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# The measurement of multiple influence paths of residents' positive perception in ethnic minority village tourism destinations: a case study of Ping'an Zhuang Village in Longsheng County

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Ethnic tourism is a delightful activity for tourists to visit ethnic minority gathering areas to fulfill their aesthetic demands by observing and experiencing the cultures of ethnic minorities. Based on the grounded theory, quantitative analysis and fuzzy set qualitative comparative analysis, this paper delves into the measurement of the positive perception of residents in ethnic minority villages and the multiple paths of its influencing factors, aiming to offer policy notions for promoting the dynamic protection of ethnic minority culture and rural revitalization. The findings revealed that: (1) The positive perception of residents in tourist destinations can be classified into three dimensions: "positive perception in economy," "positive perception in social and cultural aspects," and "positive perception in environment," and the localized scale encompasses nine items; (2) The influencing factors consist of three elements: place belonging, perceived power, and residents' participation. The enhancement of residents' positive perception demands a combination of these factors rather than relying solely on any single one; (3) Regarding the perception of residents in any dimension, the direct impact of perceived power on the positive perception of residents in ethnic villages is weak. Place belonging and residents' participation are the core conditions for the formation of the positive perception of residents in ethnic villages. Strengthening the emotional connection and participation mechanism of residents is an effective means to boost their positive perception.

## KEYWORDS

ethnic village tourism, measurement, multiple influence paths, positive perception of residents, fuzzy set qualitative comparative analysis, Ping'an Zhuang Village

## 1 Introduction

Ethnic tourism is a delightful activity for tourists to visit ethnic minority gathering areas to fulfill their aesthetic demands by observing and experiencing the cultures of ethnic minorities (Jiang, 2015). Ethnic village tourism constitutes an important component of ethnic tourism. It utilizes ethnic minority villages as the carrier and features unique ethnic culture and natural scenery as tourist attractions to draw tourists for experiencing heterogeneous cultures. This form of tourism integrates the characteristics of rural tourism and eco-tourism, and fulfills the psychological motivations of tourists such as "seeking novelty, difference, pleasure, and knowledge" (Luo, 2003). Among them, as the primary

and direct stakeholders of local development, the residents' perception and attitude toward tourism destinations directly influence the quality and sustainability of tourism destination development (Shi and Cui, 2018). Therefore, it is of considerable significance to study the perception of residents in ethnic villages for developing tourism in ethnic areas, promoting local economic development, and carrying forward the traditional national culture. Residents' positive perception is frequently employed to gauge the impact of tourism development on destinations. The prevalent research methods mainly consist of questionnaire survey, field investigation, literature research, etc. (Sun and Guo, 2022; Li et al., 2007; Zhu, 2021). There are an increasing number of research outcomes regarding the influencing factors of residents' perception, yet they tend to focus more on the impact of a single factor on residents' perception. These factors mainly include economic factors, cultural factors, social factors, environmental factors and policy and management factors. However, in the actual situation, the development of ethnic village tourism is the interaction, mutual restriction and common influence of many factors. Therefore, when formulating tourism development strategy and planning, it is necessary to fully consider the comprehensive influence of these factors in order to realize the sustainable development of ethnic village tourism. In the past, different studies focused on the influence of a specific single factor, but in reality, different factors do not play a separate role, but through different combinations of factors to produce different results, so it is necessary to conduct a systematic and comprehensive analysis of the single factor in the previous scattered studies. Under the background of the increasingly mature development of ethnic village tourism, it is increasingly important to explore the comprehensive influence of multiple factors. Against the backdrop of the increasingly mature development of ethnic village tourism, the significance of exploring the comprehensive influence of multiple factors is becoming increasingly prominent.

Residents' positive perception refers to the positive feelings and understanding they have toward the surrounding environment, social events, policy implementation, and personal life. It serves as an important indicator for measuring community harmony and residents' happiness. In the context of tourism development, when residents of tourist destinations have a positive perception of the positive impacts of tourism, they are more inclined to support the local tourism development and actively participate in related activities, thereby bringing economic, cultural, and other benefits to the local area (Stylidis et al., 2014).

## 2 Literature review

According to the literature both at home and abroad, the research contents of residents' perception of tourism destinations mainly encompass residents' perception and attitude, influencing factors, perception and attitude toward tourism and special tourism products, cluster analysis, and theoretical construction (García et al., 2015; Rasoolimanesh and Seyfi, 2021; Gursoy et al., 2019; Martínez et al., 2017; Jiang, 2016). Jimmo et al. discovered that sports tourism has a significant influence on the economy and culture of the host community (Jimmo et al., 2012). Curto examines

whether tourism can be utilized as an economic development strategy in terms of its costs and benefits (Curto, 2006). Qin found that the different geographical conditions determine the different stages of tourism development of tourism destinations, which in turn affects the differences in the perception content of the tourism impact among residents in different regions (Qin, 2014). Guo discovered that the increase in economic benefits does not necessarily enhance residents' goodwill and support for local tourism development (Guo, 2022). Yan and Zhang listed the factors influencing the perception and attitude of the residents of the ancient town as economy, environment, and culture according to the degree of influence (Yan and Zhang, 2014). With the continuous enhancement of the status of the tourism industry in ethnic minority areas, it is of great significance to explore the cognitive attitude of residents of ethnic minority villages toward tourism development, so as to assist local governments in understanding the social impact of tourism development, reduce the conflict between tourists and residents, make rational planning, and obtain the support of local residents for tourism. The current research results on residents' perception in ethnic minority areas mainly focus on residents' influence and perception of tourism development, tourism poverty alleviation, and tourism development (Liang and Wei, 2017; Deng and Wang, 2022; Huang and Huang, 2014; Chen et al., 2017; Yin et al., 2023; Li and Chen, 2019; Li et al., 2015; Qin et al., 2016). These studies probed into the perceptions, attitudes, and behavioral responses of residents in ethnic minority areas in different tourism contexts through quantitative and qualitative methods.

According to the relevant research outcomes, the influencing factors of residents' perception in tourist destinations encompass: place belonging, power perception, and residents' participation. The sense of place belonging refers to the individual's emotional investment and attachment to a specific area (Zhang and Yu, 2011), which is conducive to the formation of a positive perception of tourism. Residents with a strong sense of place belonging might pay greater attention to the impact of tourism (Chen et al., 2018). Simultaneously, place belonging is also an important driving factor influencing residents' satisfaction, and there exists a positive correlation between place belonging and residents' satisfaction (Wang et al., 2010). The stronger the villagers' sense of place belonging is, the more inclined they are to devote more time and energy to rural activities (Chao, 2013), thereby enhancing their loyalty to the countryside (Cheng et al., 2019). Power perception is the extent to which residents feel that they can exert an influence on local tourism development (Wei and Dai, 2018). It emphasizes the significance of residents' participation and opinion expression in tourism development, including the right to obtain information, the right to participate in decision-making, the right to guide, and the right to complain and appeal. Residents' participation pertains to the behavior of residents taking part in various affairs of the community. The aim is to achieve the all-round development of the community and its people (Wang and Xiang, 2017). It is mainly manifested in decision-making participation, resource management participation, economic participation, and cultural participation in tourism development. The more residents participate in community affairs, the stronger their sense of pride and ownership becomes, and the stronger their sense of

community belonging is (Chao, 2013). The depth and breadth of residents' participation are also positively correlated with the sense of place belonging and residents' loyalty (Cheng et al., 2019).

Most of the existing studies concentrate on the impact of a single factor on residents' positive perception. Nevertheless, the reality is frequently more intricate. Different factors do not act independently but influence the outcomes through diverse combinations. Based on the data acquired from questionnaires, this study employs the fuzzy set qualitative comparative analysis (fsQCA) method to explore the influence of the three factors of place belonging, power perception, and residents' participation on the three perceived value dimensions of residents' economy, social culture, and environment, and analyzes the influence of a single factor and different factor configurations on the positive perception of residents in ethnic village tourism destinations.

## 3 Research design

### 3.1 An overview of the case

Ping'an Zhuang Village is situated in the Longji Terraced Scenic Area in the southeast of Longsheng Autonomous County, Guilin City, located at 110° 04' 06" "110° 11' 52" east longitude and 25° 42' 33" "25° 50' 15" north latitude (see Figure 1). It is 27 km away from Longsheng County and 90 km away from Guilin City. The distinctive natural landscape and the unadorned folk customs of Zhuang Village have made Longji Terraced Scenic Area one of the 20 first-class scenic spots in Guangxi. It has not only been included in the internationally renowned travel guide "Lonely Planet," but was also rated as a national 4A-level scenic spot as early as 2011. Since its development in 1980, the transportation conditions and tourism facilities of this place have been continuously enhanced, especially relying on the policy support of the rural revitalization strategy. The rapid development of tourism has played a significant role in promoting the local economy. As direct beneficiaries, local residents are increasingly aware of this positive effect, and at the same time, they are gradually starting to pay attention to the negative impact of tourism development (Liu et al., 2007). Ping'an Zhuang Village is located in the core area of the Longji Terraced Scenic Area. It is the earliest developed village in the Terraced Scenic Area and is also a typical ethnic minority mountain village community. With the development of local tourism, the main household income of residents has gradually shifted from a sole agricultural income to tourism business income, and tourism business income has gradually become the main source of livelihood. At the beginning of the twenty-first century, the main tourist projects in the scenic spot have encompassed terraced field sightseeing, residential visits, farm life experiences, singing and dancing performances, traditional festivals, photography competitions, etc (Wu and Ye, 2005). And now it is constantly innovating on the original basis and has developed into a relatively mature tourist destination for ethnic minority villages. It holds a certain representativeness in the tourism industry in ethnic areas.

### 3.2 Research methods

fsQCA is a case-oriented research method, which combines qualitative analysis and quantitative analysis effectively based on set theory and configuration thinking (Yong and Chen, 2015). Its basic idea is to investigate the relationship between antecedent conditions and the combination of conditions and the result from the perspective of set with the help of architecture theory and Boolean algebra, so as to explain the complex causal relationship behind the phenomenon. It can dig deeply into the sufficient and necessary conditions for the occurrence of the result, analyze the path of their combined effect on the result variable, and dig out the combination of multiple factors that have explanatory power for the result variable, instead of treating each condition variable as separate influencing factors. This paper studies the complex attributes of the influencing factors of residents' positive perception in ethnic villages. Therefore, it is appropriate to use this method to establish parameters according to different membership degrees and finally establish a truth table to explore the causal relationship. fsQCA employs the Boolean algebra calculation method and explains the parameters of consistency and coverage as the judgment criteria. The parameters are explained as follows:

- ① Consistency. Consistency is employed to determine the degree of causality of the conditional configuration, that is, the extent of consistency between the occurrence of the result event Y and the combination of the corresponding multiple cause events X. One direct way to measure set-theoretic consistency using fuzzy membership is to divide the sum of the membership degrees that achieve agreement in the antecedent condition or combination of antecedent conditions by the sum of the membership degrees in all antecedent conditions or combinations of antecedent conditions. The formula is as follows:

$$\text{Consistency}(X_i \leq Y_i) = \frac{\sum \min(X_i, Y_i)}{\sum X_i} (0 \leq \text{Consistency} \leq 1) \quad (1)$$

- ② Coverage. Coverage is utilized to determine the explanatory strength of condition X over Y. It is a measure of the weight or importance of the empirical evidence. The basic idea behind the coverage calculation is to evaluate the degree to which a subset physically covers the target set. The measurement can be regarded as the proportion of the antecedent conditions or combinations of antecedent conditions and the overlapping part of the two sets of results to the set of results. The formula is as follows:

$$\text{Coverage}(X_i \leq Y_i) = \frac{\sum \min(X_i, Y_i)}{\sum Y_i} (0 \leq \text{Coverage} \leq 1) \quad (2)$$

Note: When the consistency is high, the coverage is not necessarily high; When the consistency is low, it doesn't make much sense to calculate coverage.



### 3.3 Data acquisition and testing

#### 3.3.1 Questionnaire design and data collection

##### 3.3.1.1 Questionnaire design

The main content of the questionnaire includes two parts: basic information of the research object and measurement items. Items were measured using the Richter scale, from “strongly disagree” to “strongly agree” were given a score of 1–5, and the subjects scored them on the corresponding value. Data collection consists of two stages. The first stage aims to determine the residents’ positive perception scale conforming to the actual situation of the case through exploratory factor analysis, and divide the residents’ positive perception dimensions. In the second stage, on the basis of the first stage, the author explores the impact of the three factors of local ownership, power perception and residents’ participation on the three perceived value dimensions of residents’ economy, social culture and environment.

The residents’ positive perception is a complex multi-dimensional abstract variable. The academic circles have produced abundant research results on the composition dimensions of residents’ perceived value in tourist destinations, and the relevant measurement scales are relatively mature. After investigating the actual situation of the case, this paper draws on the measurement scales with high adaptability in relevant literature (Wang and Qu,

2014; Du et al., 2013; Wei and Dai, 2018; Mccool and Martin, 1994; Nicholas et al., 2009). The positive perception scale of tourism destination residents was designed from the aspects of economic income perception, employment promotion perception, ecological environment perception, infrastructure condition perception, social emotion perception, and social literacy perception. Two experts were invited to fill out the test, and the questionnaire was further evaluated and guided from a professional perspective, aiming to check the clarity of the expression and the completeness of the content of the questionnaire. On this basis, an exploratory questionnaire was formed for distribution and collection (S3).

##### 3.3.1.2 Data acquisition and processing

The first phase of data collection took place from 20 to 25 September 2022. A total of 280 questionnaires were distributed and 209 were collected. The recovered valid questionnaire Cronbach’s  $\alpha$  was 0.976, which was  $>0.80$ , indicating that the data reliability was reliable. The KMO value was 0.885, and the significance level of Bartlett spherical test was  $< 0.001$ , indicating that the data could be used for factor analysis. Principal component analysis (PCA) was used to delete the items with factor loads  $<0.50$ , and finally the positive perception scale of residents in tourist destinations with nine items that were more suitable for the case site was obtained (see Table 1).



TABLE 1 Exploratory factor analysis results of residents' positive perception in tourist destinations.

| Item   | Positive perception of the economy | Socio-cultural positive perception | Positive perception of the environment |
|--|------------------------------------|------------------------------------|--|
| Tourism increases the income of residents  | 0.763                              |                                    |  |
| Tourism has increased employment opportunities   | 0.795                              |                                    |  |
| Tourism improves the standard of living of residents                                   | 0.812                              |                                    |  |
| Tourism boosts the cultural pride of residents   |                                    | 0.799                              |  |
| Tourism contributes to the preservation and dissemination of local traditional culture |                                    | 0.749                              |  |
| I had the opportunity to interact with a wide variety of people                        |                                    | 0.681                              |  |
| The ecological environment has been better managed                                     |                                    |                                    | 0.881                                  |
| Public infrastructure is better  |                                    |                                    | 0.754                                  |
| Tourism has improved my living conditions  |                                    |                                    | 0.630                                  |
| Characteristic value   | 2.975                              | 2.806                              | 2.669                                  |
| Explanation variation %  | 33.052                             | 31.177                             | 29.651                                 |
| Cumulative amount of interpretive variation %  | 33.052                             | 64.229                             | 93.880                                 |

In this paper, the maximum orthogonal rotation method is used to rotate the initial factor, and three common factors with eigenvalues  $>1$  are obtained after rotation. The explanatory variances were 33.052, 31.177, and 29.651%, respectively, and the cumulative explanatory variances were 93.880%, indicating that the explanatory power of the three common factors was strong enough. Based on the research results of residents' perception in tourist destinations, this paper identifies three dimensions of residents' positive perceptions: "economic positive perception," "social and cultural positive perception," and "environmental positive perception."

The second phase is the formal questionnaires, which will be distributed from September 30 to October 3, 2022, with a total of 300 questionnaires distributed and 224 collected. On the basis of the items determined in the first stage, the questionnaire content added a scale of three influencing factors: residents' local affiliation, residents' perception of power, and residents' participation (S4). The results of Chunyang Wang and Zongbin Du were mainly used for the residents' place attribution scale, the research results of Jin Wei were mainly used for the residents' perception of power, and the results of Chunyang Wang's research were mainly used for the residents' participation scale (Wang and Qu, 2014; Du et al., 2013; Wei and Dai, 2018). The entire data acquisition process does not involve any form of animal or human clinical trials, and the research is ethical, following the ethical principles outlined in the Declaration of Helsinki. All respondents fully understood the purpose of the study and provided informed consent before participating in the study, and the information was kept confidential and anonymous.

### 3.3.2 Demographic characteristics of the sample

The demographic results of the questionnaire (see Table 2) show that the ratio of males to females in the sample is about 1:2, of which 78% of the population is between the ages of 25 and 64, the education level is mainly concentrated in high school and below,

and the occupation is mainly farmers or self-employed. Based on the fact that the proportion of women in rural tourism is much higher than that of men, and there are a large number of men who go out to work, and women stay behind to take care of the elderly and children, the sample collection data is in line with the proportion of local population composition. In general, the sample is generally representative, which can basically meet the relevant data requirements of the empirical part of this study (He et al., 2018).

### 3.3.3 Reliability and validity analysis

Firstly, the data were tested for normality. Using SPSS27.0 to analyze the skewness and kurtosis of each measurement item, the results show that the skewness coefficient of the measurement item is between  $-1.167$  and  $0.162$ , and the kurtosis coefficient is between  $-0.892$  and  $1.544$ . According to Kline, the data normal distribution test standard of proposing the absolute value of skewness  $<3$  and the absolute value of kurtosis  $<10$  (Kline, 1998), the study data are generally normally distributed.

The reliability analysis of the obtained data was carried out using the Cronbach's  $\alpha$  coefficient and combined reliability. The calculation results are shown in Table 3. The values of the Cronbach's  $\alpha$  of each variable were 0.972, 0.935, 0.984, 0.975, 0.946, and 0.949, respectively, which were greater than the standard of 0.7 and reached the acceptance range. The factor load of each item was between 0.793 and 0.992, which meets the standard of no  $<0.6$  proposed by Kline. The measurement error of the item cannot have a negative value and simultaneously meets the significant requirements. The combined reliability (CR) values are 0.9721, 0.9383, 0.9844, 0.9627, 0.9187, and 0.8977, respectively, which meet the requirements of being  $>0.7$ . The results indicated good reliability in the measurement of the variables in this study.

Validity tests are generally for convergent validity and discriminative validity. Table 4 shows that the average variance extraction (AVE) values were 0.8745, 0.7928, 0.9268, 0.8959, 0.7903,

TABLE 2 Demographic characteristics of the sample.

|                   | Classification   | Number of research | Percentage |
|-------------------|--|--------------------|------------|
| Gender            | Male   | 82                 | 36.6       |
|                   | Female   | 142                | 63.4       |
| Age               | 18–24 years old  | 16                 | 7.2        |
|                   | 25–44 years old  | 102                | 45.5       |
|                   | 45–64 years old  | 74                 | 33.0       |
| Educational level | 64 years of age or older                                 | 32                 | 14.3       |
|                   | Elementary school and below                              | 52                 | 23.2       |
|                   | Junior high school                                       | 60                 | 26.8       |
|                   | High school and technical secondary school               | 80                 | 35.7       |
|                   | Junior college   | 20                 | 8.9        |
|                   | Graduate student   | 4                  | 1.8        |
| Occupation        | Others   | 8                  | 3.6        |
|                   | Self-employed  | 106                | 47.3       |
|                   | Company employees  | 4                  | 1.8        |
|                   | Personnel of government agencies and public institutions | 18                 | 8.0        |
|                   | Farmer   | 42                 | 18.8       |
|                   | Others   | 24                 | 10.7       |
|                   | Students   | 8                  | 3.6        |
| Marital status    | Freelancer   | 22                 | 9.8        |
|                   | Unmarried  | 26                 | 11.6       |
|                   | Married  | 198                | 88.4       |

and 0.7459, respectively. The AVE values for the convergent validity test needed to be  $>0.5$  (see Table 3). The test of discriminant validity mainly adopts the suggestion of Fornell et al., namely, if the square root of the AVE value of the variable is greater than the correlation coefficient between the variable and the corresponding variable, the variable is said to have discriminant validity. It can be observed from the calculation that the results meet the requirements for the existence of discriminant validity (see Table 4).

## 4 Analysis of research results

In this paper, the fuzzy set qualitative comparative analysis method is used to establish parameters according to different membership levels, and finally, the truth table is established to explore the relationship between the three influential factors of place ownership, power perception and residents' participation and the positive perceived value of the three dimensions of economic

positive perception, environmental positive perception and social and cultural positive perception.

### 4.1 Variable assignment of the QCA process

Since a dimension in the Likert scale is composed of multiple items, the raw data of QCA are obtained initially by averaging. The QCA method studies the relationship between sets and sets, and the variable concept needs to be calibrated to the set concept before the analysis procedure commences. In fuzzy set qualitative comparative analysis, calibration is the conversion of variable data into a membership score ranging from 0 to 1, which represents the degree to which the case belongs to a set. In this paper, the direct calibration method is employed to determine three anchor points: fully affiliated points, intersection points, and completely unaffiliated points. According to the actual situation of the questionnaire, 5% of the sample data was set as the complete non-membership point, 50% as the intersection point, and 95% as the full membership point. The calibration results are shown in Table 5. The data analysis tool was carried out using fsQCA3.0 software.

### 4.2 Analysis of the adequacy and necessity of univariate

In fuzzy set qualitative comparative analysis, consistency represents the sufficient condition for the variable to explain the outcome variable, and coverage represents the necessary condition. Through the data analysis (see Table 6), it can be observed that the consistency of place belonging, perceived power, and residents' participation as univariates is  $<0.9$ , which does not constitute sufficient conditions for the perception of a positive influence on residents in tourist destinations. Among the necessary conditions, the necessity of all univariate antecedent conditions to affect the perception of residents in tourist destinations was also lower than 0.9. Therefore, it is concluded that place belonging, power perception, and residents' participation are not sufficient and necessary conditions for the influencing factors of the positive perception of ethnic village residents, and they are considered to exist in the form of condition configuration.

### 4.3 Configuration analysis of paths that affect the positive perception of residents in tourist destinations

Before carrying out the configuration analysis, the truth table was constructed. Considering that the threshold setting could be such that at least 75% of the sample size could be retained, 1 was selected as the threshold standard. At the same time, the minimum consistency level was 0.7 on the consistency threshold. In addition, in order to avoid the situation where the configuration is a subset at the same time as the result set and is non-centralized, that is, there is a contradictory configuration, the proportional

TABLE 3 Reliability and validity analysis.

| Variable                               | The item of observing   | Normalized factor load capacity | $\alpha$ | CR     | AVE    |
|--|---|---------------------------------|----------|--------|--------|
| Place belonging                        | I liked the area very much  | 0.9                             | 0.972    | 0.9721 | 0.8745 |
|  | I would like to live locally for a long time  | 0.91                            |          |        |        |
|  | I care a lot about the day-to-day affairs of the local area                                     | 0.953                           |          |        |        |
|  | If you move away from the local area, it will be very nostalgic                                 | 0.943                           |          |        |        |
|  | Being local means a lot to me   | 0.968                           |          |        |        |
| Power perception                       | My opinion will be considered or adopted by the tourism authority                               | 0.812                           | 0.935    | 0.9383 | 0.7928 |
|  | I can influence the motivation of people around me to participate in travel activities          | 0.977                           |          |        |        |
|  | I am able to influence the experience of tourists   | 0.932                           |          |        |        |
|  | I can show our traditional culture to tourists as I like  | 0.83                            |          |        |        |
| Resident participation                 | I am aware of the problems with the development of local tourism                                | 0.959                           | 0.984    | 0.9844 | 0.9268 |
|  | I follow the news about the development of tourism  | 0.992                           |          |        |        |
|  | I have a certain understanding of the future tourists in the area                               | 0.97                            |          |        |        |
|  | I would like to participate in the management of tourism projects                               | 0.986                           |          |        |        |
|  | I would like to participate in tourism education and training                                   | 0.904                           |          |        |        |
| Economic Positive Perception           | Tourism increases the income of residents   | 1                               | 0.975    | 0.9696 | 0.9143 |
|  | Tourism has increased employment opportunities.   | 0.963                           |          |        |        |
|  | Tourism has improved my living conditions   | 0.903                           |          |        |        |
| Socio-cultural positive perception     | Tourism boosts the cultural pride of residents  | 0.945                           | 0.946    | 0.9533 | 0.872  |
|  | Tourism contributes to the positive preservation and dissemination of local traditional culture | 0.974                           |          |        |        |
|  | I had the opportunity to interact with a wide variety of people                                 | 0.880                           |          |        |        |
| Positive perception of the environment | Tourism improves the standard of living of residents  | 0.901                           | 0.949    | 0.9467 | 0.8555 |
|  | The ecological environment has been better managed  | 0.920                           |          |        |        |
|  | Public infrastructure is better   | 0.953                           |          |        |        |

reduction in the inconsistency threshold was set to 0.7. When the consistency and PRI consistency are greater than the set standard, the condition combination is assigned a value of 1; otherwise, it is 0. Then, the algorithm logic based on Boolean algebra is utilized to standardize the truth table data, and the causal relationship between the conditional variables and the outcome variables is studied. After analysis, three results can be obtained: complex solution, intermediate solution, and simple solution. The complex solution does not contain any logical remainders. The parsimonious solution contains logical remainders but does not evaluate its rationality. Intermediate solutions contain only logical remainders that are consistent with theory and experience (Zhang and Du, 2019). According to the occurrence of conditional variables in the simple solution and the intermediate solution, the configuration results of the factors affecting the residents' positive perception can be constructed. When the conditional variable appears in both the simple solution and the intermediate

solution, it is the core condition. A condition is an edge condition when it only appears in the intermediate solution (Cao et al., 2022). After simplifying the calculation, there are four sets of sufficient condition configurations (see Table 7). The three factors of place belonging, power perception, and residents' participation play different levels of roles in the three perception dimensions of residents' economic positive perception, social and cultural positive perception, and environmental positive perception in the case of Ping'an Zhuang Village (see Figure 2).

The first group of path configuration is positive economic perception (place belonging \* residents' participation), with an overall coverage of 0.634 and an overall consistency of 0.805. This indicates that this path combination can effectively explain 63.4% of residents' positive economic perception results. It can be observed that regardless of perceived power or not, in the case of high residents' place belonging and residents' participation perception, a more positive residents' economic perception can be formed.

TABLE 4 Differential validity analysis of AVE.

|  | Place belonging A | Power perception B | Resident participation C | Economic positive perception D | Socio-cultural positive perception E | Positive perception of the environment F |
|--|-------------------|--------------------|--------------------------|--------------------------------|--------------------------------------|--|
| Place belonging A                        | 0.935             |                    |                          |                                |                                      |  |
| Power perception B                       | 0.280             | 0.890              |                          |                                |                                      |  |
| Resident participation C                 | 0.319             | 0.433              | 0.963                    |                                |                                      |  |
| Economic positive perception D           | 0.295             | 0.074              | 0.401                    | 0.987                          |                                      |  |
| Socio-cultural positive perception E     | 0.349             | 0.079              | 0.416                    | 0.903                          | 0.973                                |  |
| Positive perception of the environment F | 0.372             | 0.091              | 0.464                    | 0.895                          | 0.901                                | 0.974                                    |

The lower triangle is the correlation coefficient between the variables, and the diagonal is the square root of the AVE value.

The second group of path configurations is social and cultural positive perception (place belonging \* resident participation), with an overall coverage rate of 0.623 and an overall consistency of 0.796. This shows that this path combination can effectively explain 62.3% of residents' social and cultural positive perception results. It can be seen that the existence of perceived power has no significant influence on the residents' positive perception of social culture. As long as the residents' sense of place belonging and participation reaches a high level, a more positive residents' social and cultural perception can be formed.

The third group is the combination of environmental positive perception, including two groups of configurations. The overall coverage rate is 0.800, and the overall consistency is 0.794. This indicates that the combination of these two paths can effectively explain 80% of residents' environmental positive perception. Among them, path 1 (resident participation) can explain 72.7% of the cases, and path 2 (place belonging \* ~ power perception) can explain 48% of the cases. Path 1 means that regardless of whether there is place belonging or not, and whether there is perceived power or not, in the case of high residents' participation perception, a more positive residents' environmental perception can be formed; path 2 indicates that when residents do not have perceived power, and residents' participation does not constitute a key element, and residents' local sense of belonging is higher, a more positive residents' environmental perception can be formed.

In general, in the process of the formation of positive perception of residents in ethnic village tourism destinations, the three value dimensions of economic perception, social and cultural perception, and environmental perception are affected at different levels. The performance of environmental positive perception is the most prominent, followed by economic positive perception, and social and cultural perception is the last. At the same time, place belonging and residents' participation play a crucial role in both economic positive perception and socio-cultural positive perception, while the impact of power perception is uncertain. In the positive perception of the environment, the two paths also include place belonging and residents' participation, respectively. Among them, the combination of paths with low original coverage "must not include" power perception. It can be seen that place belonging and residents' participation are important influencing factors of residents' positive perception in ethnic village tourism destinations, and the intervention effect of power perception is not obvious.

## 5 Discussion

Taking the minority villages in Guangxi as an example, this paper attempts to construct the conceptual dimension of residents' positive perception in tourism destinations and develop and verify its scale from the perspective of configuration by employing fuzzy set qualitative comparative analysis. Through the research, the condition configuration that affects the positive perception of residents in ethnic village tourism destinations is explored, and the elements with high explanatory power and their path logic are clarified, which supplements the localized and scientific theoretical basis for the cultivation and maintenance of residents' positive perception in ethnic village tourism in China.



TABLE 5 Calibration anchor points for each variable.

|                              |                           | Anchor           |                    |                       |
|------------------------------|---------------------------|------------------|--------------------|-----------------------|
|                              |                           | Full affiliation | Intersection point | Not affiliated at all |
| Influencing factors          | Place belonging           | 5.00             | 4.10               | 3.20                  |
|                              | Perceive power            | 5.00             | 3.00               | 1.16                  |
|                              | Resident participation    | 5.00             | 4.00               | 1.00                  |
| Positive perception of value | Economic perception       | 5.00             | 4.69               | 3.41                  |
|                              | Environment perception    | 5.00             | 4.83               | 3.33                  |
|                              | Socio-cultural perception | 5.00             | 4.67               | 3.00                  |

TABLE 6 Concordance and coverage of individual factors.

| Conditional variables  | Positive perception of the economy |          | Socio-cultural positive perception |          | Positive perception of the environment |          |
|------------------------|------------------------------------|----------|------------------------------------|----------|--|----------|
|                        | Consistency                        | Coverage | Consistency                        | Coverage | Consistency                            | Coverage |
| Place belonging        | 0.800                              | 0.699    | 0.787                              | 0.694    | 0.792                                  | 0.725    |
| Power perception       | 0.624                              | 0.631    | 0.615                              | 0.627    | 0.631                                  | 0.668    |
| Resident participation | 0.723                              | 0.777    | 0.708                              | 0.767    | 0.727                                  | 0.817    |

TABLE 7 Residents' active perception configuration.

|                        | Residents' active perception       |                                    |  |       |
|------------------------|------------------------------------|------------------------------------|--|-------|
|                        | Positive perception of the economy | Socio-cultural positive perception | Positive perception of the environment |       |
|                        | 1                                  | 1                                  | 1                                      | 2     |
| Place belonging        | •                                  | •                                  | -                                      | •     |
| Power perception       | -                                  | -                                  | -                                      | ×     |
| Resident participation | •                                  | •                                  | •                                      | -     |
| Raw coverage           | 0.634                              | 0.623                              | 0.727                                  | 0.480 |
| Unique coverage        | 0.634                              | 0.623                              | 0.320                                  | 0.073 |
| Consistency            | 0.805                              | 0.796                              | 0.817                                  | 0.807 |
| Solution coverage      | 0.634                              | 0.623                              | 0.800                                  |       |
| Solution consistency   | 0.805                              | 0.796                              | 0.794                                  |       |

“•” indicates that the core conditions exist, “×” indicates that the core conditions does not exist, and “-”Indicates that the conditions are dispensable.

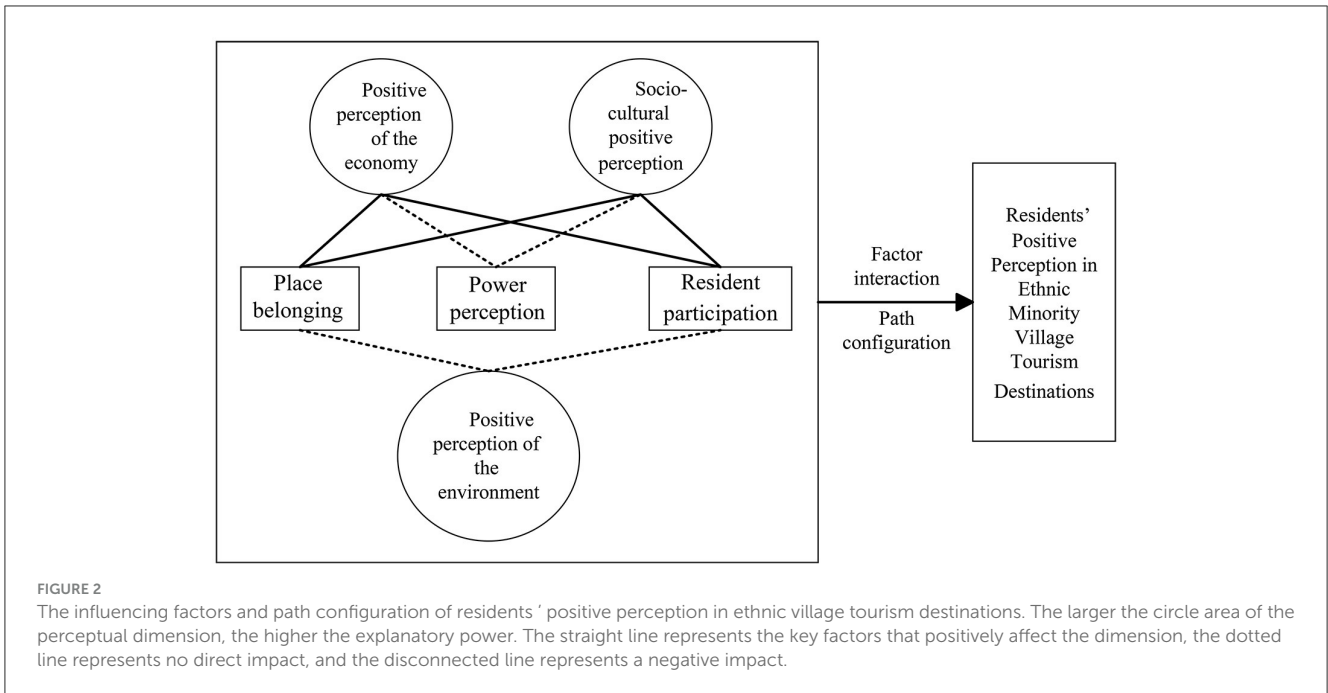
### 5.1 Exploring the dimensions of positive perception of residents in tourist destinations

By referring to relevant literature, the study concluded that the positive perception of residents in ethnic village tourism destinations can be divided into three dimensions: “economic positive perception,” “social cultural positive perception,” and “environmental positive perception” (Yin et al., 2023; Hu, 2020; Xiang, 2008). It is verified that this dimension division is still applicable to ethnic village tourism destinations in Guangxi. The positive perception of the economy involves tourism income, employment opportunities, and the improvement of living standards. The positive perception of social culture includes cultural identity, community cohesion, cultural exchange, and integration. The positive perception of the environment focuses

on the quality of the ecological environment, the improvement of tourism facilities, and the improvement of the living environment. This multi-dimensional division helps to fully understand the residents' comprehensive perception of tourism development.

### 5.2 Analysis of the positive perception influence path of residents in ethnic villages

From the influence path of the three factors, it can be seen that the formation of the positive perception of ethnic village residents is the result of multi-factor linkage. Although the three factors of place belonging, perceived power, and residents' participation have high explanatory power in univariate factor analysis, they cannot constitute the necessary and sufficient conditions for the positive



perception of residents in ethnic village tourism destinations and must play a role in conditional configuration.

A number of studies have shown that place belonging is an important part of residents' positive perception. Ethnic village residents usually have a deep emotional connection with local culture, which may be transformed into a positive attitude and willingness to participate in the development of tourism in the process of tourism development (Chao, 2013; Cheng et al., 2019). Residents' participation is not only an important manifestation of residents' positive perception but also an important driving force for the sustainable development of tourist destinations (Sun and Guo, 2022). At the same time, as an emerging factor affecting residents' perception, power perception has gradually attracted the attention of researchers (Wei and Dai, 2018; Li et al., 2017). Some people believe that the weakening of power perception may lead to residents' dissatisfaction and resistance to tourism development (Xiang, 2008). Therefore, in the process of improving residents' positive perception, ethnic village destinations need to select conditional configurations according to local conditions to enhance residents' positive perception.

### 5.3 Impact difference analysis

Place belonging and residents' participation have the most pronounced influence on the perception of each value dimension of ethnic minority village residents, while the influence of power perception is relatively low. Some studies have indicated that in tourism development, residents will pay particular attention to whether tourism activities respect and protect their ethnic culture, and this cultural identity and sense of belonging become an important criterion for them to evaluate the impact of tourism development (He and Xu, 2024; Jiang, 2004; Shan and Liu, 2016; He, 2010).

Simultaneously, residents can also enhance their sense of identity and belonging to tourism development through various participation methods. In ethnic minority villages, the uneven distribution of economic benefits, limited education and cultural level, restricted channels of political participation, and inadequate governance mechanisms will lead to the weakening of residents' perception of power during local tourism development (Xiang, 2008; Chen et al., 2011; Wang, 2016; An and Zhang, 2014; Wu, 2018).

Further analysis of the influence of different factors on the positive perception value of residents in ethnic villages reveals that place belonging is an important basis for the formation of residents' positive perception. When residents feel that tourism development can protect and inherit their ethnic culture and enhance community cohesion, they will hold a more positive view of the changes brought by tourism. Therefore, the enhancement of the sense of place belonging is the common prerequisite for enhancing the positive perception of residents' economy, social culture, and environment. Although the direct impact of power perception on residents' positive perception is weak, it indirectly affects residents' positive perception by influencing residents' satisfaction with tourism income distribution and decision-making participation. When residents feel that they have certain power and discourse power in tourism development, they are more likely to support and actively participate in tourism development, thereby enhancing the level of positive perception. Residents' participation is a direct and effective way to enhance positive perception. By participating in activities such as tourism management, cultural inheritance, and community governance, residents can not only obtain economic benefits but also enhance their sense of identity and belonging to tourism development. This sense of participation not only enhances the positive economic perception of residents but also promotes the formation of positive perception of social culture and the environment.

## 5.4 Management implications

The conclusions of this study are applicable to the restoration, transformation, and development of ethnic village tourism in the new era. The destination can select the optimal path based on its own requirements and local conditions. Guangxi is situated in the southwest region and possesses abundant ethnic cultural resources. In recent years, with the support and development of the rural revitalization strategy, an increasing number of ethnic villages have become the top choice for people's travel. Especially in the post-epidemic era, suburban tourism is favored by more and more people. However, due to regional economic development and backward educational resources, the development of ethnic village tourism has gradually exhibited a weak development state due to limited management levels (He and Xu, 2024; Li et al., 2023; Zhang, 2024; Li and Hao, 2024).

In the process of interacting with more diversified tourist groups, the residents of ethnic villages have experienced frictions and collisions in their traditional concepts and lifestyles. To enhance the positive perception of residents, destination managers need to combine place belonging, power perception, residents' participation, and other factors for analysis, improve the communication ability of residents and organizations with diversified tourists, achieve the maximum realization of the interests of both parties, and truly realize the sustainable development of ethnic village tourism. First, to enhance residents' local belonging, such as providing training on the inheritance of cultural skills, eliminating vulgar, backward, and unhealthy elements, and strengthening and stabilizing residents' cultural pride and local identity. Second, it is necessary to increase the perception of power among residents at the destination. The focus of tourism poverty alleviation has shifted from the development of a single tourism infrastructure to the development of public measures such as culture, education, farmland, and water conservancy, enabling more people to reap the benefits of tourism development. Reduce the 'polarization' caused by tourism development in some places, that is, families with good economic conditions become more prosperous by taking the express train of tourism development, while families unable to afford the cost of investment can only bear the negative impact of tourism development, jumping out of the so-called 'suicide development mode' (Liu, 2013). Third, the establishment of a participatory development concept. If residents' participation can only remain at the level of superficial small business vendors, pursuing short-term economic benefits, and failing to truly obtain opportunities for tourism development decision-making, control, management, and fair benefits, the development of ethnic village tourism is likely to be only a short-lived success.

## 6 Research limitations and prospects

This study has certain limitations and needs to be further enhanced in future research. On one hand, this study collects relatively less data and fails to extract more factors that affect residents' positive perception. At the same time, the perceptual dimensions of the impact are also maintained in the economic, socio-cultural, and environmental aspects based on the original

numerous studies, resulting in a small number of obtained configurations. The development of ethnic villages depends on exploring more diverse influence paths due to their social and cultural particularities. On the other hand, there are certain limitations in the selection of case sites in this study. Future research can incorporate empirical research on ethnic tourism villages in different regions and different ethnic groups to further explore the universality of the conclusions of this study.

## 7 Conclusion

With the vigorous ascent of ethnic tourism and rural tourism, an in-depth understanding of the genuine perception and attitude of residents in ethnic village areas toward tourism development has become the key to promoting sustainable tourism development. This study integrates in-depth interviews and questionnaire surveys and constructs a multi-dimensional framework of residents' positive perception of ethnic village tourism destinations with the aid of grounded theory and fuzzy set qualitative comparative analysis. Taking Ping'an Zhuang Village in Longsheng as a sample, the study not only reveals the positive perception of residents in the three dimensions of economy, social culture, and environment but also conducts a profound analysis of how the three core elements of place belonging, power perception, and residents' participation are interwoven, forming an influence path network.

It is particularly notable that the study discovered that although the above factors have an impact on residents' positive perception, the influence of power perception factors in each dimension is relatively weak. This finding subtly reflects the relative weakness of minority village residents in terms of rights awareness, which provides significant enlightenment for the subsequent community governance and rights protection work. The results of this study not only offer valuable decision-making bases for policy makers and tourism managers but also assist them in formulating strategies more precisely and promoting the harmonious coexistence of the living inheritance of ethnic minority culture and rural revitalization. Simultaneously, it also significantly broadens the theoretical boundary and practical vision of residents' perception research in tourist destinations and contributes new ideas and directions to the construction of a more inclusive and sustainable tourism development model.

On a global scale, with the continuous heating up of ethnic tourism and rural tourism, various ethnic areas have made use of their unique cultural resources and natural scenery to attract domestic and foreign tourists, which not only brings new opportunities for local economic development, but also has a profound impact on social structure, cultural inheritance and natural environment. Therefore, an in-depth understanding of the real perception and attitude of residents in ethnic villages around the world toward tourism development has become a key issue to promote the development of global sustainable tourism. Through precise measures, we can not only promote the living inheritance of ethnic minority cultures, but also realize the harmonious coexistence of rural revitalization and tourism development, which is of great significance for promoting the inclusive growth of global tourism. At the same time, this study broadens the

theoretical boundaries and practical horizons of the research on the perception of residents in tourist destinations, and encourages the international community to pay more attention to local characteristics, cultural diversity and community participation when exploring sustainable tourism development models, so as to jointly build a more just, green and sustainable global tourism ecology.

## Data availability statement

The original contributions presented in the study are included in the article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

## Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

## Author contributions

YW: Data curation, Investigation, Writing – original draft. LL: Data curation, Funding acquisition, Investigation, Supervision, Writing – original draft, Writing – review & editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frsut.2024.1500165/full#supplementary-material>

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