CULTURAL SUSTAINABILITY AND SOCIAL SUSTAINABILITY INFLUENCES ON THE SUSTAINABILITY OF RURAL MUSEUMS IN CHINA

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Abstract

Background-Rural museums are important cultural institutions in rural areas and play an important role in the stable development of rural areas in China. Studying the impact of cultural sustainability and social sustainability on the sustainability of rural museums can provide theoretical reference for the sustainable development of rural museums in China, as well as the formulation of government cultural policies and rural development policies. **Purpose**-The research purpose of this paper is to determine the relationship between cultural sustainability, social sustainability and rural museum sustainability. **Methodology**-We use empirical research methods to test the proposed hypotheses. **Finding**-Through the analysis results, we found that cultural sustainability positively affects the sustainability of rural museums; social sustainability positively affects the sustainability of rural museums; cultural sustainability positively affects social sustainability; social sustainability has a positive impact on cultural sustainability and rural museum sustainability. There is a mediating effect between them. This shows that our hypothesis is valid. **Conclusion/contribution**-The contribution of this work is to identify the relationship between cultural sustainability, social sustainability and rural museum sustainability, and provide reference theories and methods for rural museum sustainability research. .

Keywords: Chinese Rural Museum; Museum Sustainability; Museum Relevance; Sustainable Development; Structural Equation Model.

1. INTRODUCTION

Rural museums are an umbrella term encompassing a wide variety of museums about agriculture and the countryside, and their prolific emergence in the UK was primarily in response to accelerated changes in agricultural practices and rural lifestyles in the mid-20th century [Brigden 2013]. This change mainly results from the emergence of different concerns and challenges caused by the accelerated development of the world. For China, the impact of this change is that a large number of villages have been demolished in the process of urbanization, while the preserved villages have experienced a hollowing out of the population [Li 2020] or a weakening of development diversity [Ji 2018] . In addition, this change will have an important impact on the lifestyle and thinking of rural residents, causing residents in rural areas to change their traditional lifestyle and folk culture. According to data released by the National Bureau of Statistics of China, 491 million people in China will still live in rural areas in 2022. Therefore, the healthy development of rural areas is extremely important to China as a whole. How to maintain the healthy development of rural areas during the process of urbanization has become a huge challenge.

Rural museums have great potential to address challenges. Existing research has shown that what museums collect, preserve and display constitutes a tangible link between the past, present and future and forms the core of cultural sustainability [Stylianou-Lambert 2014]. At the same time, in addition to attracting cultural tourism, museums can also have economic [Plaza 2010, Fonseca 2010], social [King horn 2008] and environmental [Wang 2023] impacts. In some areas, museums have also become a catalyst for regional development and an important force in strengthening the local economy [Tien 2010]. Therefore, vigorously developing rural museums can effectively promote the healthy development of rural areas in China.

In view of the important status of rural museums as cultural institutions, this article mainly studies the impact of cultural sustainability and social sustainability on the sustainability of rural museums. The reason why we carry out research on the sustainability of rural museums from a cultural and social perspective is that, on the one hand, China's rural areas are being affected by urbanization, which has had an impact on rural culture and social lifestyle; on the other hand, because of the importance of sustainability in In research, cultural sustainability has been ignored for a long time and is considered by many scholars to be a component of social sustainability [Pop 2016]. It was not until 2015 that the United Nations singled out cultural sustainability as an important pillar of sustainability. In addition, the development of rural museums is often neglected. Compared with museums in cities, rural museums are relatively small and lack professional managers and curators. And most rural museums lack development planning and funding [Ji 2018]. Therefore, in this context, studying the impact of cultural sustainability and social sustainability on the sustainability of rural museums has important practical significance, especially for many developing countries and regions like China. This study will provide them with Provide an important theoretical basis for promoting the sustainable development of rural museums and the healthy development of rural areas.

2. RELATED WORK

2.1 Museum Relevance

The museum relevance theory was proposed by Nielsen [Nielsen 2015]. A relationship between people, museums and communities is discussed. That is, social, participatory participation [Wood ham 2014]. This makes it crucial to create relevance at all levels of cultural work, for example in political strategy, mission statements, project creation, exhibition layout and personal learning approaches. And creating relevant experiences often requires taking risks and meeting challenges. Meeting the challenge requires changing the way museums see themselves, meaning evaluating, discarding or reformulating existing programs and policies to which museums may be well suited, as well as their once singular functions of cultural education and heritage preservation. Relevance within a museum is not an easy concept to define, as the creation of relevant experiences often depends on the methods, collections and pathways of each museum. Likewise, tourists want the possibility to create meaning for themselves through participatory experiences and dialogue [Black 2012], as well as ways to receive knowledge and influence. It is in this interaction that correlations emerge and are defined.

In the context of museums, Nielsen understands relevance as: creating meaningful practices. This definition contains:

1) The process of creation, by developing new concepts or by establishing known concepts in new environments;

2) Emotional and personal understanding of relevance is something that must be meaningful;

3) The importance of practical applications directly related to the "matter at hand"。

The theory of museum relevance proposed by Nielsen is of great significance because there is a correlation between museums and sustainability. The proposal of this theory has laid a theoretical foundation for further research on museum sustainability.

2.2 Sustainable Development

According to the United Nations, sustainable development "is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." For further explanation, the 1987 Brundtland report proposed economic, social and environmental sustainability. There is no mention of cultural sustainability. At that time, many scholars included culture in social sustainability. Existing research has shown the importance of cultural sustainability as an independent pillar. Therefore, after 2015, the United Nations made cultural sustainability the main focus of the sustainable development agenda [IFACCA 2015]. Cultural organizations can be engines of economic development (through cultural industries, cultural tourism and traditional livelihoods), as well as contribute to social cohesion, the sustainability of the natural environment and the resilience of communities [Pop 2016]. Since then, sustainable development has included the four pillars of economy, society, environment and culture.

According to the theory of sustainable development, in order to achieve sustainable development, rural museums must consider economic, social, environmental and cultural sustainability at the same time.

2.3 Rural Museum Sustainable

In view of the importance of sustainable development of museums, some scholars have conducted research on museum sustainability. For example, Pop et al. [Pop 2016] adopted qualitative research methods, conducted semi-structured interviews with experts in the Romanian museum field, and conducted an in-depth study of the literature in this field. For the first time, they systematically studied the factors affecting the sustainable development of museums and the indicators to measure the sustainable development of museums, and proposed a museum sustainable development performance evaluation model. This model enables a comparative assessment of the sustainability performance of different museums based on economic sustainability, social sustainability, cultural sustainability and environmental sustainability. Some subsequent work expanded Pop's research. For example, Lopez [Lopez 2018] found through research that innovation is another important factor affecting the

sustainable development of museums. Pop [Pop 2019] created a comprehensive framework that explains the interconnections between the different variables of museum sustainability, as well as the place and role of cultural sustainability within the overall framework of sustainability. Although these studies claim that their findings are applicable to all types of museums. However, in fact, it is difficult for this kind of general model or framework to fully take into account the actual situation of all types of museums, especially rural museums that have received relatively little attention, as well as the specific development of rural museums in different countries and regions, such as China, which is relatively typical developing country. Because this will create unique influencing factors related to the sustainable development of rural museums. In other words, China has its own national conditions, and rural museums, as a subcategory of museums, have their own unique environment for development in China.

In summary, it is necessary to study the impact of cultural sustainability and social sustainability on the sustainability of rural museums. It can provide important theoretical methods for the formulation of government cultural policies and rural development policies in developing countries and regions.

The structure of this article is as follows: the second section lays the theoretical foundation for the hypotheses and describes the survey structure, the development of rural museums in Changzhou City, Jiangsu Province, China, the survey method and sample overview; the third section presents the results of the empirical study; the last section discusses As a result, conclusions are summarized and some recommendations for future research are made.

3. MATERIALS AND METHODS

3.1. Determine the Hypothesis

For rural museums, the purpose of cultural sustainability is to improve people's awareness of the museum, so as to better exert the museum's social impact. At the same time, cultural sustainability also focuses on collecting and displaying collections. The most common cultural activities in museums revolve around collections. As for the rural museums currently being built in China, many collections are intangible cultural heritage. Through exhibitions and collections, museums can demonstrate their social functions, enlighten people's understanding of the diversified development of human society, and calmly examine the imbalance of development between different regions and countries, as well as the differences in social development concepts between ethnic groups [Fu 2015].

Hypothesis 1 (H1): Cultural sustainability positively affects rural museum sustainability.

Rural museums are important cultural institutions in rural areas, and their basic function is to record and inherit rural culture. In Jiangxi Province, China, some rural museums are relatively simple, but they still have the dual functions of displaying and protecting rural cultural heritage, and can record the changing process of local social living habits [Wei 2016]. Compared with museums in cities, rural museums have stronger cultural recording and cultural inheritance functions.

Hypothesis 2 (H2): Cultural sustainability positively affects social sustainability.

Rural museums also play an important role in the public's daily life [Hao 2016]. The relationship between museums and society is becoming increasingly close, and they have special cultural power, which can play a role in integrating concepts, regulating behavior, and inspiring people to make progress. Therefore, the cultural activities of rural museums can be integrated into society through social education functions, closely contact the public, and pay timely attention to people's livelihood needs and social hot spots.

Hypothesis 3 (H3): Social sustainability positively affects rural museum sustainability.

3.2. Measuring Structure

To test our proposed hypotheses, we selected questionnaires at the prefecture-level city (Changzhou City) level in China for quantitative analysis. What motivated us to choose this research effort is that this method requires less time and financial investment compared to other tools and allows the required data to be collected from a larger scale. At the same time, there are also weaknesses in questionnaire-based research that are difficult to avoid. For example, the quality level of collected data depends on the honesty of the interviewees and their ability to understand the questions [Pop 2019].

The first step in designing the survey was to search the literature and identify questionnaires related to cultural sustainability, social sustainability and rural museum sustainability. Although Pop et al.'s studies have provided some references [Pop 2016, Pop 2019], the questionnaires provided by these studies did not focus on rural museums, let alone rural museums in developing countries. Therefore, in order to advance theoretical findings and empirical research in the field of rural museum sustainability, we designed a new questionnaire to collect relevant data to test our proposed hypotheses. Of course, before distributing the questionnaire, we invited three managers of rural museums in Changzhou City, Jiangsu Province, China, to refine and improve the questionnaire. And by conducting a survey in a rural museum in Changzhou City, the clarity of the items and the ability of the respondents to answer the questions were checked. The final version of the questionnaire consisted of two parts. The first part includes 48 items, using a five-point Likert scale (1 completely disagree, 5 completely agree). Among them, 16 items are related to cultural sustainability, investigating the ability of rural museums to collect, protect and research cultural heritage; 16 items are related to social sustainability, investigating the social education capabilities of rural museums; 16 items are related to rural museums. Sustainability-related, investigating the sustainability capabilities of rural museums. The questionnaire used in this study is shown in Appendix A.

The second part is the basic information of the interviewees, see Appendix B for details. We asked respondents to provide basic information such as the number of visits to rural museums, age, and occupation. The respondent's real name does not appear in the basic information. Furthermore, we assured respondents that their information would be kept strictly confidential and used only for our research work.

3.3. Development of Rural Museum in Changzhou City, Jiangsu Province, China

After proposing the research hypotheses and preparing the questionnaire, our next step is to analyze the development of rural museums in Changzhou City, Jiangsu Province, China, and understand the scale and main characteristics of rural museums in the region to determine the conditions that the sample must meet.

The reason why we chose the Rural Museum in Changzhou City as the source of our data collection is that Changzhou is located in the Yangtze River Delta, the most economically developed region in China. The local economy is developed (according to data from the Changzhou Municipal Bureau of Statistics, the city's per capita GDP in 2022 is US$26,500, which has exceeded the recognized threshold of US$20,000 in per capita GDP in developed countries), the humanities and history are profound, and the villages in the region generally have distinctive local characteristics. It has cultural characteristics and has many rural museums. According to statistics from Dong [Dong Dong Changchun 2019], as of 2019, there are already 20 rural museums in Changzhou City. Many rural museums are located in rural areas in tourist hotspots with many tourists, which lays the foundation for the research of this article.

3.4. Measurement Method

We used China's online questionnaire platform to distribute questionnaires to respondents who had visited Changzhou Rural Museum. A total of 290 questionnaires were distributed, of which 49 had omissions, inconsistent options, or obvious regularity in answers. These questionnaires will be treated as invalid samples. After raising invalid samples, 241 valid questionnaires remained, and the questionnaire survey effectiveness rate was 83.1%. Therefore, the statistical analysis was based on 241 valid questionnaires.

3.5. Sample Overview

Among the 241 questionnaires collected, 109 were male and 132 were female. There are 210 people who are locals in Changzhou City, 17 people who come from Jiangsu Province outside Changzhou, and 14 people who come from other areas of China outside Jiangsu Province. There were 43 people aged 18-25, 50 people aged 26-35, 67 people aged 36-45, and 81 people over 45 years old. There are 56 people whose occupation is students, 29 people who work in enterprises, 120 people who are government employees, and 36 people who are local farmers. There were 175 people who visited the rural museum only once in a year, 43 people who visited the village museum 2-5 times, 18 people who visited the village museum 6-10 times, and 5 people who visited the village museum more than 10 times. Among them, 221 people thought that the rural museums they visited were always open, and 20 people had the opposite opinion. 61 of the respondents thought that the rural museum they visited had 1-2 employees, 132 people thought that the rural museum they visited had 3-5 employees, and 28 people thought that the rural museum they visited had 6-10 employees. , there are 20 people who think that the rural museum visited has more than 10 employees. There were 24 respondents who visited village history museums, 169 respondents who visited rural museums, 8 who visited private museums, 27 who visited ecological museums, and 13 who visited other types of rural museums.

4. RESULT

4.1 Descriptive Statistics

The relationship model proposed by the study includes three variables: cultural sustainability, social sustainability, and rural museum sustainability and their corresponding dimensions: Heritage has uniqueness, Heritage has conservation files, Heritage well preserved and in good storage conditions, and Have intangible cultural heritage, Permanent exhibition to attract public, i Can take improvement measures based on visitors' opinions, Provide participatory and interactive educational programs, allowing community members to organize various activities, Organizational structure of the museum, Government policy, Museum marketing strategy and Size of the museum collection, with 12 dimensions and 48 topics. All scales use a 5-point Likert scale, with the maximum value being 5 and the minimum value being 1. For all variables, the higher the score, the higher the corresponding evaluation level. The absolute values of skewness and kurtosis of all items are less than 3 and 10, indicating that the sample distribution satisfies normality. The descriptive statistical results of the 48 measurement items are shown in Table 1.

Table 1: Descriptive Statistics of Items

Dimensions	Items	Min	Max	AVG	Std	Variance	Skewness
Heritage has uniqueness	CS1	1	5	3.59	1.26	-0.55	-0.87
	CS2	1	5	3.56	1.25	-0.65	-0.58
	CS3	1	5	3.54	1.28	-0.62	-0.76
	CS4	1	5	3.59	1.27	-0.55	-0.90
Heritage has conservation files	CS5	1	5	3.61	1.26	-0.72	-0.55
	CS6	1	5	3.62	1.24	-0.47	-0.96
	CS7	1	5	3.57	1.26	-0.58	-0.73
	CS8	1	5	3.66	1.22	-0.67	-0.62
Heritage well preserved and in good storage conditions	CS9	1	5	3.53	1.01	-0.59	0.17
	CS10	1	5	3.58	0.91	-0.59	0.47
	CS11	1	5	3.54	1.02	-0.42	-0.17
	CS12	1	5	3.61	0.91	-0.43	0.12
Have intangible cultural heritage	CS13	1	5	3.37	0.98	-0.39	-0.16
	CS14	1	5	3.41	1.00	-0.50	0.00
	CS15	1	5	3.35	0.96	-0.38	0.03
	CS16	1	5	3.49	1.00	-0.58	-0.04
Permanent exhibition to attract public	SS1	1	5	3.56	1.34	-0.59	-0.86
	SS2	1	5	3.49	1.35	-0.60	-0.89
	SS3	1	5	3.51	1.28	-0.56	-0.78
	SS4	1	5	3.54	1.32	-0.59	-0.85
Can take improvement measures based on visitors' opinions	SS5	1	5	3.47	1.28	-0.52	-0.84
	SS6	1	5	3.4	1.29	-0.31	-1.08
	SS7	1	5	3.34	1.36	-0.43	-1.08
	SS8	1	5	3.45	1.27	-0.45	-0.94
Provide participatory and interactive educational programs	SS9	1	5	3.45	1.25	-0.48	-0.78
	SS10	1	5	3.48	1.18	-0.64	-0.43
	SS11	1	5	3.37	1.17	-0.33	-0.89
	SS12	1	5	3.33	1.20	-0.36	-0.89

Allow community members to organize various activities	SS13	1	5	3.39	1.28	-0.33	-1.01
	SS14	1	5	3.45	1.17	-0.39	-0.83
	SS15	1	5	3.37	1.23	-0.26	-1.00
	SS16	1	5	3.52	1.22	-0.47	-0.89
Organizational structure of the museum	RMS1	1	5	3.36	1.31	-0.38	-1.07
	RMS2	1	5	3.34	1.34	-0.34	-1.17
	RMS3	1	5	3.33	1.35	-0.38	-1.12
	RMS4	1	5	3.42	1.30	-0.46	-0.95
Government policy	RMS5	1	5	3.3	1.33	-0.24	-1.21
	RMS6	1	5	3.14	1.36	-0.14	-1.25
	RMS7	1	5	3.2	1.33	-0.21	-1.20
	RMS8	1	5	3.19	1.37	-0.21	-1.21
Museum marketing strategy	RMS9	1	5	3.45	1.26	-0.49	-0.80
	RMS10	1	5	3.43	1.32	-0.48	-0.90
	RMS11	1	5	3.43	1.34	-0.33	-1.18
	RMS12	1	5	3.33	1.34	-0.38	-1.09
Size of the museum collection	RMS13	1	5	3.19	1.43	-0.26	-1.30
	RMS14	1	5	3.18	1.32	-0.07	-1.29
	RMS15	1	5	3.22	1.43	-0.18	-1.34
	RMS16	1	5	3.16	1.38	-0.16	-1.28

4.2 Reliability Test

Reliability, also called reliability, refers to the degree of credibility of the questionnaire, which mainly reflects the consistency, consistency, reproducibility and stability of the test results. A good measuring tool can measure the same thing repeatedly, and the results should always remain the same to be credible. There are many ways to measure the internal reliability of the scale. This article uses the α coefficient to represent the consistency reliability within the scale. When the α value is higher, it means that the results of each item in the questionnaire are more consistent, which means that the results of each item in the questionnaire are more consistent. The better the reliability. When the α coefficient is lower than 0.6, the reliability is low, and it is necessary to consider rewriting the questionnaire or screening controversial indicators in the questionnaire. A reliability higher than 0.9 indicates that the questionnaire data results are very stable, and 0.7 to 0.8 is relatively stable.

The above methods are used to evaluate various dimensions of the questionnaire: the heritage is unique, the heritage has preserved archives, the heritage is properly preserved and stored in good conditions, it has intangible cultural heritage, the permanent exhibition can attract the public to visit, and improvement measures can be taken based on the opinions of visitors, Providing engaging and interactive educational programs, allowing community members to organize various activities, the organizational structure of rural museums has been optimized, favorable government policies, effective museum marketing strategies, and the size of museum collections have steadily increased. The reliability range of each dimension is 0.807-0.897. It can be seen from the data in the table that the results are highly stable and have a certain degree of credibility. See Table 2 for details.

Table 2: Reliability Test of Variables

Dimensions code	Dimensions name	Number of terms	Cronbach's α	Cronbach's α based on standardized terms
X11	Heritage has uniqueness	4	0.881	0.881
X12	Heritage has conservation files	4	0.862	0.862
X13	Heritage well preserved and in good storage conditions	4	0.872	0.872
X14	Have intangible cultural heritage	4	0.859	0.860
M11	Permanent exhibition to attract public	4	0.883	0.883
M12	Can take improvement measures based on visitors' opinions	4	0.846	0.846
M13	Provide participatory and interactive educational programs	4	0.807	0.807
M14	Allow community members to organize various activities	4	0.838	0.839
Y11	Organizational structure of the museum	4	0.864	0.864
Y12	Government policy	4	0.87	0.87
Y13	Museum marketing strategy	4	0.875	0.875
Y14	Size of the museum collection	4	0.897	0.897

4.3. Validity Analysis (Exploratory Factor Analysis)

4.3.1. Culturally Sustainable

The validity index of the scale can be judged through the exploratory factor analysis process. In the exploratory factor analysis results, when KMO>0.6 and Bartlett's sphericity test significance p<0.05, it indicates that the questionnaire is very suitable for the main purpose. Component analysis (factor analysis), when 0.8<KMO<0.9, it is very suitable; when 0.7<KMO<0.8, it is generally suitable; when 0.6<KMO<0.7, it is acceptable; when the value of KMO is less than 0.6, it is not suitable as a factor analyze It can be seen from the data in Table 3 that the factor analysis result KMO=0.912>0.6, and the Bartlett's sphericity test result p<0.001, this scale is suitable for factor analysis.

Table 3: Culturally Sustainable KMO and Bartlett Test

KMO		0.912
Bartlett's test of sphericity	Chi-square	2204.757
	DF	120
	P-value	＜0.001

According to the variables of this study, in the results shown in Table 4, four principal components with eigenvalues greater than 1 were extracted, and the component matrix was rotated using the Kaiser Normalization maximum variance method. The results are as shown in the following table. The first four principal components The distribution of eigenvalues of the components is relatively balanced, which are 3, 2.938, 2.841, 2.804, and the cumulative

variance of the four principal components is 72.397%, indicating that the four principal components can well summarize the information contained in the 16 items. Able to explain most of the variation. The maximum variance method is used for factor rotation. The factor loading results after rotation are shown in Table 4. For ease of observation, loading values lower than 0.5 are prohibited from being displayed in the table. The four principal components are unique to the heritage, the heritage has preserved archives, the heritage is properly preserved and stored in good conditions, and it has intangible cultural heritage. The factor loadings of the corresponding items of each principal component are all above 0.5. , each item can well reflect the information of the variable to which it belongs, indicating that the scale used this time has good aggregation and differentiation.

Table 4: Cultural Sustainability Rotation Component Matrix

	Component			
	1	**2**	**3**	**4**
CS1	0.812			
CS2	0.760			
CS3	0.765			
CS4	0.826			
CS5			0.747	
CS6			0.821	
CS7			0.795	
CS8			0.706	
CS9		0.804		
CS10		0.742		
CS11		0.824		
CS12		0.827		
CS13				0.750
CS14				0.744
CS15				0.793
CS16				0.706
Eigenvalues	3.000	2.938	2.841	2.804
Variance contribution rate	18.753	18.362	17.756	17.527
Cumulative contribution rate	18.753	37.115	54.870	72.397

4.3.2. Socially Sustainable

The validity index of the scale can be judged through the exploratory factor analysis process. In the exploratory factor analysis results, when KMO>0.6 and Bartlett's sphericity test significance p<0.05, it indicates that the questionnaire is very suitable for the main purpose. Component analysis (factor analysis), when 0.8<KMO<0.9, it is very suitable; when 0.7<KMO<0.8, it is generally suitable; when 0.6<KMO<0.7, it is acceptable; when the value of KMO is less than 0.6, it is not suitable as a factor analyze It can be seen from the data in Table 5 that the factor analysis result KMO=0.894>0.6, and the Bartlett's sphericity test result p<0.001, this scale is suitable for factor analysis.。

Table 5: Socially Sustainable KMO and Bartlett Test

KMO		0.894
Bartlett's test of sphericity	**Chi-square**	**1906.571**
	DF	**120**
	P-value	**＜0.001**

According to the variables of this study, in the results shown in Table 6, four principal components with eigenvalues greater than 1 were extracted, and the component matrix was rotated using the Kaiser Normalization maximum variance method. The results are as shown in the table below. The first four principal components the distribution of eigenvalues of the components is relatively balanced, which are 3.054, 2.75, 2.688, 2.573 respectively. The cumulative variance of the four principal components is 69.152%, indicating that the four principal components can well summarize the information contained in the 16 items. Able to explain most of the variation. The maximum variance method is used for factor rotation. The factor loading results after rotation are shown in the table below. For ease of observation, loading values lower than 0.5 are prohibited from being displayed in the table. The four principal components respectively describe the permanent exhibition's ability to attract public visits, the ability to take improvement measures based on visitors' opinions, the provision of participatory and interactive educational programs, and the ability to allow community members to organize various activities. Four variables, each principal component corresponds to the factor of the question. The loadings are all above 0.5, and each item can well reflect the information of the variable to which it belongs, indicating that the scale used this time has good aggregation and differentiation.

Table 6: Socially Sustainable Rotation Component Matrix

	Component			
	1	**2**	**3**	**4**
SS1	0.806			
SS2	0.787			
SS3	0.838			
SS4	0.822			
SS5		0.685		
SS6		0.789		
SS7		0.757		
SS8		0.820		
SS9				0.738
SS10				0.754
SS11				0.718
SS12				0.756
SS13			0.795	
SS14			0.811	
SS15			0.717	
SS16			0.709	
Eigenvalues	3.054	2.750	2.688	2.573
Variance contribution rate	19.085	17.186	16.799	16.083
Cumulative contribution rate	19.085	36.271	53.070	69.152

4.3.3. Rural Museum Sustainable

The validity index of the scale can be judged through the exploratory factor analysis process. In the exploratory factor analysis results, when KMO>0.6 and Bartlett's sphericity test significance p<0.05, it indicates that the questionnaire is very suitable for the main purpose.

Component analysis (factor analysis), when 0.8<KMO<0.9, it is very suitable; when 0.7<KMO<0.8, it is generally suitable; when 0.6<KMO<0.7, it is acceptable; when the value of KMO is less than 0.6, it is not suitable as a factor analyze.

From the data in Table 7, it can be seen that the factor analysis result KMO=0.912>0.6, and the Bartlett's sphericity test result p<0.001, this scale is suitable for factor analysis.

Table 7: Rural Museum Sustainable KMO and Bartlett Test

KMO		0.910
Bartlett's test of sphericity	**Chi-square**	1318.878
	DF	120
	P-value	<0.001

According to the variables of this study, in the results shown in Table 8, four principal components with eigenvalues greater than 1 were extracted, and the component matrix was rotated using the Kaiser Normalization maximum variance method.

The results are as shown in the following table. The first four principal components the distribution of eigenvalues of the components is relatively balanced, which are 3.02, 2.938, 2.909, 2.899 respectively. The cumulative variance of the four principal components accounts for 73.539%, indicating that the four principal components can well summarize the information contained in the 16 items. Able to explain most of the variation.

The maximum variance method is used for factor rotation. The factor loading results after rotation are shown in Table 8. For ease of observation, loading values lower than 0.5 are prohibited from being displayed in the table.

The four principal components respectively contribute to the optimization of the organizational structure of rural museums, favorable government policies, effective museum marketing strategies, steady increase in the scale of museum collections, and four variables. The factor loadings of the corresponding items of each principal component are all above 0.5. Each item can well reflect the information of the variable to which it belongs, indicating that the scale used this time has good aggregation and differentiation.

Table 8: Rural Museum Sustainable Rotation Component Matrix

	Component			
	1	**2**	**3**	**4**
RMS1		0.767		
RMS2		0.775		
RMS3		0.786		
RMS4		0.789		
RMS5				0.786
RMS6				0.785
RMS7				0.755
RMS8				0.792
RMS9			0.791	
RMS10			0.848	
RMS11			0.733	
RMS12			0.782	
RMS13	0.781			
RMS14	0.8			
RMS15	0.8			
RMS16	0.795			
Eigenvalues	3.02	2.938	2.909	2.899
Variance contribution rate	18.874	18.364	18.183	18.118
Cumulative contribution rate	18.874	37.238	55.421	73.539

4.4. Validity Analysis (Confirmatory Factor Analysis)

Before conducting confirmatory factor analysis, we need to clarify the main evaluation indicators and evaluation criteria for the overall fitness of the model. See Table 9 for specific evaluation indicators and standards.

Table 9: Main Evaluation Indicators and Evaluation Criteria for the Overall Fitness of the Model

Indicator	Value range	Ideal value
X^2/df	Greater than 0	Less than 5, less than 3 is better
RMSEA	Greater than 0	Less than 0.1, the fit is good; less than 0.08, the fit is very good; less than 0.05, the fit is very good; less than 0.01, the fit is excellent
GFI	Between 0~1	Greater than 0.8 is acceptable; greater than 0.9 is best
CFI	Between 0~1	Greater than 0.8 is acceptable; greater than 0.9 is best
IFI	Between 0~1	Greater than 0.8 is acceptable; greater than 0.9 is best
TFI	Between 0~1	Greater than 0.8 is acceptable; greater than 0.9 is best
AGFI	Between 0~1	Greater than 0.8 is acceptable; greater than 0.9 is best

4.4.1 Cultural Sustainability Model Fitting Results

The model fitting results of cultural sustainability are shown in Table 10.

Table 10: Model Fitting Indicators for Cultural Sustainability

Indicator	X^2/df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Statistics	1.434	0.934	0.910	0.980	0.976	0.980	0.043
Reference	<5	>0.8	>0.8	>0.8	>0.8	>0.8	<0.08
Compliance status	Supported	Supported	Supported	Supported	Supported	Supported	Supported

The fitting index of the cultural sustainability model operation is shown in the table above. The fitting index is: x²/df=1.434, which is less than 5. GFI=0.934, AGFI=0.910, IFI=0.980, TLI=0.976, CFI=0.980, greater than 0.8, RMSEA=0.043 less than 0.08. The fitting standards of the comparison table and the fitting indicators of the confirmatory factor analysis model all meet the requirements. Suitable for model analysis.

4.4.2 Socially Sustainable Model Fitting Results

The model fitting results of social sustainability are shown in Table 11.

Table 11: Model Fitting Results of Social Sustainability

Indicator	X^2/df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Statistics	1.565	0.926	0.899	0.970	0.963	0.969	0.049
Reference	<5	>0.8	>0.8	>0.8	>0.8	>0.8	<0.08
Compliance status	Supported	Supported	Supported	Supported	Supported	Supported	Supported

The fitting index of the social sustainability model operation is shown in the table above. The fitting index is: x²/df=1.565, which is less than 5. GFI=0.926, AGFI=0.899, IFI=0.970, TLI=0.963, CFI=0.969, greater than 0.8, RMSEA=0.049 less than 0.08. The fitting standards of the comparison table and the fitting indicators of the confirmatory factor analysis model all meet the requirements. Suitable for model analysis.

4.4.3 Model Fitting Results of Rural Museum Sustainability

The model fitting results of rural museum sustainability are shown in Table 12.

Table 12: Model Fitting Indicators for Rural Museum Sustainability

Indicator	X^2/df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Statistics	1.441	0.933	0.909	0.981	0.977	0.980	0.043
Reference	<5	>0.8	>0.8	>0.8	>0.8	>0.8	<0.08
Compliance status	Supported	Supported	Supported	Supported	Supported	Supported	Supported

The fitting index of the sustainable model operation of the rural museum is shown in the table above. The fitting index is: x²/df=1.441, which is less than 5. GFI=0.933, AGFI=0.909, IFI=0.981, TLI=0.977, CFI=0.980, greater than 0.8, RMSEA=0.043 less than 0.08. The fitting standards of the comparison table and the fitting indicators of the confirmatory factor analysis model all meet the requirements. Suitable for model analysis.

4.5 Structural Equation Model Fit Test

The main path results of the model constructed in this article are shown in Figure 1. According to the structural equation model adaptation test indicators: the ratio of chi-square degrees of freedom should be between 1 and 3, and less than 5 is acceptable; asymptotic residual mean square and square root RMSEA (Residual The mean square error of approximation) value should be between 0.05-0.08. If it is lower than 0.05, it means the fit is very good; the fit index GFI value is generally considered to be greater than 0.9, and if it is above 0.8 it is still acceptable; the value-added fit index CFI The value should be greater than 0.9; the non-standard adaptation index TLI value should be above 0.9; it is generally believed that the number of samples should be greater than 200 [Wu 2022].
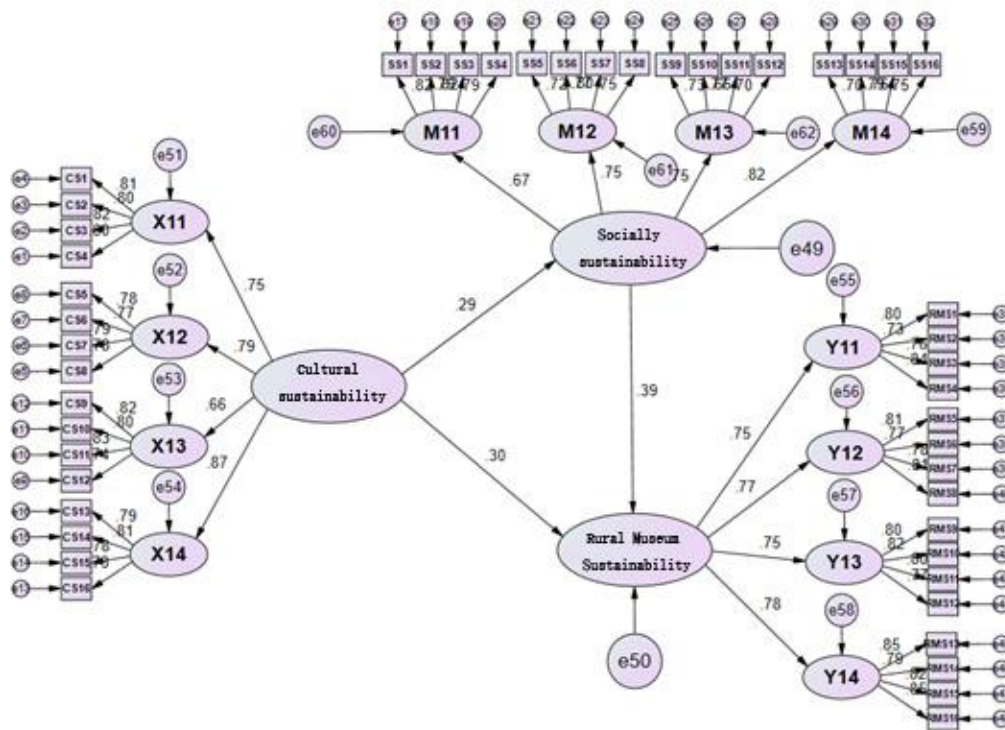

Figure 1: Structural Equation Model Diagram Running Results (annotated)

The fitting indicators of the structural equation model in the above figure are shown in Table 13.

Table 13: Structural Equation Model Fitting Index (annotated)

Indicator	□X²/df	GFI	AGFI	IFI	TLI	CFI	RMSEA
Statistics	1.265	0.821	0.802	0.957	0.954	0.956	0.033
Reference	<5	>0.8	>0.8	>0.8	>0.8	>0.8	<0.08
Compliance status	Supported	Supported	Supported	Supported	Supported	Supported	Supported

The fitting indicators of the structural equation model are shown in the table above: □ x²/df=1.265, less than 5; RMSEA=0.033 less than 0.08; GFI=0.821, AGFI=0.802, CFI=0.956,

IFI=0.957, TLI=0.954 Greater than 0.8; the fitting standard of the comparison table and the model fitting index of the structural equation model all meet the requirements, and it is suitable for structural equation model analysis.

4.6 Path Analysis

This study conduct structural equation model path analysis, thereby obtaining the structural equation model path coefficient value and C.R. value. The path coefficient reflects the relationship and degree of influence between variables, and the critical ratio C.R. (Critical Ratio) can judge regression. Whether the coefficient is significant or not, it is generally believed that a C.R. value greater than or equal to 1.96 means there is a significant difference at the 0.05 significance level [Wu 2022]. The standardized regression coefficients and variance parameter estimates of the structural equation model in this study are shown in Table 14.

Table 14: Path Coefficients between Variables

Path			β	b	S.E.	C.R.	P
Socially sustainable	←	Culturally sustainable	0.292	0.284	0.084	3.387	***
Rural museum sustainable	←	Culturally sustainable	0.303	0.313	0.086	3.645	***
Rural museum sustainable	←	Socially sustainable	0.387	0.412	0.097	4.246	***

Note: ***, P<0.001; b unstandardized coefficient; β: standardized factor coefficient

1. Cultural sustainability has a significant positive impact on social sustainability

The data analysis result of cultural sustainability versus social sustainability is: after standardization, the coefficient of its path is 0.292, and the CR value, the critical ratio value, is 3.387, which is greater than 1.96, and the corresponding P<0.001. Based on the above indicators, it can be seen that this hypothesis the path described in is significant, proving that the hypothesis can be established.

2. Cultural sustainability has a significant positive impact on the sustainable existence of township museums

The data analysis results of cultural sustainability on the sustainability of township museums are: after standardization, the coefficient of its path is 0.303, and the CR value, the critical ratio value, is 3.645, which is greater than 1.96, and the corresponding P<0.001. Based on the above indicators, it can be seen that the path stated in the hypothesis is significant, proving that the hypothesis can be established.

3. Social sustainability has a significant positive impact on the sustainable existence of township museums.

The results of the data analysis of social sustainability on the sustainability of township museums are: after standardization, the coefficient of its path is 0.387, and the CR value, the critical ratio value, is 4.246, which is greater than 1.96, and the corresponding P<0.001. Based on the above indicators, it can be seen that the path stated in the hypothesis is significant, proving that the hypothesis can be established.

4.7. Mediation Effect Test

The existence of the mediating effect can be directly tested using the Bootstrap method. The hypothesis condition for direct testing is H0: ab=0. If the confidence interval derived from the test results contains 0, it means that there is no mediation effect.

According to the results of the path analysis, the hypothesis test is established. In order to explore whether there is a mediating effect in these significant paths, we ran the Bootstrap method, chose to repeat it 5000 times, the confidence interval standard was 95%, and carried out the bias correction method. Test. The results of the mediation effect test are shown in Table 15.

Table 15: Mediation Effect Test Results

Effect decomposition	Effect size	SE	95% lower limit	95% upper limit	P
mediating effect	0.113	0.039	0.052	0.208	0.000
direct effect	0.303	0.085	0.132	0.460	0.002
total effect	0.416	0.081	0.250	0.567	0.000

The Bootstrap method was used to test the mediating role of social sustainability between cultural sustainability and township museum sustainability. The results are as follows:

The bias-corrected trust interval of Bootstrap for cultural sustainability → social sustainability → township museum sustainability is [0.052, 0.208] and does not include 0, indicating that the mediation effect is established.

5. DISCUSSION AND CONCLUSIONS

5.1 The Relationship between Chemical Sustainability, Social Sustainability and Rural Museum Sustainability

The empirical research results show that the hypothesis proposed in this article is valid. Cultural sustainability positively affects social sustainability. Social sustainability positively affects rural museum sustainability. Cultural sustainability positively affects rural museum sustainability. Social sustainability plays a mediating role between cultural sustainability and rural museum sustainability. The hypothesis proposed in this article has been verified and it also shows that cultural sustainability and social sustainability can positively affect the sustainability of rural museums. Cultural sustainability can also have a positive impact on social sustainability.

5.2 Impact on Sustainable Research in Rural Museums

Through empirical research, we construct theories and methods for assessing the sustainability of rural museums. It is confirmed that cultural sustainability and social sustainability have a positive impact on the sustainability of rural museums. Since our study area is set in China, a typical developing country, the results of this study have important practical significance. It will provide a theoretical basis for the development of rural museums and the formulation of government cultural policies in developing countries and regions. At the same time, it also provides reference methods for further research in rural museums.

5.3 The Impact of Rural Museums on Rural Development

Through the above research, it was found that most of the tourists visiting rural museums are local residents. This shows that rural museums are important destinations for short-distance travel. It also shows that local people are more willing to identify with local characteristics and culture. It reflects the cultural inheritance function of the rural museum from the side. In addition, judging from the interviewees, most tourists came to the rural museum for the first time. This shows that the attraction of rural museums needs to be strengthened. In other words, if we want to fully realize the impact of rural museums, we need to increase financial support and research. Let rural museums better serve rural development.

5.3 Study Limitations

This study also has certain limitations. We examine the relationship between cultural sustainability, social sustainability and rural museum sustainability. But since sustainability has four pillars, the impact of economic sustainability and environmental sustainability on rural museums, as well as the relationship between the three, is unknown. In other words, the relationship between the four pillars of sustainability and the rural museum, as well as their relationship to each other, is also unknown. Clarifying these relationships and their impact on the sustainability of rural museums will help us better evaluate the sustainable performance of rural museums and discover problems existing in the development of rural museums. This is also what we will do in the future.

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