Evaluation System of Tourism Endowment Destination Based on Tourism Endowment Index

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Abstract
The destination is the foundation for tourism endowment activities; however, the majority of relevant studies focus on how to develop and build tourism endowment destinations, with little attention paid to site selection, particularly the construction of a scientific evaluation system for tourism endowment destinations. A relatively scientific evaluation system will aid in guiding tourism endowment's work, contribute to the region's tourism endowment industry's development, and improve the quality of life for urban residents and tourists. Taking China as an example, this paper compiles previous research on livable, endowment, remote endowment, and pension tourism, and uses Delphi and Logarithmic Fuzzy Priority Programming- Fuzzy Analytic Hierarchy Process (LFPP-FAHP) to develop an evaluation index system for tourism endowment destinations using the tourism endowment index (TEI). This index system consists of three criterion layers, ten field layers, and 35 index layer indexes for endowment living environment, ecological environment, and tourism environment, and these indexes have been modified using the Delphi method to be beneficial for the construction and research of tourism endowment index, industry, and destination.
Keywords: Tourism Endowment Index (TEI), Destination Selection, Aging, Evaluation System, China

Introduction
        The world's population is aging, which is a common concern and challenge. China has one of the world's fastest-aging populations (Fan & Chen, 2020; Yiyong Yang & Guan, 2017). By 2050, the elderly population is predicted to exceed 400 million, bringing the rate of aging to more than 30% (Meng, 2020). The aging population may impose expenses and economic implications (Loutfi et al., 2018), most notably on health care, pensions, and political participation (Economic Policy Committee, 2006; VISCO, 2005). Additionally, in comparison to

earlier generations, as time and discretionary income have improved, this generation of elderly people has a distinct living style and attitude (Soler, 2005), and their need for high-quality life attributes such as health, longevity, and social contact has increased. The traditional home-based endowment has proven incapable of meeting the elderly's expanding material and cultural requirements (Ruan, 2019; Yang & Tang, 2021). Senior persons place a higher premium on travel, particularly in their leisure time following retirement (Alén et al., 2016). According to the survey, 81.2 percent of China's middle-aged and elderly respondents are eager to live in a tourism endowment lifestyle if economic and physical conditions permit (Xu, 2013; Yang, 2018; Yuan et al., 2013). The selection of a tourism endowment destination is critical since it influences outcomes of elderly tourists such as satisfaction, loyalty and revisit intention. However, most of the existing studies focus on proposing destination development strategies based on tourism endowment marketing demand. The theoretical foundation for tourism endowment destinations has not been suggested, nor has a scientific evaluation index system for site selection been devised (Pang et al., 2022). The motivation of this research is to compensate for this shortcoming by proposing a relatively scientific evaluation index system for tourism endowment, assisting the region in developing a tourism endowment industry suitable for the elderly, and improving the quality of life for urban residents and tourists.

According to China's 2015 Evaluation Standards for Tourism Endowment Service Institutions, tourism endowment is defined as the elderly who travel and live in a location other than their permanent residence area for a period of more than 15 days in a single trip and benefit from a variety of elderly services and experiences (China Aging Industry Association, 2015). The livability of a tourism endowment destination is the primary element influencing the elderly's travel and residency decisions, as well as the amount of time spent in the destination by the aged (Zhang & Li, 2021). Tourism endowment industry can integrate various functions of tourism, pension, and livable, involving screening and restructuring of various resources, forming a corresponding industrial chain (Chen et al., 2017), promoting consumer market development (Liang, 2011), and alleviating the social and economic pressures associated with aging (Meng, 2020), while effectively meeting all aspects of the elderly's needs (Li, 2017), which is critical to the destination development (Yang & Tang, 2021).

Scientific selection of destination is the core of tourism endowment (N. Michael et al., 2020). By integrating the travel motivations, behavioral characteristics, and service needs of the elderly, as well as the tourism endowment destination's hardware and soft services, the destination can meet the needs of the elderly in nearly every aspect of tourism and endowment, while also bringing certain economic, social, and ecological benefits to the destination (Dai et al., 2011).

Currently, there are few studies on tourism endowment destinations in China, most of them focus on the construction and development (Liu, 2019; Liu, 2017), with little attention paid to site selection. Gao et al (2017) conducted a comprehensive study of 15 outstanding tourism cities in China, identified the characteristics of the most suitable cities for tourism retirement, and gave recommendations on how to increase the suitability level of tourism retirement. Pang (2015) used GIS to quantitatively assess the suitability of Jinhua city's tourism endowment destination, thereby providing a research foundation for destination selection. However, the above research' construction of an evaluation index system for tourism endowment destinations is not flawless (Yang & Tang, 2021). This research contributes by compiling previous research on livability, endowment, and tourism, developing

an evaluation index system for tourism endowment destinations, providing guidance for destination selection and regional tourism endowment development, allowing for the possibility of improving the quality of life for urban elderly residents and tourists, and inspiring future research on the theoretical foundation of tourism endowment destinations.

Literature Review
Tourism Endowment Index Definition

From the elderly's standpoint, tourism endowment is designed to address the fundamental demands of livable, endowment, tourism, and leisure (Mo & Zheng, 2014; Xu et al., 2006; Zhang & Feng, 2018). From a regional economic perspective, factors of production associated with tourism endowment (labor, capital, land, etc.) are increasingly concentrated in departments associated with the tourism endowment industry, and the tertiary industry with tourism endowment as its core accounts for a significant share of the regional economic structure in absolute terms (Liu & Wang, 2017; Yan et al., 2013; Zheng et al., 2015). From a sustainable perspective, tourism endowment is a way of life for the elderly that blends human, nature, and society, inherits and perpetuates regional culture, and strives to achieve environmental friendliness and ecological civilization (Dai et al., 2011; Wu & Qu, 2016; Zhang & Li, 2021).

The tourism endowment index (TEI) is a quantitative indicator of a region's tourism endowment's suitability. It is a detailed assessment of the regional tourism endowment's development state. Therefore, when defining the TEI, it is necessary to reflect the evaluation system's primary characteristics and conditions from a variety of perspectives, including the elderly's tourism endowment needs, the regional economy and society, and the system's sustainable environment.

Tourism Endowment Destinations Decision-making

The environment of tourism endowment destinations is important to the elderly (G. Ma et al., 2012). Climate is cited by 74% of seasonal senior migrants as the primary cause for their migration (Krout, 1983). In surveys of retired immigrants who came to the Spanish coast, some scholars discovered that the local pleasant Mediterranean climate was the major factor for their decision to come here (O'Reilly, 2012, 2020; O'Reilly & Benson, 2009; Rodriguez et al., 1998). The elderly's physical performance deteriorates over time, and the damp and chilly climate makes it easy for them to contract numerous ailments; however, the average annual temperature in the Spanish seashore area is 18°C, with more than 3,000 hours of sunshine and less rainfall, making it ideal for the elderly to do tourism endowment activities. Differences in lodging type (Otoo et al., 2020), price (Shoemaker, 2000), convenience and safety (B. Wu, 2015) also influence the sorts of activities and destinations that the elderly choose. 38% of the elderly will select elderly flats or retirement centers in tourism destinations (Espinoza & Stallmann, 1996). Elderly flats and retirement centers are not only provided with particular facilities and equipment to give the services that the elderly require, making tourism more convenient for them, but they are also less expensive than hotels and restaurants, and are better suited to the elderly's generally thrifty consumption. Other research have found that demographic characteristics, consumption habit, neighborhood environment, previous tourist experience, and destination familiarity all influence the elderly's decision-making when choosing a tourism endowment destination (Chi et al., 2018; Dryglas & Salamaga, 2018; Geng, 2009; Huang & Tsai, 2003; Losada et al., 2019; Lyu et al., 2021; Pan et al., 2021).

For the elderly, past tourist experiences have a higher influence on their future tourism decisions (Liu et al., 2018). Tourist destinations that are more familiar and pleasant to elderly tourists are frequently preferred (Liu et al., 2018; Lyu et al., 2021). According to King et al (1998), more than 90% of British retirees who settled in Algarve and Costa del Sol had come here in previous tourist experience. It can be seen that the elderly's choice of tourism endowment destination is influenced by their previous tourist experience and tourists' impressions of the destination. Furthermore, beautiful ecological environment, complete tourism facilities, comfortable living environment, convenient transportation, and friendly attitude of the local people may provide tourists with a positive tourist experience and leave them with pleasant memories. These tourist destinations are also more likely to be revisited by tourists, and they are more likely to be picked by elderly tourists as a tourism endowment destination (Rodriguez, 2001; Shoemaker, 2000).

By summarizing the above literature, experts' research on tourism endowment is primarily focused on the subjective sentiments of the elderly. The environmental requirements and residential ways of elderly to tourist destinations are entirely determined by their own perceptions, with previous tourist experiences serving as the primary source of information. Whether the experience comes from elderly their own or has been heard from their relatives and friends, it will influence their decision-making when it comes to tourism destinations. The elderly will have a better understanding and acquaintance with the destination's environment, transportation, pricing, and facility due to previous experience. In particular, the elderly will be more accepting of what they are familiar with. It is easy to understand why some elderly tourists might pick a fixed tourist destination for living, health care, tourism and other activities. In comparison, present Chinese tourism endowment destination research focuses more on the exploration of development models (Chai, 2004; Guan, 2009; He, 2017; Pan, 2020; Yuan et al., 2013; Zhang, 2021; Zhou, 2006). Although some research involve the elderly's subjective feelings (Jiao, 2008; Ma, 2019; Xu, 2013), they are not exhaustive, and merely a preliminary analysis of the phenomenon as part of the market analysis, with the primary goal remaining to assess the feasibility of developing tourism endowment destinations.

How to scientifically and properly identify a tourism endowment destination based on the demands of the elderly, so that a large number of elderly people may experience a joyful and beautiful old age existence, is the study direction of relevant researchers' unceasing efforts in today's growing aging society. It is also the significance and objective of this research.

Materials and Methods
Materials

Statistics and survey data are included in the research materials. Statistical data, such as the "China Civil Affairs Statistical Yearbook," the "China City Yearbook," the "China Environmental Yearbook," the "China Regional Economic Statistical Yearbook," the "China Tourism Statistical Yearbook," and the "China Health Statistical Yearbook," and various other national, provincial, and municipal statistical materials. The survey data materials consist of data acquired during field surveys in various provinces, cities, and regions, and the objects of the survey are targeted for selection. The materials will be used to verify the tourism endowment destination index system through practices.

Research Steps and Methods

As figure 1 shown, five steps comprised the entirety of the study. The first step was to establish the research concept. This research was conducted using the concept of humanism, taking into account China's diverse geographical natural areas, economic development level, city scale, and indigenous culture, the tourism endowment index (TEI) was defined. The second step was to develop a TEI evaluation system. Through preliminary investigation and literature analysis, the index database for tourism endowment was organized and arranged, and the indexes for TEI evaluation system were constructed using the Delphi method. The third step was to calculate the index weights based on Logarithmic Fuzzy Priority Programming- Fuzzy Analytic Hierarchy Process (LFPP-FAHP). The forth step was to optimize TEI indexes by dimensionless processing. The fifth step was to determine the indexes at all layers. Presented calculation methods for all layer index values, and proposed a comprehensive evaluation of tourism endowment destination using TEI index level scale.

[Insert Figure 1 about here]

Results

Arrange research indexes according to literature analysis

The most critical decision-making element in selecting a site for tourism endowment activities is whether it is ideal for livability, endowment, and tourism. This is followed by index selection and index system construction based on a review of pertinent literature. Tables 1-3 highlight prior research findings on elderly needs and other relevant evaluation index system research themes such as livable, endowment, and tourism, using Web of Science (WoS) and China National Knowledge Infrastructure (CNKI) core databases.

[Insert Tables 1-3 about here]

Develop TEI evaluation system based on Delphi method

Following a review of pertinent literature and a thorough examination of current livable, endowment, and tourism-related assessment indexes (Tables 1-3), 50 index layer indexes are preliminarily developed as the core data. Then, using the Delphi Method, questionnaires were distributed to specialists with extensive teaching and scientific research expertise in tourism-related fields. Twenty surveys were distributed, and fourteen were recovered. We conducted three rounds of expert questionnaire surveys. Following each round, the index system was sorted according to expert judgments and statistical findings, and the appropriate findings were communicated to them. They were encouraged to re-evaluate the adjusted index system, and they were expected to revise and verify the evaluation results (Shan, 2008). After three rounds of study, Table 4 displays the degree of expert opinion emphasis on index layer indices. As illustrated in Table 4, the degree of concentration is high, implying that the updated index method is capable of conducting a scientific evaluation of the tourism endowment destination (Table 5).

[Insert Table 4 and 5 about here]

Determine index weight based on LFPP-FAHP

Prior to data processing and calculation, the index weights at all levels must be determined (Song & Wang, 2019). The arithmetic average technique, the analytic hierarchy process, the Delphi approach, and the key index normalized quantization method are all ways for calculating weights (Yang & Tang, 2021).

Two rounds of scoring were conducted by experts in related study disciplines, and the fuzzy judgment matrix for the evaluation index system was obtained. The index weight of each expert is established using the improved Fuzzy Analytic Hierarchy Process (FAHP) (Csutora & Buckley, 2001), that is, Logarithmic Fuzzy Priority Programming- Fuzzy Analytic Hierarchy Process (LFPP-FAHP). The allocated weight of each expert is then calculated using the LFPP-FAHP. Finally, by merging the two types of weights, the comprehensive weight value of each index is determined (Dong, 2017).

To reduce subjectivity in expert scoring, experts with big discrepancies in judgment matrices were allocated lower weight values, and vice versa (Ou, 2018). In comparison to FAHP, adopting LFPP-FAHP to determine the weight not only reduces the number of consistency test steps in the calculation process, but also successfully avoids negative numbers in the calculation process, which results in invalid solutions, and optimizes the weight solution process. The triangular fuzzy number assessment scale (Z. Zhang et al., 2019) is used to assess the significance of pairwise comparisons of indicators (Table 6). The result of the TEI Weighting is shown in Table 5.
[Insert Table 6 about here]

Raw index processing

Index caliber and value orientation determination. To ensure the objectivity and fairness of the evaluation outcomes, all index caliber concepts adhere to the Chinese National Bureau of Statistics' statistical system. All indexes are classified into three categories by the evaluation guidelines and principles: the first category is positive index, whose value has a positive effect on the evaluation result, which means the larger the index data, the better the evaluation result. The second category is negative index, whose value has a negative effect on the evaluation outcome, which means the larger the index data, the worse the evaluation outcome. The third category is moderate indexes, which means that the closer the value is to the goal value, the more favorable the evaluation outcome (Lyu, 2013).

Dimensionless Index Processing. Due to the varying dimensions of the index data, it is necessary to perform dimensionless index processing on each index prior to doing the actual calculation (Lyu, 2013).

When I_x is a positive index, the higher the value, the more ideal the destination is for tourism endowment development.

$$I_x = \frac{i_x - i_{\min}}{i_{\max} - i_{\min}} \qquad (1)$$

When I_x is a negative index, the higher the value, the less suited the destination is for tourism endowment development.

$$I_x = \frac{i_{\max} - i_x}{i_{\max} - i_{\min}} \qquad (2)$$

When I_x is a moderate index, it requires investigation according to its structure and context. The distance between the current value and the goal value should be computed first: $z_x = |M - i_x|$, and then forward processing should be performed.

$$I_x = \frac{z_x - i_{\min}}{i_{\max} - i_{\min}} \qquad (3)$$

In above formulas, I_x is the dimensionless data associated with the x index in the evaluated destination; i_x is the original data associated with the x index in the evaluated

destination; i_{max} is the maximum data associated with the x index in the evaluated destination within the range of data; and i_{min} is the minimum data associated with the x index in the evaluated destination within the range of data.

Calculation of Tourism Endowment Destination Evaluation Index Based on TEI

Index layer calculation. I_x serves as the foundation for calculating the assessment index system for tourism endowment destinations, as it utilizes dimensionless data from each index.

Field layer calculation. The k item F_x of a particular region in a given year may be computed using the index set in the evaluation index system of tourism endowment destination by adding equal weights to the data from all associated index layers. The following is the formula:

$$F_x = \frac{\sum_{x=f(k)}^{i(k)} I_x}{i(k) - f(k) + 1} \ (x = 1,2,...,m; k = 1,2,...,N) \qquad (4)$$

In formula 4, *N* denotes the total quantity of field layer data in the evaluation index system; *f(k)* denotes the index layer's first index number corresponding to the kth item in the field layer; and *i(k)* denotes the index layer's last index number corresponding to the kth item in the field layer.

Criterion layer calculation. The criterion layer generates three sub-indices within the TEI. It is calculated as the weighted sum of all field layer indexes for the t item in the criterion layer for a particular year:

$$C_x = \sum_{x=c(t)}^{f(t)} W_x F_x \ (x = 1,2,...,m; t = 1,2,...,Z) \qquad (5)$$

In formula 5, *Z* denotes the number of data points in the evaluation index system's criterion layer. *c(t)* denotes the field layer's first index number corresponding to the t-th item in the criterion layer; *f(t)* denotes the field layer's last index number corresponding to the t-th item in the criterion layer; and W_x is the weight in field layer for a certain year.

TEI calculation. The TEI is an abstract concept. It is the weighted average obtained when the indexes are calculated step by step, and its value range is [0, 1] (N. Lyu, 2011). 0.5 indicates that the destination is still in its infancy. (0.5, 1] indicates a higher than average level, indicating that the analyzed place currently has relative advantages in terms of developing into a tourism endowment destination. [0, 0.5) indicates a lower than average level, indicating that the location lacks tourism endowment characteristics and is thus temporally unsuitable for development as a tourism endowment destination (Song & Wang, 2019).

The TEI is calculated by multiplying the estimated values of the criterion layers by their respective weights. The following is the calculating formula:

$$TEI = \sum_{x=1}^{m} C_x W_x \qquad (6)$$

In formula 6, C_x is the criterion layer data; W_x is the weight of each criterion layer data; and *m* is the number of criterion layer indexes.

Comprehensive evaluation of tourism endowment destination. The TEI is graded according to the Shan (2008) index level scale (Table 7), which allows for a more objective and comprehensive evaluation of the tourism endowment destination index.

[Insert Table 7 about here]

Using the TEI calculated above, a comprehensive evaluation and analysis of the destination may be conducted to determine whether this location has the potential to develop the tourism endowment industry at the current stage. Additionally, for places with insufficient development advantages at the moment, the aforementioned evaluation technique can be used to compensate for inadequacies and strengthen destinations' prospective strength. For instance, in places with a strong economic basis and well-developed infrastructure, the degree of tourism endowment should be increased in accordance with the evaluation criteria of the tourism endowment evaluation index system. For locations with a weak economic basis and a low level of tourism endowment, the tourism endowment industry can be used to develop the destination's characteristics and functions. For towns and villages that are still in the process of urbanization, they can actively integrate their development with the cities to which they are connected via the tourism endowment destination evaluation system, as well as integrate their development into the regional industrial system.

Conclusion and Discussion

The creation of a tourism endowment destination is a process that gradually improves the quality of regional development, the quality of life for locals, and people's environmental awareness. As a result, the TEI must continue to rise, TEI > 0. Therefore, the index value should be between [0,1].

The study of tourism endowment destination selection is still in its infancy; extant research focuses mostly on the tourism endowment of a particular destination or the building, refurbishment, and development of tourism endowment projects. While several studies have provided an evaluation system for a single situation, no scholar has proposed a systematic index system for tourism endowment.

This study's objective is to establish a benchmark for the development of tourism endowment destinations. 35 indexes are related to the endowment living environment, ecological environment, and tourism environment through the TEI system, while adhering to the premise of consistent statistical caliber of diverse index data. The entire index system adopts a mature index system construction method, which is scientific. Additionally, based on the humanism concept, this research focuses on the needs of the elderly to select indexes, with a goal of providing a satisfactory tourism endowment destination for the elderly.

Limitation and Future Research

It is a complicated systematic effort that evaluates a destination's tourism endowment. Each index's value is always changing, and the evaluation score for different regions fluctuates according to their geographical location and the subjective feelings of their inhabitants (Liu, 2019; Xu et al., 2020; Zhang & Li, 2021). Additionally, if data for some indexes are difficult to get or the statistical caliber of data in varies regions is different, it is required to abandon or replace these data indexes in accordance with the principle of operability (Dai et al., 2011). Therefore, when applying the evaluation index system described in this paper to the specific measurement of a destination, the actual state of local development should be fully

considered, and the evaluation should be more closely aligned with the destination's actual development needs through continuous improvement of relevant indicators.

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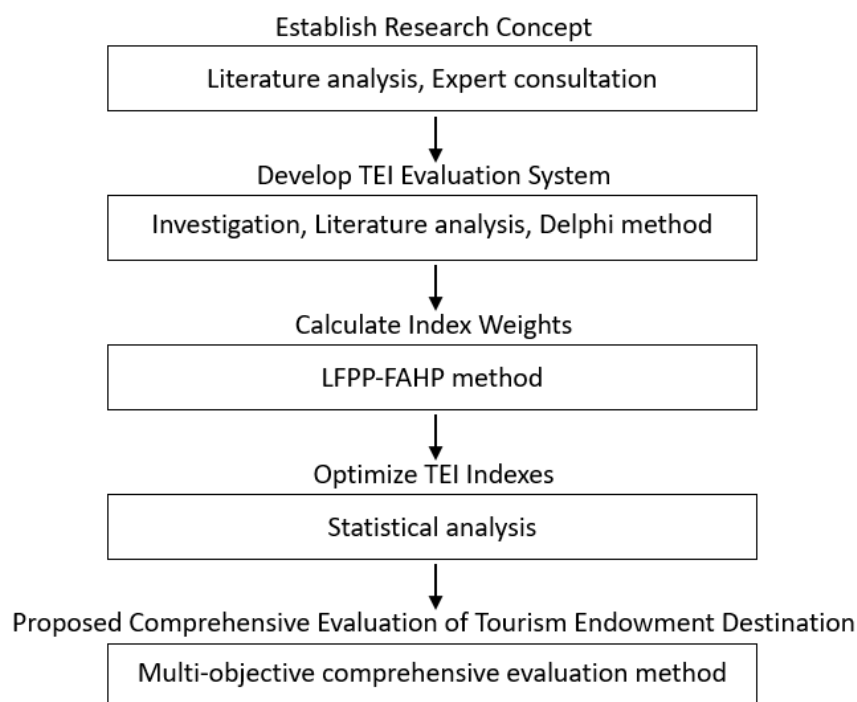
Figure 1. Index system construction steps and methods.

Table 1

Activity environment evaluation index reference based on elderly needs.

Reference	Index	Reference	Index
Booth et al., 2000	Facility accessibility, activity security	Corseuil et al., 2012	Footpath quality, waste collection, safety, urban infrastructure
King et al., 2003	Destination perception, ambient quality	Carlson et al., 2012	Walkability, number of parks and recreational amenities
Li F et al., 2005	Housing density, green space, recreational amenities	Tsunoda et al., 2012	Residential density, destination accessibility, safety, landscape
King et al., 2005	Accessibility	Parra et al., 2010	Social support, weather
Sugiyama and Thompson, 2008	Appropriate community recreation areas, path quality, safety, hydrological characteristics	Cerin et al., 2013	Recreational and commercial facilities, infrastructure, safety, aesthetics, cleanliness
Michael Y et al., 2006	Landscape, number of destinations (parks and shopping centers)	Mahmood et al., 2012	Safety perception, destination accessibility, activity comfort, destination diversity

Table 2

Published statistics of livability index system.

No.	Main evaluation index system	Conclusion	Reference
1	Six dimensions: infrastructure conditions, sanitation situations, public services, public safety, employment opportunities and social engagement.	This article analyses relevant indexes of elderly services, acknowledges the elderly's unique needs for livability, and employs Changshu city as an empirical study.	Li Y et al., 2020
2	Seven criterion layer indexes: economic development, city civilization, ecological environment, living convenience, city security, management efficiency and urban innovation capacity.	The framework was developed by a comparison of several domestic and international studies. Did not do any empirical study.	Hu F and Hu X, 2014
3	Five first-level indexes: economic and industrial development, transportation capacity and safety, leisure services and reception, leisure space and environment, leisure life and consumption.	The study took into account the effect of city size and population density on livability. The spatial variation in leisure city quality was discovered through an empirical examination of 35 cities in China.	Xu A et al., 2020
4	Five main indexes, including transportation environment, safety, landscape and sanitation, accessibility, and living environment.	Environmental assessment of the community taking into account the needs of the elderly.	Song and Wang, 2019
5	Public indexes of livable environment for the elderly, including ecological, economic, and social environment. Special indexes of livable environment for the elderly, including policies of respect and preferential treatment, economic security, medical security, care, and cultural and social participation for the elderly.	Taking into account the physiological and psychological features of the aged, the index system encompasses all aspects of the senior's soft and hard surroundings.	Dai et al., 2011
6	Five first-level indexes: safety, health, convenient living, convenient travel and living comfort.	The evaluation system is offered from both subjective and objective perspectives, taking into account the requirements of individuals, although no empirical study is conducted.	Zhang W, 2007

No.	Main evaluation index system	Conclusion	Reference
7	Public and special indexes of social, natural, facility, residential, and human system.	The present study examined 149 residential environments in Liaoning province and evaluated the spatial disparities and distribution characteristics of livable environments.	Zhang C and Li, 2021
8	Four main indexes: ecological environment health, resource and environment consumption intensity, non-point source pollution control efficiency, and inhabitability.	This article discusses the impact of the natural environment on the livability of cities and conducts an empirical investigation in Wuhan from 2006 to 2011.	Zhang et al., 2015
9	Six principal component factors, including living convenience, urban safety, natural environment comfort, cultural environment comfort, travel convenience, environmental health.	It elucidates the characteristics and determinants of Beijing residents' livability satisfaction.	Zhan et al., 2015

Table 3

Published statistics of endowment and tourism index system.

No.	Main evaluation index system	Conclusion	Reference
1	The factors of geographical environment, living convenience and cost are considered.	Three cases of Xinfeng, Dapeng and Beilingju were used to verify the model.	Tao, 2016
2	An evaluation index system for the site selection of tourism endowment complex was established, including 2 first-level indexes, 4 second-level indexes and 16 third-level indexes.	Take empirical research to verify the rationality of the index system.	Xu J, 2013
3	Three criteria level indexes: living environment, ecological environment, tourism environment.	Take Hubei province for empirical research. However, no study on differences in marginal areas.	Yang Yulan and Tang, 2021
4	AHP was used to establish an evaluation index system for the suitability of remote interactive tourism endowment destination, including endowment environment, natural environment and tourism environment three first-level indexes.	To study the influencing factors of the old people's long-distance tourism and endowment activities.	Yuan et al., 2013
5	Five main indexes, including climate suitability, ecological environment quality, transportation convenience, living and leisure atmosphere and health service facilities.	The tourism endowment of the elderly to avoid cold weather was studied.	Duan, 2021
6	GIS was used to evaluate the suitability of the tourism endowment destination of Jinhua city, including endowment environment, natural environment and tourism environment.	Taking Jinhua city for empirical analysis. Index system does not consider factors such as the acceptance degree of residents and the size of endowment institutions.	Pang et al., 2016
7	Using factor analysis method, 12 indexes were selected from three aspects of community economic development function, tourism function and medical function for comprehensive evaluation.	The ecological environment and tourism resources are important indexes.	Gao et al., 2017

Table 4
Index layer indexes opinion concentration (3rd round results).

Index layer (I)	Concentration	Coefficient of variation
F1 Economic conditions	7.36	0.199049
F2 Public transport and services	7.55	0.120795
F3 Comfort of life	8.09	0.165884
F4 Vegetation conditions	8.27	0.119105
F5 Climatic conditions	7.18	0.190529
F6 Water conditions	7.73	0.170246
F7 Terrain conditions	7.00	0.197143
F8 Tourism and leisure	7.09	0.136953
F9 Tourism services	7.36	0.199049
F10 Tourism economy	7.00	0.197143

Table 5
TEI evaluation system and weight.

Target layer	Criterion layer (C)	Weight	Field layer (F)	Weight	Index layer (I)	Weight
TEI Evaluation System	C1 Endowment living environment	0.3681	F1 Economic condition	0.207	I1 Regional GDP I2 Proportion of tertiary industry in GDP I3 Living standard of residents	0.2601 0.1468 0.5931
			F2 Public transport and services	0.4018	Traffic I4 Road area per capita I5 Airport number I6 Railway stations number I7 Bus ownership per 10,000 people I8 Taxi ownership per 10,000 people Medical I9 Medical institutions number I10 Beds number in medical institutions per 10,000 people I11 Medical personnel number per 10,000 people Endowment I12 Endowment institutions number I13 Endowment service personnel number Shopping I14 shopping places number	0.0934 0.0512 0.0690 0.0523 0.0829 0.1617 0.0767 0.0734 0.2067 0.0373 0.0954
			F3 Comfort of life	0.3912	I15 Space congestion I16 Air quality I17 Noise level I18 Crime rate	0.3062 0.2827 0.2279 0.1832

Target layer	Criterion layer (C)	Weight	Field layer (F)	Weight	Index layer (I)	Weight
	C2 Ecological environment	0.2993	F4 Vegetation conditions	0.2135	I19 Vegetation coverage I20 Proportion of woodland area to land area	0.4222 0.5778
			F5 Climatic conditions	0.3221	I21 Temperature humidity index I22 Wind effect index I23 Annual Sunshine Duration	0.3786 0.2563 0.3651
			F6 Water conditions	0.1931	I24 Hydrophilic landscape index I25 Average annual precipitation I26 Water resources per capita	0.4187 0.3318 0.2495
			F7 Terrain conditions	0.2713	I27 Elevation analysis I28 Slope analysis	0.5358 0.4642
	C3 Tourism environment	0.3326	F8 Tourism and leisure	0.3218	I29 Tourist attractions number I30 Leisure places and facilities number (theaters, cultural centers, museums, art galleries, parks, squares, sports and fitness venues)	0.588 0.412
			F9 Tourism services	0.3017	I31 Travel agencies number I32 Star hotels number I33 Tourist average length of stay	0.3172 0.3503 0.3325
			F10 Tourism economy	0.3765	I34 Annual tourist arrivals I35 Tourism income	0.5262 0.4738

Table 6

Triangular fuzzy number evaluation scale (Zhang et al., 2019).

The importance of A as compared with B	Triangular fuzzy number	Reciprocal triangular fuzzy number
Same important	(1, 1, 1)	(1, 1, 1)
More important	(1, 3/2, 2)	(1/2, 2/3, 1)
Obviously important	(3/2, 2, 5/2)	(2/5, 1/2, 2/3)
Very important	(2, 5/2, 3)	(1/3, 2/5, 1/2)
Extremely important	(5/2, 3, 7/2)	(2/7, 1/3, 2/5)

Table 7
TEI index level scale.

Level	TEI	Evaluation
1	> 0.75	TEI is extremely high, making it an excellent candidate for development as a tourism endowment destination.
2	0.61 - 0.75	TEI is high, one or two indicators fall short of the mark. It has the potential to develop into a tourism endowment destination.
3	0.51 - 0.60	TEI is average, several indexes are not up to standard. Some regions can be developed into tourism endowment destinations.
4	0.35 - 0.50	TEI is low, many indexes are not up to standard, so it is not suggested to develop into a tourism endowment destination.
5	< 0.35	TEI is extremely low, the majority of indexes do not match the criteria for turning into a tourism endowment destination.