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Poor Residents' Perceptions of the Impacts of Tourism on Poverty Alleviation: From the Perspective of Multidimensional Poverty

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Abstract: Tourism plays a crucial role in alleviating poverty deprivations and achieving sustainable development. Nevertheless, there is a lack of literature regarding evaluating poor residents' perceptions of the impacts of tourism on poverty alleviation from the perspective of multidimensional poverty. Taking Fenghuang County, China, as the study area, this study established an evaluation framework by using the Delphi method based on multidimensional poverty theory. Moreover, analytic hierarchy process (AHP) was employed to identify the weight of each indicator and assess poor residents' perceptions of the impacts of tourism on poverty alleviation. The results indicate that tourism economic development has been a momentous contributor to alleviating multidimensional poverty in study locations to a certain extent (3.180). However, there is still room for improvement and promotion. With respect to various dimensions, the mean of economic level is the highest (1.125), whilst the means of education training (0.420) and health care (0.819) are relatively lower than the other dimensions.

Keywords: poor residents' perception; tourism on poverty alleviation; multidimensional poverty; sustainable tourism management; Fenghuang County

1. Introduction

Sustainable development (SD) is the common target of human society, and alleviating poverty is one of the most important goals of sustainable development [1]. Poor residents usually live in remote mountainous and rural environments in China, whereas poor areas are rich in natural, cultural and social tourism resources [2–4]. Due to low barriers to participation, more employment opportunities and less environmental pollution, the tourism industry is deemed as a predominant strategy to alleviate poverty deprivations, escape from the poverty trap and accomplish sustainable development in poverty-stricken areas [4–6].

Since the first national pro-poor tourism pilot zone (NPTPZ) was implemented in Guyuan City of Ningxia Hui Autonomous Region, tourism development has played a pivotal role in alleviating regional poverty in China. As described by relevant Statistics from the Ministry of Culture and Tourism of China (MCTC), 2.19 million poor residents have shaken off poverty deprivations by participating in tourism services in 2017. The precision poverty alleviation policy (PPAP), launched in China's poverty-stricken counties, emphasizes that people have enough to eat and wear, and that they have adequate education, health services, and housing. The goal of PPAP is in accordance with the requirement of multidimensional poverty theory. In practical implementation, local governments

attach more attention to tourism economic development [7]. However, the benefits of poor residents are often neglected, including living standards, education and medical. The tourism economic development of poor regions cannot totally explain whether poor residents make profits from tourism development. Consequently, can tourism alleviate multidimensional poverty deprivations? How does tourism affect the livelihood, education and medical of poor residents? What are the differences of different impacts of tourism on poverty alleviation? Consequently, there is a pressing need to appraise poor residents' perceptions of the impacts of tourism on poverty alleviation from the perspective of multidimensional poverty.

After the United Kingdom Department for International Development (DFID) put forward pro-poor tourism in 1999, there were plenty of literature generated regarding the relationship between tourism and poverty alleviation [8]. However, the academic circle has been debating whether tourism has the ability to alleviate poverty [9]. Due to the difference in depth and breadth of poverty, investment of poverty alleviation tourism and degree of poor residents' participation, the impacts of pro-poor tourism are disparate in various countries. For example, Deller [10] demonstrated that tourism and recreation played a small role in reducing the poverty rate in the USA. On the contrary, Zhao and Xia [9] found that tourism development could contribute to poverty rate alleviation based on the panel data of Chinese provinces. Notably, the above two scholars conducted analysis from the macroscale. Although macroscale examination has an advantage in broadly drawing on the relationship between tourism development and poverty reduction, the full benefits of the microcosmic group are often overlooked. In addition, statistical data and macroeconomic models will affect the accuracy of results [11].

Even if in microscale, the effects on the whole community, small tourism operators or ordinary residents are more intensively analyzed and discussed in the extant literature [12–14]. According to the proposal of DFID, the core goal for pro-poor tourism is that a net benefit for poor residents could be generated [15]. Nevertheless, scholars have still failed to pour attention into assessing the impacts of PPT from the perspective of poor residents [16]. Additionally, the minority of the literature gives regard to poor residents' development; instead, researchers attach great importance to focusing solely on economic effects [17] such as improving household income [18,19], providing opportunities of jobs [20,21], and promoting the sale of agriculture products [18,22]. Compared with the economic effects of tourism on poverty alleviation, scholars need to pour adequate attention into non-economic effects [8].

Poverty is a complicated concept with various definitions and cannot be understood appropriately by applying a simple assessment referring to economic level [23]. Simultaneously, Sen [24] emphasized that any poverty alleviation policy needs to solve the issue of capability deprivations rather than merely targeting the household income or consumption. Developing the tourism industry is deemed as a vital strategy of alleviating poverty, the implementation of pro-poor tourism should take into account comprehensive impacts on poor residents, including economic level, livelihood conditions, education training and health care. However, there is a lack of literature on poor residents' perceptions of the impacts of tourism on poverty alleviation from the perspective of multidimensional poverty.

In order to make up for this omission, based on multidimensional poverty theory, the evaluation system with respect to the impacts of tourism on poverty alleviation—was established by adopting the Delphi method. Then, AHP was employed to identify the weight of each indicator. Finally, this study evaluated poor residents' perceptions of the impacts of tourism on poverty alleviation in six study locations in Fenghuang County, China. Our research's literature contributions are as follows. This study develops a novel and systematic evaluation framework based on multidimensional poverty theory, which has the benefit of enriching the application scope of multidimensional poverty theory and deepening the research content regarding the effects of tourism on poverty alleviation. Moreover, this article provides a innovate perspective on pro-poor tourism and paves the road for future studies in the academic circle with regard to pro-poor tourism.

The rest of this article is structured as follows. Related literature concerning multidimensional poverty and the impacts of tourism on poverty alleviation are introduced in Section 2. The methodology is presented in Section 3, in which study location, research methods, the establishment of an indicator system, the identification of weights and analysis, and data collection are displayed. Section 4 evaluates poor residents' perceptions of the impacts of tourism on poverty alleviation from the perspective of multidimensional poverty. The results are discussed in Section 5. Finally, Section 6 makes conclusions and provides recommendations.

2. Literature Review

2.1. Multidimensional Poverty

Alleviating poverty has received increasing attention from nations around the world. In order to scientifically formulate effective policy involving alleviating poverty, it is of great significance for authorities to roundly grasp the connotation of poverty. In the first phase, poverty was defined as low income, which is now deemed as a narrow definition of poverty [1]. The concept of capability poverty, which was first put forward by Sen [25], has paved the road for the more comprehensive cognition toward the multidimensional nature of poverty, namely, receiving health services, education and improving livelihood standards [26], etc. Based on the multidimensional poverty theory, the evaluation indicators of poverty transfers from consumption or income only into medical service, education consumption patterns and leisure activities [27,28], etc. Hence, the interpretation and measurement of poverty has become increasingly accurate and reliable.

In the academic circle, more progress has been made in the establishment of measurement models. For instance, sum score, Foster–Greer–Thorbecke (FGT) method, DFID approach, and principal component analysis (PCA) are widely applied to measure the depth and breadth of poverty in empirical research [1,28,29]. It is universally acknowledged that selecting rational indicators is more complicated [1]. Based on the capability poverty theory, the global Multidimensional Poverty Indicator (MPI), advanced by Alkire and Santos [30] and with the help of the United Nations Development Programme (UNDP), consists of three dimensions (health, education, and standard of living) and ten indicators. However, monetary dimension should not be overlooked, which results from the consensus that household income also affects education, livelihood level and health [26]. To overcome the shortcoming, the income and consumption were drawn into the assessment framework, developed by World Bank in 2018. Furthermore, the sustainable livelihood framework, including five dimensions (human capital, natural capital, financial capital, social capital and physical capital) has been regarded as a helpful framework to establish an indicator system with regard to measure poverty. The framework is also narrow, however, in that the model structure is so complicated that it is not widely used in empirical research of assessing poverty [31]. In general, there is controversy about identifying the rational indicators.

In addition, the debate about how to identify the weight of each indicator [32]. On the assessment of multidimensional poverty, scholars have mainly adopted: (1) In the UNDP–MPI methodology, the equal weighting method has been broadly employed [33,34]. (2) Padda and Hameed [1] hold that PCA is able to determine the appropriate weight of each dimension and indicator by reducing the number of variables. Various weight identification for indicators may produce very different outcomes for policymaking. In order to obtain appropriate importance of indicators, quite a few innovative approaches are being used. For example, Pinar, Stengos and Topaloglou [32] identified the weights by extending the stochastic dominance (SD) efficiency. With the cognition and connotation deepening, the multidimensional poverty theory has triggered a large wave of poverty research circle. Apart from the measurement of poverty, multidimensional poverty theory is also applied to assess the effects of poverty alleviation and formulate the policy of poverty alleviation [35,36]. With regard to the evaluation of the impacts of tourism on poverty alleviation. However, scholars have failed to devote enough attention to establish the evaluation framework by comprehensively adopting

multidimensional poverty theory. Undoubtedly, this theory will not only make the evaluation outcome more accurate and practical, but also provide crucial reference for policymaking.

2.2. *The Effect of Tourism on Poverty Alleviation*

With tourism being regarded as a momentous contributor to alleviating poverty in increasing developing countries. Consequently, the research with respect to pro-poor tourism has received increasing attention from many scholars in the academic circle [4]. However, there is a dispute about the effectiveness of pro-poor tourism [9]. Hence, it is necessary to examine the impacts of tourism on poverty alleviation. In recent decades, an army of researchers have devoted more attention to the impacts of tourism on poverty alleviation. These impacts have been divided into three aspects, namely, economic impacts, socio-cultural impacts and environmental impacts [8].

In terms of economic impacts, positive impacts are ascribed to pro-poor tourism, including contribution to benefiting small tourism operators, providing valuable job opportunities, increasing household income, and facilitating the sale of agricultural products [15,18,20,37]. However, a number of negative impacts have been identified such as leakage of tax revenues, unequal distribution of income, elite capture and the Dutch disease effect resulting from tourism economic development in poverty-stricken areas [13,38–40].

With respect to sociocultural impacts, scholars have recognized a series of positive impacts, such as the modernization of poor areas, the construction of infrastructure, the improvement of health and educational services, the elimination of gender discrimination, cultural communication, vulnerability reduction, human capital, and capacity building [41–44]. However, as emphasized by Chok et al. [45], tourism is too often regarded as a panacea without considering quite a few negative sociocultural impacts, including corruption and cronyism, uneven power relations as well as new health risk [8,44,46].

With regard to environmental impacts, at the level of positive impacts, Nyaupane and Poudel [47] found that tourism development could improve residents' environmental awareness and behavior as well as the protection of the surrounding natural environment around Chitwan National Park, Nepal. In Zambia, however, Richardson, et al. [48] indicated that the crops of residents tended to be destroyed by wild animals and tourists.

The pivotal principle of tourism on poverty alleviation is that poor residents can obtain the net benefit. However, the literature, mostly developed from the perspective of regional development, examines whether tourism is conducive to alleviate poverty. Meanwhile, economic effects of tourism development are mainly focused on. Any policy or strategy of alleviating poverty should take into consideration multidimensional effects on poor residents. Meanwhile, researchers have failed to pour adequate attention into exploring the poor residents' development based on the multidimensional nature of poverty.

3. Materials and Methodology

3.1. *Study Area*

Situated in the western edge of Hunan Province in the southwest of Wuling Mountain Area, a contiguous poor area with particular difficulties (CPAPD) between 27°44' N and 28°19' N and 109°18' E and 109°48' E (Figure 1), Fenghuang County is experiencing the rock-ribbed deprivation of multidimensional poverty. The distribution of both the poverty-stricken area and the region of abundant tourism resources is consistent. Fenghuang County is no exception, it is home to rich natural scenery, unique ethnic amorous and a long history. In 2018, Fenghuang County received a total of 18 million tourists, an augment of 19.21%, compared with 2017, and gained RMB 17 billion in tourism income, an increase of 20.72% than the previous year; meanwhile, the tourism industry accounted for 70% of GDP and generate 35% of the total employment, with the tourism industry being regarded as an indispensable contributor to alleviating poverty. Therefore, the six study locations in Fenghuang

County (Laodong Village, Xionglong Village, Niuren Village, Fenghuang Ancient City Community, Chunmuping Village, and Huangsiqiao Village) were selected to explore how poor residents perceive the impacts of tourism on poverty alleviation from the perspective of multidimensional poverty. The reason why these six locations were chosen is that they were identified as National Tourism for Poverty Alleviation Demonstration Villages (Community) by MCTC in 2016; developing the tourism industry was deemed as a primary strategy regarding poverty alleviation by the local government.

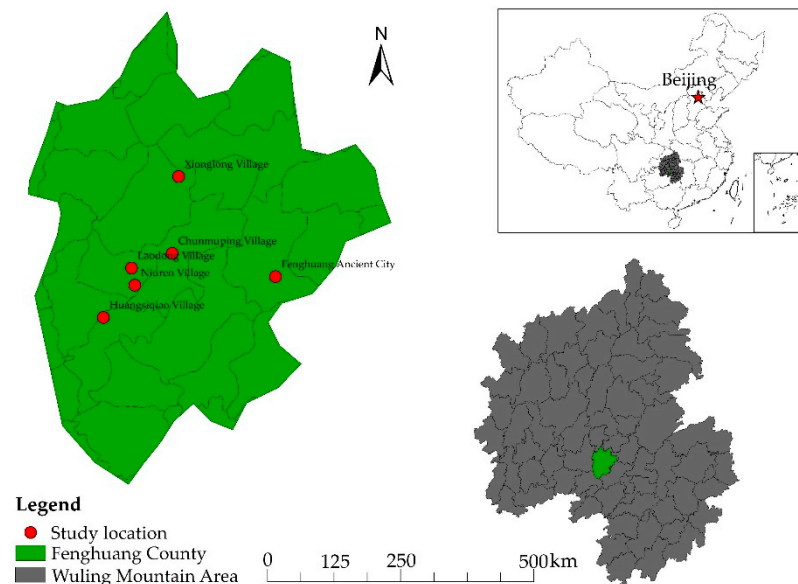


Figure 1. The study locations in Fenghuang County, China.

3.2. Research Approach

The Delphi method is one of the most common procedures for constructing the indicator system by drawing on experts' knowledge and experience [49,50]. The approach has a number of attractive features. First, the Delphi method can draw on the knowledge of many to increase the accuracy and relevance of the answer. In other words, experts from various fields and organizations, such as universities, government sectors and companies, can generate a collective and accurate judgement that contributes to the construction of indicator system [51]. Second, the Delphi method can enhance the validity of scenario based on the advantage of anonymous and heterogeneity of experts [52]. Third, the Delphi method can assist with reliably selecting indicators by the large-scale participation paired with two-round investigations. This makes the indicator contents more applicable and scientific [53]. Taking the aforementioned advantages into account, the method is widely used for the establishment of an assessment framework and the development of evaluation indicators [51,54–57]. There is evidence that application of the Delphi method can enhance the accuracy and scientific level of research [57].

The analytic hierarchy process (AHP), introduced by Saaty [58], has been applied to identify the relative importance of each indicator based on the criteria of various weightings [59]. AHP helps policymakers with illustrating the complicity of an issue and exercising reasonable judgement by combing the subject judgment of experts with objective consideration [60]. Moreover, AHP can measure intangible factors by forming pairwise comparisons of judgements that stand for the dominance of one factor over another [61]. In particular, AHP can achieve the research process for certain problems where objective data are absent or the structure of the target layer is complex [59]. Therefore, AHP is widely employed to solve multi-criteria decisions problem, which results from the advantage of flexibility and convenience. In the tourism academic circle, AHP has been widely applied to the evaluation of tourism resources [62], the decision of tourism destination [63] and tourism marketing [64].

3.3. Indicator System and Weight

3.3.1. The Original Indicators Generation

Poverty is a complicated notion that contains various definitions; income or consumption is not the sole criterion that measures the depth and breadth of poverty [65,66]. Sen [25] deemed that poor residents experience severe multidimensional deprivation beyond low income to a certain extent, and the authority should pour increasing attention into the poor residents' opportunities such as receiving education and healthcare service, etc. In addition, taking multidimensional deprivations in rural areas into account, the Chinese government put forward the policy that poor residents should meet the basic needs of food and clothing and be guaranteed compulsory education, basic medical care and, housing [67]. After screening the indicators that are frequently used and discussed in the multidimensional poverty theory [24,25], the Chinese poverty alleviation tourism policy and the related literature, 30 indicators were selected with the intention of evaluating poor residents' perceptions of the impacts of tourism on poverty alleviation. The literature sources of indicators are summarized in Table 1. In the selection of indicators, three principals were observed: first, according to multidimensional poverty theory; second, selecting the high-frequency indicators; third, obeying the requisition of the Delphi method and AHP [68].

Table 1. The original evaluation indicators involving the impacts of tourism on poverty alleviation.

No.	Indicator Content	Reference
1	Improve family income	León [21]
2	Promote employment opportunity	Saayman, Rossouw and Krugell [20]
3	Increase the level of consumption	Škrbić et al. [69]
4	Optimize the structure of consumption	Wang, Li, Zhen and Zhang [63]
5	The easier sell of agricultural products	Spenceley, Habyalimana, Tusabe and Mariza [18]
6	Improve the development of village	Briedenhann [37]
7	Decrease the difficulty of loan	Zhao and Xia [9]
8	Improve housing condition	Vijaya, Lahoti and Swaminathan [34]
9	Access to safe drinking water	Alkire and Santos [30]
10	Access to stable electricity	Alkire et al. [70]
11	Increase life durable products	Mudombi et al. [71]
12	Enrich the category of cooking fuel	Zhang et al. [72]
13	Enhance the security of food	UNDP [73]
14	Increase the number of clothes	Chowdhury and Mukhopadhyaya [36]
15	Change the structure of houses	Wang, Li, Zhen and Zhang [63]
16	Optimize bathroom environment	Wang, Li, Zhen and Zhang [63]
17	Aggrandize training opportunity	Liu and Xu [28]
18	Promote education infrastructure	Pinar, Stengos and Topaloglou [32]
19	Enhance cultural quality	Soliman [42]
20	Generalize Mandarin	Qin, Xu and Chung [3]
21	Popularize English	Wang, Li, Zhen and Zhang [63]
22	Protect traditional cultural	Anderson [41]
23	Increase the number of schools	Robles Aguilar and Sumner [74]
24	Promote family harmony	Butler et al. [75]
25	Extend the coverage of medical insurance	Qin, Xu and Chung [3]
26	Increase the percentage of government bearing medical insurance	Wang, Li, Zhen and Zhang [63]
27	Improve medical care condition	Bauer [76]
28	Increase the opportunity of free treatment in village	Wang, Li, Zhen and Zhang [63]
29	Improve physical condition	UNDP [73]
30	The augment of hospital	Sen [24]

3.3.2. Screening the Evaluation Indicators

To promote the systematizations of indicator structure, the Delphi method was employed to select and establish indicator system based on the original evaluation indicators. It is widely acknowledged

that adopting a heterogeneous panel of experts can collect more information from various fields and organizations than a homogenous panel [51]. An “expert” panel was established that was composed of 15 scholars from pro-poor tourism (10 scholars from universities and 5 scholars from tourism research institutes) and 5 government officials in the poverty alleviation department. Questionnaires were distributed to the above-mentioned 20 experts, who were requested to put forward their advice about the indicator system. All questionnaires were collected, and they were valid. The survey was conducted in two rounds.

The first round: Twenty questionnaires were distributed to measure the agreement of each indicator (Appendix A, Table A1). Based on the criterion of the Delphi method, if the selection rate for the indicators is less than 60%, these indicators will be omitted [52]. After the first-round survey, 8 indicators were deleted. Meanwhile, experts put forward related reasons why these indicators were deleted. As a result of the difficulty of measurement, 13th, 14th and 29th were deleted. On account of independence, 6th, 22nd and 24th were removed. As 7th and 21st were not in accordance with the situation of study, they were eliminated. The 9th and 10th, as well as 14th and 17th, were merged by following the experts’ suggestions. Twenty evaluation indicators remained in the first-round investigation.

The second round: Experts were requested to make a statement on which indicator was “exceedingly unimportant” (1), “unimportant” (3), “general” (5), “considerably important” (7) or “exceedingly important” (9), respectively. The mean and variation coefficient of each indicator represent the degree of opinion concentration and the degree of opinion coordination, respectively (Appendix A, Table A2). According to the criterion, the degree of opinion concentration was above 6 and the degree of opinion coordination ranged from 0 to 0.35 [77]. Therefore, 10th and 12th were eliminated. At the end of two round surveys, an indicator system, which incorporated 4 second-level indicators and 18 third-level indicators, was finally established. Following the classification, which was ascertained by the World Bank in 2018, four second-level indicators were named economic level, livelihood condition, education training and, health care, respectively (Table 2).

Table 2. The final evaluation indicators and their weights.

Dimension	Indicator Content	Weight
Economic level CR = 0.060 W = 0.391	Improve family income	0.134
	Promote employment opportunity	0.113
	Increase the level of consumption	0.042
	Optimize the structure of consumption	0.025
	The easier sell of agricultural products	0.077
Livelihood condition CR = 0.064 W = 0.276	Improve housing condition	0.114
	Promote water and electricity condition	0.072
	Increase life durable products	0.029
	Enrich the category of cooking fuel	0.039
	Optimize bathroom environment	0.022
Education training CR = 0.058 W = 0.138	Aggrandize training opportunity	0.020
	Promote education infrastructure	0.071
	Enhance cultural quality	0.033
	Enlarge the coverage of grasping Mandarin	0.014
Health care CR = 0.054 W = 0.195	Extend the coverage of medical insurance	0.086
	Increase the percentage of government bearing medical insurance	0.054
	Improve medical care condition	0.036
	Increase the opportunity of free treatment in village	0.019
	Perception of the impacts of tourism on poverty alleviation CR = 0.045	1.000

Note: CR is consistency ratio and the W is the weight of indicator.

3.3.3. The Weights Identification and Analysis

Considering the reliability and rationality of the research findings, AHP was used to determine the weights of evaluation indicators. First, the relative significance, related to different indicators, was assessed by sending the questionnaires to the above-mentioned 20 experts, in line with the 1~9 scale method, allowing for the establishment of a set of the pairwise comparisons matrixes. Second, the leading eigenvalues of pairwise comparisons matrixes were measured. Third, the pairwise comparisons matrixes were simplified. Finally, the consistency related to pairwise comparisons matrixes was checked. The results, shown in Table 2, represent that the consistency ratio (CR) of the first-level indicator and four dimensions were below 0.1. The value of CR is in line with the requirement of the AHP approach.

As shown in Table 2, the weight of “economic level” (0.391) is far greater than that of “livelihood condition” (0.276), “education training” (0.138) and “health care” (0.195). This indicates that the economic effect of tourism on poverty alleviation such as improvement of income or consumption is basic for the promotion of other dimensions. Therefore, local governments pay more attention to implementing measures for the promotion of economic level. In addition, of the 18 indicators, “improve family income” (0.134), “improve housing condition” (0.114), and “promote employment opportunity” (0.113) have the greatest weight. Hence, local government should give higher priority to the pursuit of the enhancement of the effect regarding tourism on poverty alleviation.

3.3.4. Building the Evaluation Model

Suppose that the total score of poor residents’ perceptions of the impacts of tourism on poverty alleviation is P , and W_i and M_i are the weight of each indicator and the score of each indicator, respectively. The calculation formula is given as follows.

$$P = \sum_{i=1}^{18} M_i \times W_i$$

3.4. Data Collection

The questionnaire exploited for our research consists of two sections. The first section was applied to survey the demographic profiles of respondents. The second section captured 18 questions for measuring poor residents’ perceptions of the impacts of tourism on poverty alleviation by the five-point Likert type scale, ranging from “1 = totally disagree” to “5 = totally agree”. In order to improve the scientific level of the questionnaire, a preliminary investigation was launched from 9 to 16 July 2018. Before the formal survey, all investigators were cultivated to make them familiar with poverty alleviation tourism policy, the introduction of the study locations and the meaning of each indicator. According to the poverty line, which was developed by the Chinese government, people whose average annual per capita income is less than RMB 2300 are defined poor residents [78]. Therefore, we selected respondents based on criterion. The ceremonial survey was conducted during 8 to 14 August 2019. The distribution of poor residents and the development of the tourism industry was firstly grasped by consulting the village (community) heads. Second, we distributed questionnaires to poor residents in 6 study locations and a total of 230 valid questionnaires were collected, which accounted for 82.1% of all collected questionnaires.

4. Finding and Analysis

4.1. Sample Profile, Reliability and Validity

The total demographic profiles, used in this research, consisted of six characteristics. Of the 230 poor residents who participated in the investigation, 50.43% were male, and 49.57% were female. The education background of the vast majority of respondents was primary school or less. Most of

the interviewees ranged from 36 years old to 65 years old. The number of laborers was between 2 and 4. The average annual per capita income of the majority of respondents ranged from RMB 600 to RMB 1400. The percentage of respondents who lived in six investigation locations was 21.30%, 11.30%, 26.09%, 13.04%, 15.22% and 13.04%, respectively.

In order to examine the reliability and validity of the evaluation indicators, the Cronbach's alpha, Kaiser–Meyer–Olkin (KMO) and Bartlett Test of Sphericity were calculated. The results showed that Cronbach's alpha value of the whole indicator system and the four second-level indicators were 0.941, 0.924, 0.83, 0.818 and 0.828, respectively. This indicates that construction of the indicator system had a high degree of reliability. The KMO value was 0.924 and Bartlett Test of Sphericity was significant at the level of 1%, which showed that the evaluation system has a high degree of validity.

4.2. Perceptions of the Impacts of Tourism on Poverty Alleviation

4.2.1. Economic Level

With respect to the economic level, the mean of improving family income (0.378) and promoting employment opportunity (0.326) is at a high level (Table 3), which indicates that poor residents can obtain jobs and increase household income by participating in tourism service to a certain extent. With the acceleration of commercialization, plenty of agriculture products, which come from poor residents, are purchased by tourists and hotel operators; thus, the indicator of the easier sell of agricultural products performs relatively well (0.222). However, due to the quality of farm products, there is still room for improvement. The impacts of two indicators (optimize the structure of consumption (0.071) and increase the level of consumption (0.126)) are insufficient and need to be enhanced and promoted. Furthermore, the consumer products of poor residents are primary daily necessities, indicating that local government should take into account the integrated mechanism to improve the poor resident's development in tourism industry development.

4.2.2. Living Condition

In terms of living conditions, the mean distribution ranges from 0.066 to 0.333 (Table 3). Only one indicator (improve housing condition) is at the high level (0.333). With the development of the tourism industry, poor residents expressed that local government helped them with dismantling dilapidated buildings and constructing new houses. Moreover, the majority of poor residents have access to clean drinking water and secure electricity (0.219). Additionally, the minority of poor residents hold that the category of cooking fuel was transferred from firewood to firewood and electricity (0.115). Therefore, it is still necessary for more poor residents to popularize other cooking fuel. Although poor residents' livelihood condition has been promoted under the background of pro-poor tourism, increasing the life durable products (0.086) and optimizing the bathroom environment (0.066) perform miserably, which is due to the fact that the level of participation in tourism is shallow and they simply acquire slender wages, therefore, they cannot afford the expense to a certain extent.

4.2.3. Education Training

As demonstrated in Table 3, apart from promoting education infrastructure, the means of all indicators are below 0.3, indicating that the integral satisfaction of poor residents is low. Tourism development raised the tax revenue of local authorities, poor residents said that school buildings were established with the help of local government (0.220). Hence, their children can receive more favorable education than before; however, poor residents have fewer opportunities with regard to receiving skills training programs (0.059). In order to grasp higher wages, they expressed that they hoped to grasp the knowledge related to tourism industry operations. Cultural quality is of great importance for taking part in tourism service; poor residents have to study by themselves. Meanwhile, the communication with tourists can also promote their cultural quality (0.098). Due to the issue that the majority of

respondents are Hmong, mandarin is rarely used to daily communication. Therefore, the satisfaction of the indicator (enlarge the coverage of grasping Mandarin) is low (0.042).

Table 3. The score distributions of the impacts involving tourism on poverty alleviation.

First Level	Second Level	Third Level	Weight	Mean	Std
Perception of the impacts of tourism on poverty elimination	Economic level	Improve family income	0.134	0.378	0.161
		Promote employment opportunity	0.113	0.326	0.126
		Increase the level of consumption	0.042	0.126	0.044
		Optimize the structure of consumption	0.025	0.071	0.024
		The easier sell of agricultural products	0.077	0.222	0.079
	Perceptions of the economic level		0.391	1.125	0.389
	Livelihood condition	Improve housing condition	0.114	0.333	0.135
		Promote water and electricity condition	0.072	0.219	0.077
		Increase life durable products	0.029	0.086	0.027
		Enrich the category of cooking fuel	0.039	0.115	0.037
		Optimize bathroom environment	0.022	0.066	0.021
	Perceptions of the livelihood condition		0.276	0.821	0.219
	Education training	Aggrandize training opportunity	0.020	0.059	0.020
		Promote education infrastructure	0.071	0.220	0.075
		Enhance cultural quality	0.033	0.098	0.034
		Enlarge the coverage of grasping Mandarin	0.014	0.042	0.015
	Perceptions of the education training		0.138	0.420	0.246
	Health care	Extend the coverage of medical insurance	0.086	0.267	0.098
		Increase the percentage of government bearing medical insurance	0.054	0.166	0.055
		Improve medical care condition	0.036	0.108	0.037
		Increase the opportunity of free treatment in village	0.019	0.277	0.083
	Perceptions of the health care		0.195	0.819	0.124
Total perceptions of the impacts of tourism on poverty alleviation			1.000	3.180	0.832

4.2.4. Health Care

In the health care, as indicated in Table 3, the mean distributions vary from 0.108 to 0.277. Poor residents told us that they had more chances to acquire medical insurance. Meanwhile, with the poverty alleviation tourism policy implemented, the medical team from city hospitals provided some gratuitous medical treatment. Therefore, the two indicators' scores (extend the coverage of medical insurance (0.267) and increase the opportunity of free treatment in villages (0.277)) are higher than other indicators. Nevertheless, quite a few of the poor residents expressed that local government can solely cover a fraction of medical insurance expenses. Additionally, the medical condition in their villages is still poor due to the neglect of government agencies. Consequently, both increasing the percentage of government bearing medical insurance (0.166) and improving medical care conditions (0.108) have lower performance than other indicators.

4.2.5. Overall Evaluation

This study calculates the total score and four dimensions' scores. As shown in Table 3, the mean of the overall perceptions of the impacts of tourism on poverty alleviation is 3.180, which indicates that tourism economic development can help poor people with escaping from the poverty trap to a certain extent in six study locations. The impacts of tourism on poverty alleviation are insufficient. However, there is still plenty of room for improvement. Additionally, the means of economic level, livelihood condition, education training, and health care are 1.125, 0.821, 0.420 and 0.819, respectively. This indicates that poor people are most satisfied with the impacts of the economic dimension in the

study area. During the poverty alleviation tourism policy, the main target of the local government is to alleviate economic poverty in an attempt to boost the household income of the poor residents. Compared with the economic level, however, the impacts of the three other dimensions are not sufficient. The performances of education training are the lowest in four dimensions.

5. Discussion

Based on multidimensional poverty theory, by evaluating poor residents' perceptions of the impacts of tourism on poverty alleviation in six study locations in Fenghuang County, this article has: (1) established a systemic evaluation framework regarding poor residents' perceptions of the impacts of tourism on poverty elimination; (2) appraised the poor residents' perceptions of the multidimensional impacts of tourism on poverty alleviation at the level of individual indicator, and (3) examined the differences in poor residents' perceptions of the four kinds of impacts of tourism on poverty alleviation. The concrete discussion is as follows.

According to the capability deprivation proposed by Sen [25], when evaluating the impacts of tourism on poverty alleviation, the multidimensional nature of poverty must be taken into consideration rather than concentrating solely on low income or insufficient consumption [17]. Our research proposes an integrated evaluation framework, including four dimensions (economic level, livelihood condition, education training and health care). This framework is contrary to that of Medina-Muñoz, Medina-Muñoz and Gutiérrez-Pérez [8], who established the assessment framework that consists of economic impacts, sociocultural impacts and environmental impacts. Our indicator system concentrates more on the capabilities and rights of poor residents, which are in line with the primary goal of pro-poor tourism and sustainable development concepts [2,4,16,17]. Moreover, the evaluation framework referred to multidimensional poverty theory and can grasp the effects of tourism on the depth and breadth of poverty [1], which is beneficial for formulating more accurate and applicable poverty alleviation tourism policy.

At the level of the individual indicator, this study assessed poor residents' perceptions of the impacts of tourism on poverty alleviation that has been confirmed in previous literature. In particular, in terms of economic level, tourism development can improve household income, provide more employment opportunities and facilitate agriculture products [3,18]. With respect to livelihood conditions, house conditions of poor residents can be improved, which accords with the conclusion of Harris [79]. Concerning education training, our results indicate that exploiting the tourism industry has a significant positive influence on the promotion of education infrastructure, which is consistent with Mkhize and Cele [14]. In health care, with the enhancement of tourism tax, the local government actively provides a greater level of health service to poor residents [41]. The results of quite a few indicators, however, differ from the extant literature. For instance, in contrast to Manyara and Jones [80], this study finds that poor residents have access to clean drinking water and secure electricity by participating in tourism exploitation, which is due to the fact that since 2013, the Chinese government invests more in the precise poverty alleviation policy (PPAP) and the poor residents' living standard has been improved to a greater extent. Additionally, we also find a number of new outcomes such as extending the coverage of medical insurance and increasing the opportunity of free treatment in villages. This also demonstrates that the effects of tourism on poverty alleviation go beyond an enhancement in income [79].

Generally, tourism development in the study locations is a crucial contributor to alleviating multidimensional poverty deprivations (3.180), although there is still room for improvement. In the four dimensions, the economic level of the study locations accepts the highest score (1.125), which results from the fact that the basic economic needs can be met more easily than other aspects [65]. Meanwhile, the local government pours more attention into improving the economic level of poor residents (0.821). However, the means of total education training (0.420) and health care (0.819) are lower than the two other dimensions, which demonstrates the status quo of China's poverty alleviation, namely, economic

level and livelihood condition, has been promoted to a certain extent. Meanwhile education and medical care still need to be focused on, particularly education training.

Our research makes twofold contribution. Theoretically, by combining the multidimensional poverty theory, this study proposes an evaluation framework to better examine the impacts of tourism on poverty alleviation from the perspective of poor residents' perceptions. Moreover, by incorporating the multidimensional nature of poverty, it can complement and enrich the literature on tourism development and poverty alleviation. Practically, our results would allow local government to formulate an integrated policy that takes economic level, livelihood condition, education training and health care into consideration to alleviate the multidimensional deprivations for poor residents. Furthermore, our findings also have crucial implications for other poor tourism destinations where expect to promote the full impact of tourism on poverty alleviation and achieve sustainable development.

It is undeniable that there are quite a few limitations in this study. The implementation of pro-poor tourism is a dynamic process; poor residents' perceptions of the impacts of tourism on poverty alleviation differ in times of prosperity. Hence, examining the diachronic perception should be conducted in future research. Moreover, our study can veritably reflect the current situation with regard to tourism on poverty alleviation in study locations. Similar to the majority of research, however, our study is limited in that the Delphi method and AHP rely on the judgement of experts to a certain extent. Due to this reason, a larger-scale Delphi and AHP survey need more time and resources. Inevitably, these current judgements contain subjective thoughts and opinions. Therefore, the study can adopt "Big Data" to collect more objective information in the future. In addition, the factors that affect poor residents' perception of the impacts of pro-poor tourism also need to be explored.

6. Conclusions and Policy Implications

On the basis of multidimensional poverty theory, the Delphi method was applied to establish the evolution framework involving poor residents' perceptions of the impacts of tourism on poverty alleviation. Thereafter, the AHP was used to identify the weights of each indicator. Finally, the mean of comprehensive score is calculated in six study locations. The main conclusions are as follows. Tourism development has been a momentous contributor to alleviating poverty in six locations in the Fenghuang County to a certain extent (3.180). However, there is still room for progress. Moreover, the impacts of tourism on poverty alleviation are limited to the economic level, and tourism economic development also can improve livelihood conditions, education training and health care. Notably, the scores of education training (0.420) and health care (0.819) are lower, especially in education training.

Based on the above conclusions, the relevant recommendations are put forward for Fenghuang County. When implementing poverty alleviation tourism policy, an integrated mechanism including economic, livelihood, education and medical, needs to be taken into consideration. In the first place, it is acknowledged that improving the economic condition can not only directly alleviate the feelings of relative deprivation, but also lay the foundation for the promotion of living standards, education and medical care. Consequently, it should be considered that local government in Fenghuang County establishes a platform for employment information, expands trenches of income increment, controls the excessive rise of daily necessities and constructs an appropriate distribution mechanism of tourism benefits to ameliorate the economic level of poor residents. Understandably, it is of great significance for preventing non-poor residents from falling into the poverty trap to improve education level. Hence, it is imperative that training classes with regard to tourism service, tourism policy and enterprise operation are launched to enhance the comprehensive participation ability of poor residents. It is noted that there is room for improvement in livelihood conditions and health care. The degree to which livelihood condition is boosted is also crucial. Consequently, local government expands the spillover effect of tourism development to promote the investment of livelihood welfare, especially in life durable products and bathroom environment. Additionally, as demonstrated in the conclusions, health care is lower than economic level and livelihood condition. Health care of poor residents cannot be enhanced immediately in the short term, local government should therefore establish a long-acting

mechanism of tourism on poverty alleviation to continuously expand the scope of medical insurances and ameliorate medical infrastructure.

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Appendix A

Table A1. The section rate of each indicator.

No.	Indicator Content	Selection Rate %
1	Improve family income	100
2	Promote employment opportunity	100
3	Increase the level of consumption	75
4	Optimize the structure of consumption	80
5	The easier sell of agricultural products	90
6	Improve the development of village	55
7	Decrease the difficulty of loan	50
8	Improve housing condition	75
9	Access to safe drinking water	80
10	Access to stable electricity	80
11	Increase life durable products	75
12	Enrich the category of cooking fuel	70
13	Enhance the security of food	55
14	Increase the number of clothes	40
15	Change the structure of houses	65
16	Optimize bathroom environment	70
17	Aggrandize training opportunity	90
18	Promote education infrastructure	80
19	Enhance cultural quality	85
20	Generalize Mandarin	65
21	Popularize English	50
22	Protect traditional cultural	50
23	Increase the number of schools	65
24	Promote family harmony	30
25	Extend the coverage of medical insurance	80
26	Increase the percentage of government bearing medical insurance	85
27	Improve medical care condition	90
28	Increase the opportunity of free treatment in village	80
29	Improve physical condition	35
30	The augment of hospital	65

Note: selection rate = the number of experts' agreement/total of experts.

Table A2. Degree of opinion concentration and degree of opinion coordination for indicators.

No.	Indicator Content	Degree of Opinion Concentration	Degree of Opinion Coordination
1	Improve family income	8.70	0.08
2	Promote employment opportunity	8.60	0.09
3	Increase the level of consumption	7.15	0.15
4	Optimize the structure of consumption	6.20	0.16
5	The easier sell of agricultural products	7.80	0.21
6	Improve housing condition	7.50	0.28
7	Access to safe drinking water and stable electricity	7.90	0.17
8	Increase life durable products	6.20	0.16
9	Enrich the category of cooking fuel	6.20	0.16
10	Change the structure of houses	5.50	0.30
11	Optimize bathroom environment	6.30	0.15
12	Aggrandize training opportunity	7.30	0.32
13	Promote education infrastructure	7.30	0.23
14	Enhance cultural quality	7.80	0.21
15	Generalize Mandarin	6.40	0.17
16	Extend the coverage of medical insurance	7.00	0.22
17	Increase the percentage of government bearing medical insurance	7.50	0.17
18	Improve medical care condition	7.30	0.18
19	Increase the opportunity of free treatment in village	6.70	0.22
20	The augment of hospital	5.40	0.15

Suppose that the number of experts is n , the number of indicators is m , and X_{ij} represents the score that i expert evaluates j indicator.

$$M_j = \frac{1}{n} \sum_{i=1}^n X_{ij} \quad (\text{A1})$$

$$S_j = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (X_{ij} - M_j)^2} \quad (\text{A2})$$

$$V_j = \frac{S_j}{M_j} \quad (\text{A3})$$

where M_j represents the degree of opinion concentration and V_j represents the degree of opinion coordination. The greater the value of M_j , the greater the degree of opinion concentration. Conversely, the greater the value of V_j , the lower the degree of opinion coordination.

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