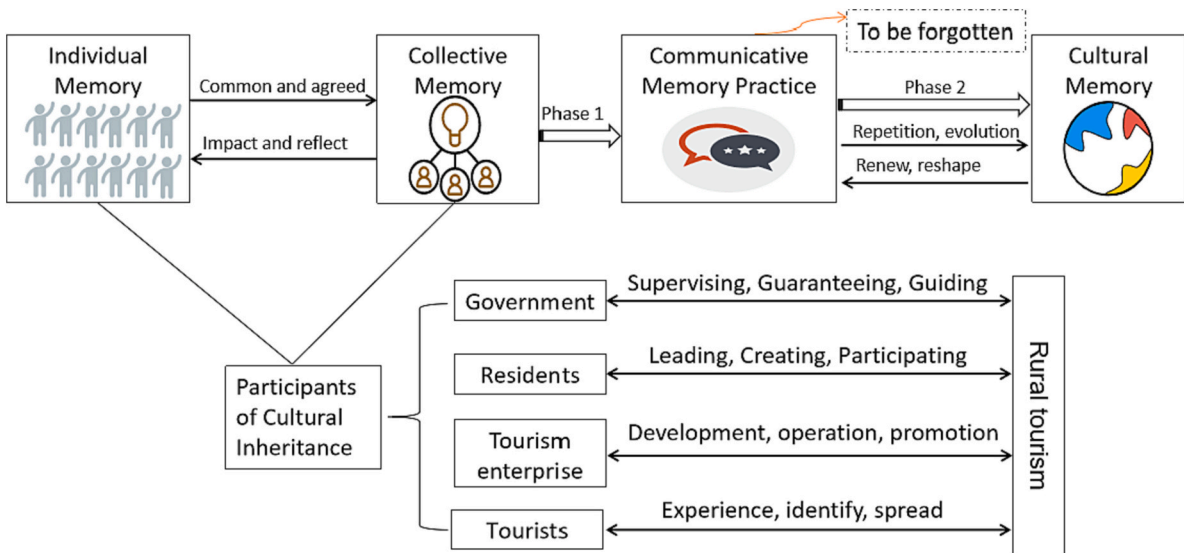


Fig. 4. Cultural inheritance participants of TOTVs based on memory theory.

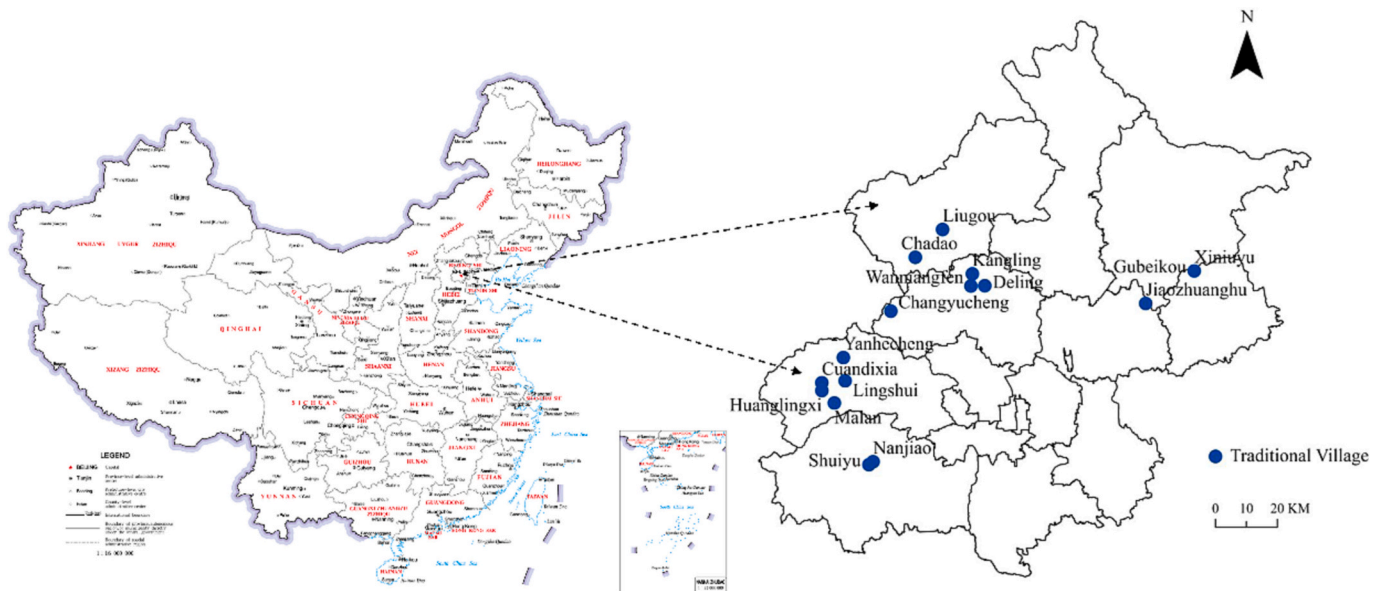


Fig. 5. Geographical distribution of the case TOTVs in Beijing, China.

inheritance, and extracted indicators suitable for this research context and theme in combination with the Chinese document *Evaluation and Identification Indicator System of Traditional Villages (Trial)*. Then, we interviewed different types of cultural inheritance participants in the villages to understand the cultural inheritance indicators from the perspectives of the villagers, enterprises, tourists and so on. Next, we pre-investigated the case villages on the spot to evaluate and grasp the effectiveness, feasibility and scientific nature of the existing indicators. Finally, the expert discussions involved 10 scholars in the fields of traditional villages, cultural heritage and rural tourism, and we discussed the optimization of the indicator system. Through these steps, the comprehensive evaluation index system for the CIL of TOTVs was constructed (Table 1), and the detailed indicator system description is shown in Appendix A.

2.4. Analytical method

2.4.1. Determination of index weights

The comprehensive index system for the CIL in TOTVs is a multi-level system with a complex structure. The Analytic Hierarchy Process (AHP) is often used to explore a comprehensive framework for structuring a decision problem, for quantifying its items, and for evaluating the best solution and its alternatives (Lin & Huang, 2015). At the same time, as an objective weighting method, the entropy weight method can use information entropy to calculate index weights (Teixeira et al., 2021), thus reflecting objective data characteristics. Therefore, the weighting of evaluation indexes in this study adopted the compound weight of subjective and objective synthesis, which involved three specific calculation steps (Luštický & Štumpf, 2021; Tang et al., 2023; Tomal, 2021).

First, the AHP involves three calculation steps.

- (1) Set up a hierarchical system of criteria and sub-criteria.

Table 1
Comprehensive evaluation index system for the CIL of TOTVs.

Criterion	Element	Indicator	Source
Completeness of inheritance content B1	Material Culture C1	Authenticity of traditional buildings D1	I (Yang & Peng, 2022)
		Scarcity of traditional buildings D2	II
		Richness of existing historical environment elements D3	II
		Degree of preservation of the traditional layout of the village D4	I
		Coordination between the village and the surrounding environment D5	I (Wang & Sun, 2021)
Diversity of inheritance means B2	Intangible culture C2	Richness of intangible culture D6	II
		Scarcity of intangible culture D7	II
		Continuity of intangible culture D8	II
Diversity of inheritance means B2	Material exhibition C3	Functional richness of traditional buildings D9	I (Nie et al., 2015)
		Proportion of cultural resources used for tourism development D10	I (Yang & Peng, 2022)
	Event performance C4	Abundance of traditional folk activities D11	I (Zou et al., 2020)
		Abundance of cultural and tourism festivals and events D12	II
Multiplicity of inheritance participants B3	Internet communication C5	Diversity of Internet communication channels D13	III
		Policy guarantee D14	I (Wu & Guo, 2022)
	Government guarantee C6	Financial guarantee D15	I (Wu & Guo, 2022)
		Intelligence guarantee D16	III
	Residents participation C7	Degree of resident participation D17	II
		Age structure of participants D18	III
	Enterprises support C8	Cultural connection between the enterprises and the village D19	III
		Proportion of employed population in the village D20	III
Tourist identity C9	Annual tourist reception D21	I (Sun & Wang, 2022)	
	Attention of potential tourists D22	II	

Note: I: Literature; II: The Chinese document *Evaluation and Identification Indicator System of Traditional-Villages (Trial)*; III: Expert.

- (2) Invite 33 professors and associate professors from traditional villages, rural tourism, cultural heritage and other related fields to compare and score each judgment matrix.
- (3) Test the consistency using Yaahp 12.3 software. After testing the discriminant matrices $CR < 0.1$, the subjective weight results W_j of each index are calculated by the decision-making of the expert group.

Secondly, the entropy weight method involves three calculation steps.

- (1) The extreme value method of the linear dimensionless method is used to eliminate the dimensional influence of data:

$$y_{ij} = \frac{x_{ij} - \min(x_i)}{\max(x_i) - \min(x_i)}, (i = 1, 2, \dots, m; j = 1, 2, \dots, n).$$
 where y_{ij} donates the normalized value; and x_{ij} , shows the value of the j -th indicator of the i -th sample, which is the original value of each indicator of each village.

- (2) The objective weight of indicators are determined by the entropy method. There are m observation values, and n evaluation indicators. Specifically, calculate the information entropy e_j of index j first:

$$e_j = -k \sum_{i=1}^m p_{ij} \ln p_{ij}, p_{ij} = \frac{x_{ij}}{\sum_{i=1}^m x_{ij}}, k = \frac{1}{\ln m}.$$

- (3) Then determine the objective weight θ_j of index j :

$$\theta_j = \frac{1 - e_j}{\sum_{j=1}^n (1 - e_j)}, \theta_j \in [0, 1], \sum_{j=1}^n \theta_j = 1$$

Finally, we combined the subjective and objective weights to obtain a composite weight of the evaluation indicators for the CIL of TOTVs.

$$\lambda_j = \frac{W_j \theta_j}{\sum_{j=1}^n W_j \theta_j}$$

2.4.2. Comprehensive evaluation of CIL

The TOPSIS model is applicable to multi-level evaluation (Tang et al., 2018). The improved weighted TOPSIS method was used to reflect the comprehensive evaluation value of the CIL of TOTVs, and involves four calculation steps.

- (1) Compute the weighted normalized decision matrix: $P = (p_{ij})_{m \times n}$, that is, multiply the normalization matrix Y_{ij} by the composite weight vector θ_j obtained above.
- (2) Determine the positive and negative ideal solutions of a matrix $(p_j^+$ and $p_j^-)$, in which $p_j^+ = \max(p_{1j}, p_{2j}, \dots, p_{mj})$, $p_j^- = \min(p_{1j}, p_{2j}, \dots, p_{mj})$.
- (3) Calculate the distances between the index vector of each evaluation object and both the positive ideal solution and the negative ideal solution (d_i^+ and d_i^-), in which $d_i^+ = \sqrt{\sum_{j=1}^n (p_{ij} - p_j^+)^2}$, $d_i^- = \sqrt{\sum_{j=1}^n (p_{ij} - p_j^-)^2}$, ($0 \leq d_i^+, d_i^- \leq 1$).
- (4) Calculate the proximity value C_i of each evaluated object to its optimal value, $C_i = \frac{d_i^-}{d_i^+ + d_i^-}$, ($0 \leq C_i \leq 1$).

2.5. Data source and processing

Due to the lack of the micro-regional statistical data, this study obtained data through on-the-spot surveys, in-depth interviews, and targeted questionnaires (Table 2). In particular, data for the comprehensive assessment were obtained from government statistics, village committee interviews and field research. In the rural participatory assessment (PRA), we mainly obtained data through questionnaires issued to villagers, tourists and tourism operators (see Appendix B). For the qualitative indicators that are inconvenient to quantify, the respondents were asked to score with reference to certain evaluation standards, and after the weighted average, the final value that could be substituted into the entropy weight method measurement model was obtained. From October to November 2020, 214 valid questionnaires and 277 valid questionnaires were collected through field investigation and telephone interviews, respectively. Finally, a total of 491 valid questionnaires were collected.

3. Results and analysis

3.1. The characteristics of the CIL of case villages

The subjective weight, objective weight and compound weight of each indicator were obtained through the calculation steps of the

Table 2
The data acquisition and scoring method of each evaluation index.

Data acquisition method		Indicators	Scoring method
Comprehensive evaluation PRA	Field survey/village committee	D1, D2, D3, D6, D7, D8, D9, D10, D11, D12, D13, D15, D16, D17, D18, D20, D21, D22	Score according to the index evaluation scale
	Villager PRA	D4	Score on Likert 5 subscale, calculate the average value, and score according to the evaluation scale
	Tourist PRA	D4	
	Tourist operators PRA	D4, D19	
Expert evaluation	Expert rating	D5, D14	Calculate the average score of experts, and assign scores according to the evaluation scale

hierarchical-entropy weight method (Table 3).

Based on the research results, the numerical characteristics of three sub-dimension indicators, namely the integrity of inheritance content, diversity of inheritance means, and diversity of inheritance participants, were calculated. The overall characteristics of the CIL of 16 TOTVs were also revealed. At the same time, we divided the calculated values into five levels ($0 \leq C_i \leq 0.2$, $0.2 < C_i \leq 0.4$, $0.4 < C_i \leq 0.6$, $0.6 < C_i \leq 0.8$, $0.8 < C_i \leq 1$), which correspond to the five levels of very low, low, general, high, and very high. The evaluation results of the comprehensive CIL in each case village and three sub-dimensions are shown in Fig. 6 and Fig. 7.

The comprehensive index of CIL of the 16 TOTVs range from 0.1789 to 0.8567, and there are significant differences among case villages (Fig. 6), showing a state of great differentiation and imbalance. Specifically, the comprehensive CIL in Cuandixia (0.8567) is at the very high level; Gubeikou (0.7484), Liugou (0.7295), Chadao (0.7113), Lingshui (0.6617), Shuiyu (0.6616), Kangling (0.6443), Nanjiao (0.6254), and Huanglingxi (0.6037) rank high; Malan (0.5646), Changyucheng (0.5610), Yanhecheng (0.4654), and Jiaozhuanghu (0.4500) are at the general grade; Wanniangfen (0.3593) and Deling (0.3405) are at a low level; and Xiniuyu (0.1789) is at the very low level, so it urgently needs to be improved.

In addition, the data in Fig. 6 show that the trends of the overall curve of CIL (A) in different villages and the curves of the three sub-dimensions (B1 ~ B3) are roughly similar, but there are significant fluctuations in the scores of some case villages. Specifically, first, the integrity levels of the inheritance content are between 0.1737 and 1.000, the levels in eight villages are lower than the comprehensive level of cultural inheritance, three villages are significantly higher than the comprehensive level, and the remainder are roughly equivalent to the

comprehensive level. This distribution shows that the integrity of the content of cultural inheritance, such as material culture and intangible culture protection in the case villages, still needs to be further improved. Secondly, the diversity levels of the inheritance means are between 0.1561 and 0.8663. The levels in nine villages are significantly higher than the comprehensive level, five villages are significantly lower than the comprehensive level, and the remainder are roughly similar to the comprehensive level. This distribution indicates that with the rapid development of rural tourism, Beijing's TOTVs have paid more attention to diverse means of cultural inheritance such as material exhibitions, event performance, and Internet communication. Thirdly, the diversity levels of inheritance participants are between 0.1887 and 0.8130. The levels in 11 villages are significantly lower than their comprehensive level, two villages are higher than their comprehensive level, and the remainder are roughly the same as their comprehensive level. This distribution shows that there are still some problems in the TOTVs in Beijing, such as insufficient government guarantee, inadequate enterprise support and poor villager participation.

3.2. Evaluation of CIL in the three sub-dimensions

3.2.1. Evaluation of the integrity of cultural inheritance content

As a physical space that can be directly touched and perceived by tourists, the traditional architecture, historical environmental landscapes, traditional patterns, and surrounding natural environments of traditional villages have become the main space for carrying out tourism activities. The degree of integrity of traditional villages is an important reflection of the CIL. Taking Cuandixia, which has the very high score, as an example, the village committee regularly allocates funds to repair the ancient buildings of the Ming and Qing Dynasties that have been

Table 3
Weights of each indicator for the CIL of TOTVs.

Indicator	Subjective weight	Objective weight	Compound weight	Indicator	Subjective weight	Objective weight	Compound weight
Authenticity of traditional buildings D1	0.0557	0.0495	0.0591	Abundance of cultural and tourism festivals and events D12	0.0404	0.0483	0.0419
Scarcity of traditional buildings D2	0.0565	0.0518	0.0627	Diversity of Internet communication channels D13	0.0956	0.0522	0.1069
Richness of existing historical environment elements D3	0.0432	0.0525	0.0486	Policy guarantee D14	0.0271	0.0517	0.0301
Degree of preservation of the traditional layout of the village D4	0.0551	0.0472	0.0557	Financial guarantee D15	0.0354	0.0510	0.0387
Coordination between the village and the surrounding environment D5	0.0346	0.0240	0.0178	Intelligence guarantee D16	0.0209	0.0440	0.0197
Richness of intangible culture D6	0.0855	0.0496	0.0909	Degree of resident participation D17	0.0479	0.0482	0.0495
Scarcity of intangible culture D7	0.0711	0.0411	0.0626	Age structure of participants D18	0.0223	0.0354	0.0169
Continuity of intangible culture D8	0.0487	0.0421	0.0440	Cultural connection between the enterprises and village D19	0.0245	0.0408	0.0214
Functional richness of traditional buildings D9	0.0522	0.0491	0.0549	Proportion of employed population in the village D20	0.0258	0.0459	0.0254
Proportion of cultural resources used for tourism development D10	0.0472	0.0510	0.0516	Annual tourist reception D21	0.0317	0.0492	0.0334
Abundance of traditional folk activities D11	0.0503	0.0473	0.0510	Attention of potential tourists D22	0.0284	0.0282	0.0172

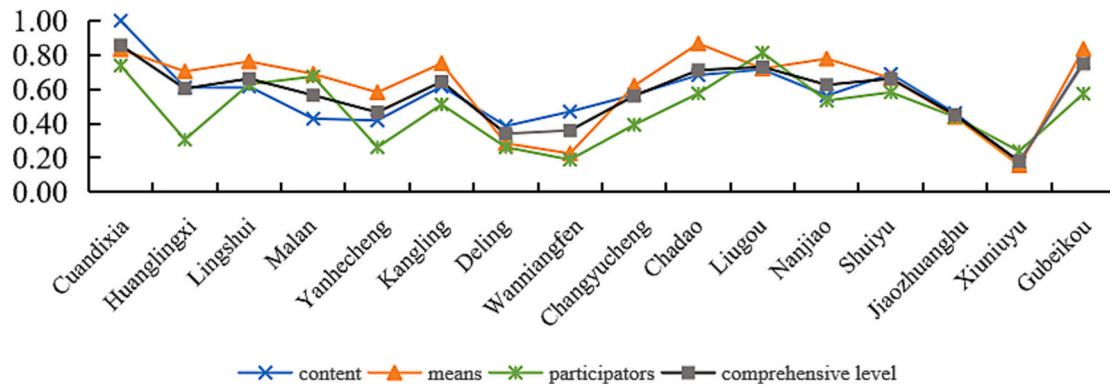


Fig. 6. Value of the comprehensive CIL of the 16 TOTVs.

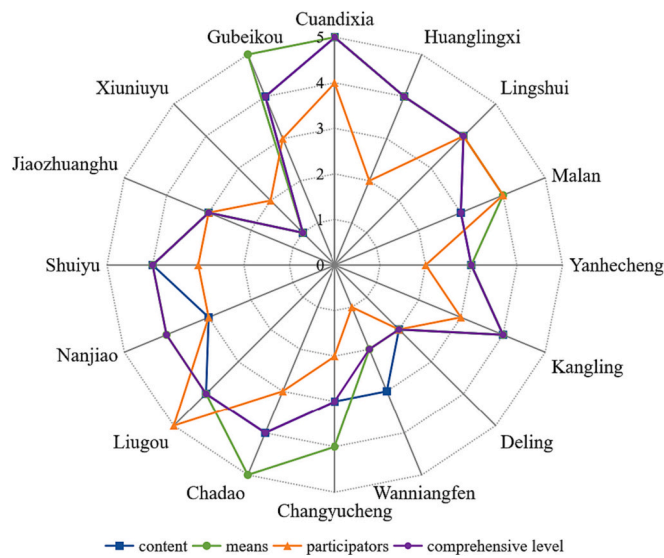


Fig. 7. The classification results of the scores of the CIL of case villages. Note: 1, 2, 3, 4 and 5 represent very low, low, general, high and very high grades, respectively.

preserved in the village for hundreds of years. The authenticity of traditional buildings, the richness of existing historical environmental elements and the preservation degree of the traditional layout of villages all perform well. However, driven by short-term economic interests, some villages which have relatively low scores (e.g., Xiniuyu, Deling, Wanniangfen and Jiaozhuanghu) have destroyed the cultural content of the traditional villages, such as villagers rebuilding huts privately, transforming traditional buildings at will, and failing to repair dilapidated dwellings. Taking Xiniuyu as an example, there are almost no existing traditional dwellings, thus the traditional cultural atmosphere is not obvious and it is no different from modern villages, so the integrity of the traditional cultural inheritance content is poor, and this village is at the very low level.

Furthermore, the tourism development of traditional villages has also activated intangible cultural heritage, and the differences in their scores of richness, scarcity and continuity reflect the integrity level of the content of intangible cultural heritage in the villages. Taking Changyucheng as an example, the village has inherited the “Changyucheng’s Community Chinese Opera” for more than 500 years, and the stability of the three generations of the “the old-middle-young” inheritance troupe is good. However, the richness and scarcity of the content of intangible cultural inheritance are slightly insufficient, so the score for the integrity index of the inheritance content is at the general level. Additionally, the hand-made craft of “Luban pillow” in Gubeikou is

included in the Beijing Municipal Intangible Cultural Heritage List. However, the field investigation found that the villagers have lost the skills for making “Luban pillow”, thus Gubeikou should strengthen the inheritance of its traditional hand-made craft in the future, in order to achieve the very high level of the integrity of inheritance content.

3.2.2. Evaluation of the diversity of cultural inheritance means

First, the most direct way to carry out cultural inheritance of TOTVs is to exhibit material cultural heritage and landscapes through tourism. Taking Chadao, which has the highest score in the sub-dimension of inheritance means, as an example, the village has utilized the large number of tourists brought by the Great Wall and cultural relics protection funds from the local government to carry out tourism planning and project construction for the village, thereby strengthening the tourism function of traditional buildings. For example, the village currently has 105 boutique homestays. However, as a TOTV also located near the scenic spot (The Ming Tombs), Deling Village has not yet conducted the material exhibition of its cultural resources, such as Deling within the village, for tourism development. Therefore, that village’s score in the sub-dimension of inheritance means is poor.

Secondly, TOTVs can fully display the intangible cultural heritage by regularly carrying out traditional folk activities, cultural and tourism festivals and other activities. Taking Nanjiao as an example, this village still regularly organizes traditional folk festivals such as the Lions Festival and the Lantern Festival every year, and it integrates rich intangible cultural heritage such as local sayings, dialects, and customs into them. At the same time, the village actively carries out cultural and tourism activities, such as the Beijing Xishan Folk Culture Festival and the Spring Festival Cultural Performance, which has attracted the attention of many tourists. Therefore, its evaluation score for the diversity of inheritance means is at a high level. On the other hand, Wanniangfen has intangible cultural content such as traditional drama and dance. However, that village has not yet realized the inheritance means of event performance, so the score of the sub-dimension of inheritance means is at a low level.

Finally, Internet communication has broken through the temporal and spatial limitations of cultural inheritance, effectively promoting the diffusion of traditional cultural memories from within villages to the outside world. Taking Malan, which has a high score in the sub-dimension of inheritance means, as an example, this village takes the Chinese revolutionary culture as its core brand. It carries out online communication on social sharing platforms with strong interaction and wide spread exposure, such as Weibo, WeChat and Tiktok, enhancing the attention of multiple inheritors to Malan’s patriotic cultural heritage. However, Xiniuyu only publicizes its boutique homestays on Tiktok at present, and the network communication means is relatively singular, which is not conducive to distributing the propaganda of the village culture.

3.2.3. Evaluation of the diversity of cultural inheritance participants

Firstly, policies, funding and intellectual support from the local government can directly and significantly stimulate the economic development, cultural landscape preservation and the introduction of professional knowledge. Taking Lingshui as an example, the local government attaches great importance to the repair and protection of traditional buildings in the village. In 2018, it provided a special construction fund of 140 million yuan for the development, protection and repair project of the village, and conducted detailed cultural heritage and tourism development planning. Therefore, the score of the sub-dimension of cultural inheritors in the village is at a high level. However, there are also some villages where rural tourism is limited to self-exploration in the absence of policy and financial support. Taking Yanhecheng as an example, based on actual research data, the funds provided by the local government cannot meet the repair needs of traditional buildings in the village, resulting in a dilemma for the protection of the village's material heritage.

Secondly, resident participation is a key force in the inheritance of traditional village culture, and the development of rural tourism has promoted the active participation of community residents in the inheritance of traditional culture to some extent. By comparing Shuiyu and Huanglingxi, in the former, through the active participation of villagers and the teaching of artists to inherit the intangible cultural heritage of the Zhongfan, the age structure of the inheritance team tends to be balanced, ensuring the good inheritance of traditional culture. In contrast, the serious population loss of the young in Huanglingxi poses a great threat to the inheritance of traditional culture, so the score of the sub-dimension of inheritors is still at a very low level.

Thirdly, enterprise support can provide direct financial support for the inheritance of traditional culture and tourism development, while also providing employment opportunities for the villagers. For example, Liugou, which has the highest score in the evaluation of the diversity of inheritors, has the characteristic food culture of "tofu banquet", and its tourism enterprises mainly operate "tofu banquet", which has a strong

connection with village culture and promotes the active inheritance of traditional culture in the village. Furthermore, Cuandixia has developed rural tourism since 1995. The tourism enterprises in this village have absorbed many part-time villagers who participate in farming and tourism at the same time, which has greatly promoted the return of villagers from towns to the rural areas, thus helping to promote the inheritance of traditional culture.

Fourthly, the consumption demand of tourists is one of the important driving forces for the development of tourism in traditional villages, and the capital brought by their consumption provides priority conditions for the cultural inheritance. Taking Jiaozhuanghu as an example, the village has built patriotic cultural attractions such as Tunnel Warfare Site Memorial Hall, with an annual tourist reception of about 700,000. Tourists have a strong sense of identity with the cultural heritage of this village. On the other hand, Kangling has rich cultural resource such as the "Spring Cake Feast" and traditional operas, but the consumption potential of tourists in this village has not been fully activated and still needs further improvement.

3.3. Differentiated improvement paths for the CIL of the TOTVs

Based on the above analysis of the CIL in TOTVs and the scores of their three sub-dimensions, we explored the differentiated improvement paths for the CIL of the TOTVs. Specifically, quadrant diagrams were drawn using the three dimensions of the integrity of cultural inheritance content (X-axis), the diversity of cultural inheritance means (Y-axis) and inheritor participation (Z-axis) (Fig. 8 & Fig. 9), and each dimension was divided according to the five levels mentioned above. The differentiated improvement paths are: demonstration of the culture and tourism brand, comprehensive improvement the level of cultural inheritance, reconstruction of cultural values, and the construction of a featured theme homestay complex.

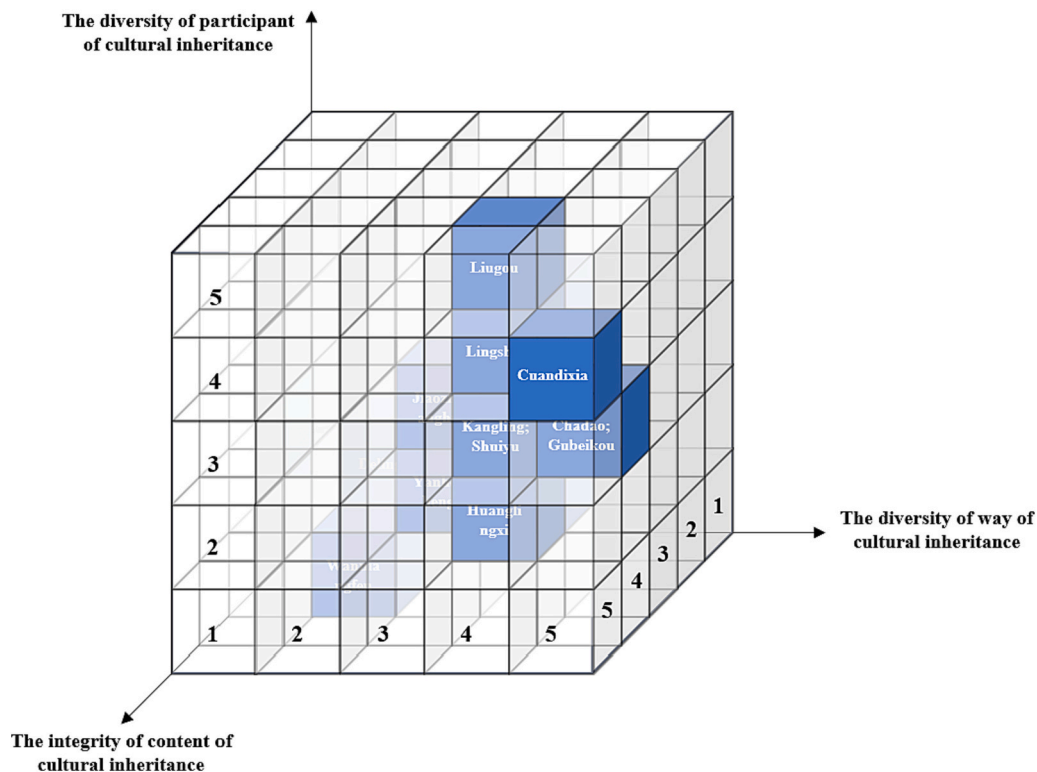


Fig. 8. Three-dimensional chart of the classification results of scores for the level of the cultural inheritance of the case villages. Note: 1, 2, 3, 4 and 5 represent very low, low, average, high and very high ratings, respectively.

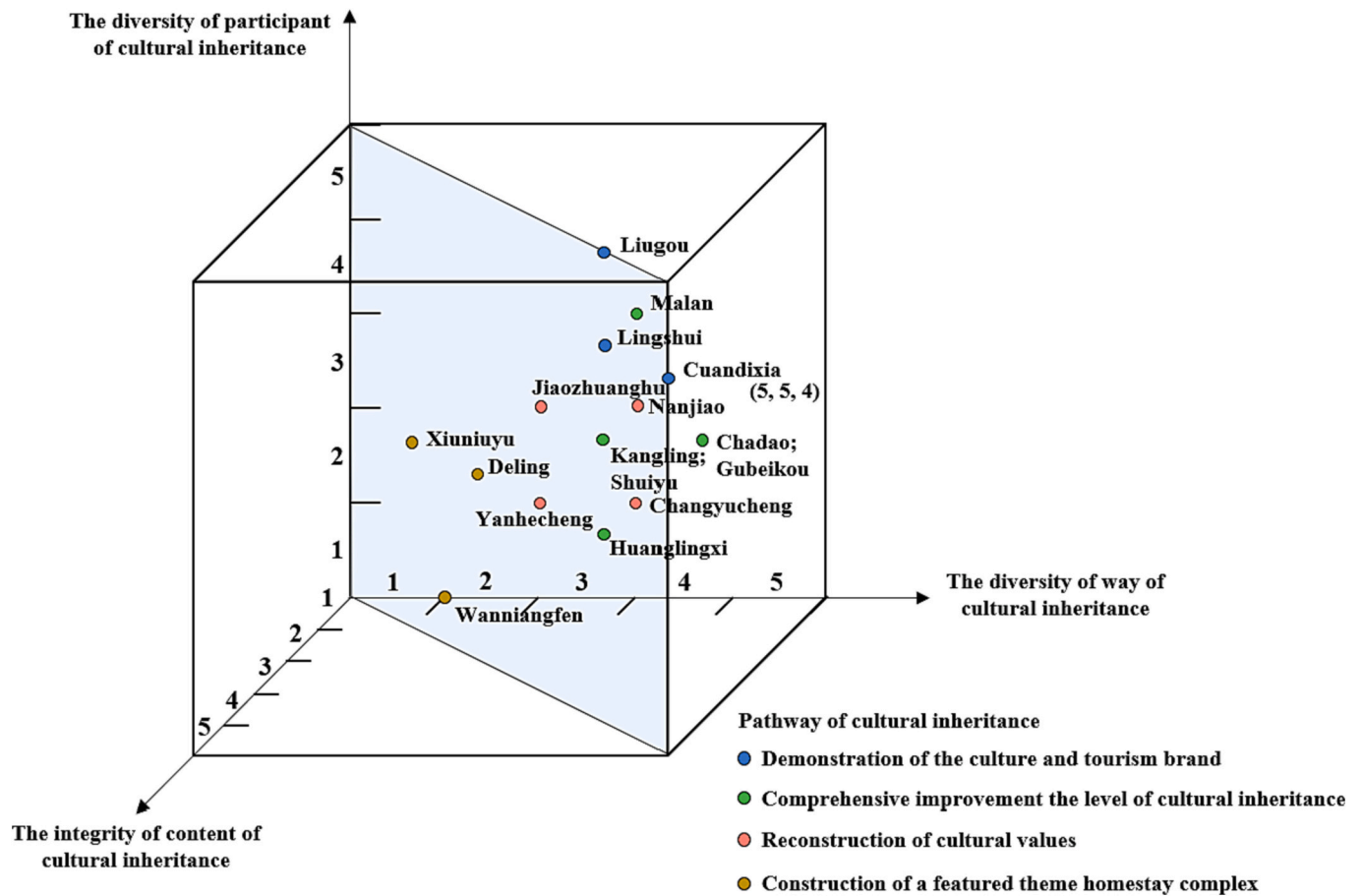


Fig. 9. Different pathways for the cultural inheritance of the case villages based on the quadrant method. Note: 1, 2, 3, 4 and 5 represent very low, low, general, high and very high grades, respectively; the coordinates where each village is located are based on its scores in the three dimensions, e.g., Cuandixia is (5, 5, 4)

3.3.1. Demonstration of culture and tourism brand

This path represents the three sub-dimensions of CIL that are higher than the general level, which also means that the comprehensive CIL is very high, and it applies to Cuandixia (5, 5, 4), Lingshui (4, 4, 4), and Liugou (4, 4, 5). This type of TOTVs retains a relatively complete and rich cultural inheritance content, realizes the diverse utilization of cultural inheritance means, promotes the diverse participation of cultural inheritors, and has a demonstration brand foundation for driving the high-quality development of rural tourism and high-quality inheritance of traditional culture.

Specifically, these TOTVs should give full play to the resource advantages of traditional culture in enriching the material culture landscape and intangible cultural heritage, deeply tap into the connotation of traditional culture, emphasize the authenticity of traditional culture, and create a distinctive rural tourism product system. Furthermore, this type of TOTVs could learn from the concept of the Skansen Museum in Sweden, which built an open-air museum of a traditional village to more directly display the traditional cultural brand of the village for tourists. For example, Cuandixia could build the whole village into an open-air museum to show visitors its unique traditional street layout, public cultural space and traditional residential buildings of the Ming and Qing dynasties in China. More importantly, this type of TOTVs needs to further optimize the rural development of the village, improve the influence and competitiveness of its tourism brands, promote the improvement of rural tourism quality, and develop towards a high-quality brand, such as the “Cuanshe” boutique homestay brand in Cuandixia, the “Autumn Porridge Festival” in Lingshui, and the “Tofu Feast” in Liugou. These steps would provide the leading effect of brand

demonstration for the cultural inheritance and tourism development in other villages.

3.3.2. Comprehensive improvement the level of cultural inheritance

This path represents TOTVs with two of the three sub-dimensions above the general level and one sub-dimension at or below the general level, and it applies to Huanglingxi (4, 4, 2), Malan (3, 4, 4), Kangling (4, 4, 3), Chadao (4, 5, 3), Shuiyu (4, 4, 3) and Gubeikou (4, 5, 3). Although the comprehensive CIL in these TOTVs is high, they have certain biased inheritance characteristics. Therefore, such TOTVs should focus on improving their poor performance based on their own shortcomings.

Specifically, these TOTVs should identify the strengths and weaknesses of each sub-dimension of cultural inheritance, and clarify the specific reasons for their shortcomings. Then, based on the existing cultural heritage and rural tourism development foundation of the village, they should break through those disadvantages in the process of cultural inheritance step by step, promote the reconstruction and structural optimization of elements within the cultural inheritance system, continuously narrow the gap between the levels of various sub-dimensions, and promote the comprehensive improvement of the CIL. For example, due to the severe renovation of its traditional residential buildings, the evaluation score for the integrity of the traditional cultural inheritance in Malan Village is relatively low. In the future, Malan should focus on the protection and repair of its traditional buildings. The exterior of the buildings should be restored as ancient and they should be appropriately renovated without damaging the traditional style, in order to meet the dual needs of villagers’ modern living needs and tourists’ tourism needs, thereby promoting a balanced improvement in

the CIL.

3.3.3. Reconstruction of cultural values

This path represents TOTVs with scores above or below the general level in all three sub-dimensions. Their comprehensive CIL is mostly general, and this applies to Yanhecheng (3,3,2), Changyucheng (3, 4, 2), Nanjiao (3, 4, 3) and Jiaozhuanghu (3,3,3). Although these TOTVs have relatively distinct cultural characteristics, rich cultural heritage, and tourism market development value, their comprehensive CIL is not very prominent, and some villages even have some obvious shortcomings. Therefore, these TOTVs should realize the productization and industrialization of traditional cultural resources, and promote the reconstruction of their traditional cultural values.

Specifically, these TOTVs should build a research team composed of local governments, village committees, villagers, scientific research institutes and other cultural inheritors; sort out the existing preserved cultural resources with local characteristics; and objectively and scientifically analyze their historical, cultural, scientific and recreational values. Then, they could shape their historical and cultural spatial scenes by organically integrating regenerated spatial scenes into the cultural creative design and digital technology, transforming the traditional villages into cultural memory communities guided by rural tourism. Furthermore, based on the existing cultural value characteristics and spatial scenes of the traditional villages, they should clarify the direction for reconstructing the cultural value of the traditional villages. For example, Jiaozhuanghu can take the material space with great revolutionary cultural value in China as the core, excavate and reconstruct its cultural value, and create a historical and cultural community full of patriotic spirit.

3.3.4. Construction of a featured theme homestay complex

This path represents the TOTVs with poor scores in all three sub-dimensions and the comprehensive level of cultural inheritance is relatively low, and it applies to Deling (2,2,2), Wanniangfen (3,2,1) and Xiniuyu (1,1,2). This kind of traditional village has congenital deficiencies, such as the lack of a prominent connotation of traditional culture and poor participation of the cultural inheritors. At the same time, the traditional culture of these villages is increasingly marginalized by the impact of urban culture, and almost all traditional residential buildings have been renovated by the villagers.

Therefore, such TOTVs should seize their development opportunities, such as the rural revitalization strategy, improve the development of rural tourism, build a characteristic theme homestay complex, and finally realize the overall improvement of the CIL. Specifically, they should optimize the construction of village infrastructure and tourism service facilities, and gradually carry out the upgrading of the current village. They could actively introduce social enterprise capital and industrial resources, comprehensively transform idle courtyards, create themed homestays with village cultural heritage and symbols, and provide employment opportunities for the villagers in that village and the surrounding villages. Moreover, they could actively develop derivative industries and characteristic products for the themed homestay, connect with the tourist consumption market, and use tourism capital to promote the protection of old courtyards and the restoration of public cultural spaces, thereby reviving traditional culture that is now on the brink of loss. For example, Deling can rely on its location advantages to creatively build a homestay complex with the theme of Chinese royal culture.

4. Discussion and conclusion

4.1. Discussion

Based on the memory theory, the logic of cultural inheritance was disassembled layer by layer, and this process revealed that the cultural inheritance should be an organism of complete content, diverse means,

and multiple participants. This study considers village memory as a collection of material and intangible culture from the perspective of memory theory, and the inheritance of culture through interaction memory and cultural memory, thereby expanding the traditional view of memory as intangible (Hossain & Barata, 2019).

The combination of traditional village culture and tourism is a new path for promoting the vitality of cultural inheritance (Rodríguez, 2019). The key to promoting the connection between tourism development and local culture is to recognize the value of the local traditional culture in order to overcome the challenges brought by market disconnection (Kong & Wu, 2022). There are huge differences between the material cultures and intangible cultures in the various villages. Consequently, we should choose appropriate ways to achieve cultural inheritance with our culture's distinctive connotations and attributes in mind in the process of cultural inheritance. At the same time, improper tourism intervention would lead to cultural changes or variations. Therefore, in order to maintain the authenticity and integrity of rural memory, attention should be paid to keeping the ideal ideological distance (Strand, 2019), and avoiding excessive tourism (Majdak & de Almeida, 2022). This ideological distance can be proactively maintained by tourists or it can come from the villagers intentionally creating a "staged scene" for visitors. In fact, staged experiences need not exclude objective authenticity, and staged authenticity means the visitors are willing to accept its inauthenticity (Gardiner et al., 2022). Regardless of the ethnic or cultural background, the appropriate and effective integration of tourism and culture can be used to foster the diversification and vitality of cultural inheritance means, and the multiplicity and enthusiasm of cultural inheritance participants, while ensuring the authenticity and diversity of the cultural inheritance content. Hence, it is reasonable and scientific to evaluate and measure the comprehensive CIL from three aspects: contents, means and the participants of cultural inheritance. However, it should be noted that the selection of a special indicator needs to be further considered and adjusted according to the actual situation of a specific culture. Therefore, the theoretical analysis framework proposed in this study has strong universality and generalization, and the index system of empirical analysis has certain features of flexibility and dynamics.

Based on the above considerations, the measurement index system for the CIL of TOTVs, which includes three subsystems of culture contents, means and participants, has certain theoretical significance. Firstly, we clarified the connotation and logical structure of traditional village cultural inheritance with memory theory. Secondly, an analytical framework for measuring the CIL was constructed, and a comprehensive evaluation index system of cultural inheritance was built from three aspects: contents, means and participants. Finally, we expanded the connotation of cultural inheritance, and found that rural cultural inheritance in the context of tourism intervention is a process of transferring and taking over the material and intangible cultures of villages among multiple inheritors. In terms of practical significance, we considered 16 TOTVs in Beijing as examples, summarized and refined their respective levels and characteristics of cultural inheritance, and summarized four differentiated cultural inheritance paths, on the basis of which targeted suggestions for improvement were put forward.

4.2. Conclusions

This study proposed a theoretical framework for the cultural inheritance of TOTVs, constructed a comprehensive evaluation index system of the CIL, and empirically analyzed the CIL of 16 typical TOTVs in Beijing, China. This analysis yielded four main conclusions.

Firstly, the cultural inheritance of TOTVs refers to the process of transferring and taking over the material and intangible cultures of villages among multiple inheritors. This process is based on cultural inheritance content, such as material culture and intangible cultural heritage; takes cultural inheritance means such as material exhibition, event performance and the Internet communication as channels; and

takes the participation of government, residents, enterprises and tourists as a guarantee for continuous and dynamic progress.

Secondly, a comprehensive evaluation index system of the CIL has been constructed from three sub-dimensions: the integrity of the cultural inheritance content, the diversity of cultural inheritance means and the diversity of cultural inheritance participators, which could be divided into 22 indicators.

Thirdly, the CIL of the case villages show significant differences, indicating hierarchical differentiation and imbalance. The trends of the three sub-dimensions are related to the overall CIL trend, and some indicator values fluctuate significantly.

Fourthly, based on the different combinations of the scores of TOTVs in the three sub-dimensions, we proposed four paths for improving the CIL of TOTVs: demonstration of culture and tourism brand, comprehensive improvement, reconstruction of cultural values, and the construction of a featured theme homestay complex.

4.3. Limitations and prospects

At present, the research on the CIL is still relatively broad, and its depth is insufficient. From the limitations and shortcomings that exist in this study, we would like to propose some future research perspectives. First, due to article space constraints, this study did not further explore the impact of each of the three subsystems on the cultural inheritance and village sustainability. Therefore, future research should carry out the detailed examination of a certain subsystem of cultural inheritance to clarify the mechanism and optimization path of the cultural inheritance system.

In addition, based on the memory theory, this study proposed a comprehensive evaluation method for the CIL, mainly referring to and using the meaning of memory as a noun form, that is, the content, means and participants of cultural inheritance. But memory itself is also an important link and action of cultural inheritance (Chudek & Henrich, 2011). Further discussion of cultural inheritance from the perspective of memory as a verb would help us to better understand the mechanism of cultural inheritance. Therefore, subsequent research could study the specific process of cultural inheritance from memorizing, such as alternative memory (Castillo-González & Leetoy, 2019).

Finally, this study only selected the traditional villages in Beijing for the empirical analysis of the CIL. Although the results are innovative and scientific, the cultural elements are constantly interacting and influencing each other, so they cannot be regarded as a discrete pedigree (Gabora, 2008). The closer the spatial distance is, the more significant the impact will be, that is, the more significant the similarities among them. Therefore, the selection of cases will still need to be further tested and improved in the future, including a wider range of TOTVs with more complex and diverse cultural backgrounds.

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Statement

Our team members worked together to complete the preparation and writing of this paper. Everyone has played an important role, especially in their own areas of expertise. Specifically, Tang Chengcai: Project administration; Resources; Writing-review & editing; Funding acquisition. Yang Yuanyuan: Conceptualization; Writing-original draft; Supervision. Liu Yaru: Methodology; Formal analysis; Visualization; Writing-original draft. Xiao Xiaoyue: Investigation; Data curation; Validation.

Declaration of Competing Interest

The authors report no declarations of interest. And there is no conflict of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tmp.2023.101166>.

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