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Explorations of Charm Factors and Development of Fishing in Southern Taiwan Based on Miryoku Engineering and the Analytic Network Process

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Abstract: Fishing is a popular leisure activity all over the world. However, due to the differences in local customs and cultures, fishing shows regional differences. This study aims to explore the charm of fishing in Southern Taiwan. In this study, the Miryoku engineering method was used to analyze and determine the charm characteristics of fishing in Southern Taiwan and draw the EGM evaluation structure chart. Thereafter, with the analytic network process method, the evaluation model was established in order to calculate the weight and ranking of each charm item. Then the weights of the 35 items in the summit, middle and bottom levels were obtained. The analysis results showed that fishing in Southern Taiwan was similar to that in other parts of the world, but the charm factors of fishing in Southern Taiwan had its relaxation and leisure characteristics. According to the analysis results of the charm factors of fishing, we discussed the future development direction of fishing industry based on the charm characteristics of fishing in Southern Taiwan.

Keywords: Southern Taiwan; fishing; consumer preferences; Miryoku engineering; analytic network process (ANP)

1. Introduction

Fishing is the activity of hunting for fish. With the rapid development of global economy, the leisure trend of fishing is more significant. Behaviors and psychology of anglers and fishing development have also been studied in humanities and social sciences [1]. As a popular outdoor activity, recreational fishing significantly promotes the development of relevant industries and sectors worldwide [2]. Through the quantitative analysis of fishery expenditure in the Southern United States from 2006–2011, it is concluded that recreational fishing promotes economic development. Without significant changes in fishing expenditure, the number of participants in recreational fishing increased by 10% from 2006–2011, contributing 35.5 billion US dollars and 10–30% increase to the economic development [3]. Ditton et al. [4] argued that recreational fishing is an entertaining activity in every state of the United States; long-distance fishing is considered as the travelling by many anglers. Each state promotes the tourism, including the recreational fishing. In addition to attracting fishing enthusiasts, the states also export enthusiasts to other states. Minnesota, Florida, and Wisconsin are the top three recreational fishing destinations. From the perspective of the long-term development, the in-depth study on recreational fishing has a positive impact on the fishing industry and regional economic development.

In 1994, Fedler and Ditton [5] proposed that the investigation on the behavior and thinking of anglers is vital for improving the recreational fishing experience. The user experience of recreational fishing involves various factors [5–8]. For instance, it is usually thought that the reason for fishing activities is to catch fish. However, some studies have reported that certain fishing enthusiasts believe that the fishing process is more important than capturing fish [5,9–14]. In addition, the fishing site is also an important factor affecting the user experience [15]. From the above research, the factors affecting the user experience are an important issue of fishing research. Discovering charm factors of fishing through fishing enthusiasts can pertinently enhance the user experience of fishing activities. At the same time, with the change of region, charm factors of recreational fishing also change.

Based on the preference design, Miryoku engineering is a technical system method that can define the charm factors in accordance with the user's preferences. This method can quickly define the relationship between preferences and charm factors. [16]. Therefore, Miryoku engineering is often used to study the relationship between users and activities or products. As mentioned above, charm factors of recreational fishing can affect the user experience to a great extent. Meanwhile, charm factors can vary due to different regions. Charm factors of recreational fishing can be effectively evaluated according to the methodology of Miryoku engineering [16].

To effectively explore charm factors of recreational fishing, it is necessary to conduct in-depth interviews with fishing enthusiasts in accordance with local conditions. Additionally, there are few discussions on charm factors of recreational fishing in the previous studies. To this end, taking Southern Taiwan (Tainan, Kaohsiung) as the main research area, an in-depth investigation is conducted to evaluate charm factors of recreational fishing. This study aims to (1) propose a research method which combines the evaluation grid method of Miryoku engineering and hierarchical network analysis, to evaluate the potential charm factors of the recreational fishing in Southern Taiwan, and obtain clear weighted value of each factor item; (2) put forward development suggestions in line with charm factors of recreational fishing in Southern Taiwan. In this study, (1) A new hybrid research framework is proposed, charm factors of recreational fishing in Southern Taiwan are evaluated and translated into clear values. (2) Through the Miryoku engineering, a new idea is provided for the establishment of ANP structural model. (3) The combination of Miryoku engineering and ANP can more accurately evaluate the charm factors. This study can contribute to the development of recreational fishing industry in Southern Taiwan.

2. Literature Review

2.1. Related Studies

As a leisure activity, the contribution of recreational fishing to the regional economy has been confirmed by many studies [3]. However, how to ensure the sustainable development of the recreational fishery requires the further discussion. Fedler and Ditton [4] argued that understanding the behaviors and thinking of anglers is vital for improving the user experience of recreational fishing. Fisher studied fishing in North America and believed that the user experience pursued in recreational fishing by anglers in North America can be classified as: the specific charm of recreational fishing and the charm of general outdoor activities [13]. Food demand is not necessarily included in the motivation of recreational fishing [1,5,7], while the charm of fishing activities is more emphasized. In Europe and America, many anglers adopt catch-and-release (C and R) to fish. Arlinghaus et al. [17] recorded and studied C&R fishing in terms of history, ethics, society, biology, and other knowledge. C and R refers to fishing mainly caught by hooks and lines with the aid of rods. When anglers catch the fish, they typically release the fish back into water voluntarily [18,19]. Statistically, millions to billions of fish are released by recreational anglers and the release rate is about 60% every year around the world [20]. Arlinghaus studied the motivation and satisfaction of recreational anglers in Germany and explored the relationship between them [21]. Hutt et al. [22] studied the attitude of leisure anglers towards fishing and surveyed the correlation between anglers from different backgrounds and the fishing outcomes in Texas of America.

Most fishing studies merely focus on anglers' satisfaction or fish catch. In addition, the influences of different regions with different local cultures on charm factors of fishing should be also considered. This study focuses on the charm of fishing in Southern Taiwan.

2.2. Miryoku Engineering and Evaluation Grid Method

Miryoku engineering, originated from Japan, indicates the power of attractiveness. Miryoku engineering was developed by Junichiro Sanui and Masao Inui based on the concept of personal construct theory [23]. It is widely used to extract the charm factors of some activities, space, products. At the same time, it is also utilized to investigate the relationship between preference and attractiveness [16].

Evaluation grid method (EGM), as an important research method in Miryoku engineering, is developed to understand the true psychological feelings of interviewees [24] and capture the elements of charm evaluation. In this method, the psychological feelings of the interviewees are mapped into three levels: the summit, middle and bottom levels [25]. The summit-level is an abstract factor expressing the emotions of the interviewees; the middle-level is the actual charm characteristic, known as the original evaluation items; and the bottom-level is the specific conditions or physical characteristics involved in the evaluation. The EGM procedure includes four steps as follows: (1) Set the experience requirements of the interviewee; (2) conduct the pre-tests in line with the experience requirements, and make an interview if the experience requirements are met; (3) draw the evaluation structure map in line with the interview content; and (4) consolidate and converge the evaluation structure of all interviewees. This approach is extensively applied in various areas. For example, EGM has been used to explore the attractiveness of smartphone application icons [26]. Shen [16] used EGM to investigate the appeal of social networking games to Taiwan's social culture and argued that incorporating local cultural features into designs is a part of the marketing strategy. Liu and Zhang [27] utilized EGM to understand the relationship between customer demands and design elements with creative products as a study example.

Through the Miryoku engineering method, the charm characteristics of fishing activities in Southern Taiwan are analyzed, and the EGM evaluation structure chart is drawn to explore the interdependence and correlation among the charm factors. Miryoku is considered as a vague concept by Kang et. al [28]. However, definite value was not obtained in the structure chart of EGM evaluation by Miryoku engineering. Thus, Miryoku engineering is usually combined with statistical methods. In the past, Miryoku engineering was often combined with quantitative analysis or variance analysis. In this study, a new hybrid research method is proposed by the combination of ANP and the evaluation grid method in Miryoku engineering to improve the research efficiency. In this way, the results of this study are more instructive, avoiding the uncertainty in the questionnaire.

2.3. Analytic Network Process (ANP)

Analytic Network Process (ANP) is a method for multi-criteria decision making (MCDM) and can solve complex problems by discussing the interdependence among multiple decision factors [29]. ANP is the extension of AHP (analytic hierarchy process). The AHP calculates the weights of decision-making. Indicators is based on the assumption that there is no interdependence or correlation among the decision-making factors, while the decision-making process of ANP considers the interdependence and correlation among the decision-making factors [30]. When confronted with a more complex decision model, ANP is more accurate and can easily express complex relationships, such as feedback between elements in hierarchical structures. However, AHP is limited to express the complex relationship [31–33]. Sarkis and Talluri [34] concluded two major limitations of AHP in their research. Firstly, there is a unidirectional influence relationship between the hierarchical structure of AHP. It indicates that the higher level can affect the lower-level, while the lower-level cannot be affected by the higher level. If the influence relationship is mutual, the AHP cannot evaluate the influence. Secondly, each factor in the hierarchical structure is independent, while there may be interaction in reality. The ANP method has been applied in many decision-making studies. Uygun et al. [35] used this method to evaluate the outsourcing suppliers of telecom companies so as to select the most suitable suppliers. To study the design strategy of the elderly motorized mobility scooters, Liu and Zhang [36] determined the design direction by ANP, namely combining customer demands with firm performance indicators. In manufacturing, the application of ANP has successfully enhanced the customer satisfaction [37]. MCDM methods are widely used in the fishery research. Gao and Hailu [38] used AHP to study the management strategy of a recreational fishing site in Western Australia, and proposed several management strategies to realize the benefit maximization. Pascoe et al. used AHP to explore the differences in management objectives between groups on the eastern coast of Queensland, Australia [39]. To achieve the sustainable income, AHP is applied by Mardle to evaluate fisheries management in the English Channel [40]. In previous studies, most fishery research using MCDM method is studied by AHP method. However, in the study of the attractive factors of recreational fishing, human emotional factors which are more complex, detailed and influential factor are more emphasized. According to the characteristics, ANP is more suitable for solving interdependent and more complex problems [29]. To calculate the weights based on the interdependence and correlation among the charm factors, the ANP method is employed to establish an evaluation model of fishing in Southern Taiwan. In addition, the ANP assessment model for recreational fishing in Southern Taiwan is derived through the revision of the evaluation structure of Miryoku engineering, as Miryoku engineering can effectively define the relationship between preferences and charm factors [16]. In this study, Miryoku engineering defines the abstract factors, charm characteristics and physical characteristics of recreational fishing in Southern Taiwan, then the ANP structural model is established. Additionally, a research method that combines Miryoku engineering with hierarchical network analysis is also developed in this study.

3. Research and Analysis

Experimental sites were selected in Tainan and Kaohsiung of Southern Taiwan. Main fishing sites were investigated, such as Anping Port in Tainan and Xiziwan in Kaohsiung. This study lasted for eight months.

To understand different demands of anglers and charm factors of fishing, the research method of Miryoku engineering is adopted to extract the required items. ANP is used to conduct the weight analysis to determine the possible future management and development direction of fishing in Southern Taiwan.

3.1. Interviews with Evaluation Grid Method

EGM interviewees should be fishing experts or people with high experience of fishing [41]. Therefore, in the pre-interview period, the interviewees must be local residents of Tainan or Kaohsiung in Southern Taiwan. At the same time, they should have more than five years of fishing experience, and the average fishing time is more than once a week. In this stage, the author interviewed 136 anglers who have met the above requirements. During the interview, the evaluation grid method (EGM) was used in the interview. EGM can quickly and accurately extract charm factors proposed by respondents, and also quickly construct the structure and sequence of each factor project [28]. Then the efficiency of building ANP models is improved in the following study.

A short question and answer were performed before the interview, and the interview can be conducted if the interview requirements are met. During the interview process, interviews were conducted in a comparative way. For example, "Do you like fishing in Tainan or Kaohsiung? Why?" After getting the answer, more specific factors and the abstract sensory factors were questioned. Or the interviewer can ask the question whether the disliking fishing site has anything appealing. More specific factors and abstract sensory factors should be obtained. In the process of responding, reasons were recorded by interviewees. If the most direct appealing cause was assessed as the primitive charm characteristics, then it was classified as the middle-level and the more abstract sensory or emotional phrase abstract factors were classified as the summit. The physical characteristics of appealing details were classified as the bottom. The summit items were on the left; the middle items were on the middle; the bottom items were on the right. The aforementioned three levels were connected by lines to illustrate causality [42], as shown in Figure 1. All interviewee's records of the upper, middle and lower-levels were collated and cross-checked. Similar items were modified into the same sentence by writing. Ultimately, the EGM evaluation structure chart is drawn, as shown in Figure 2.

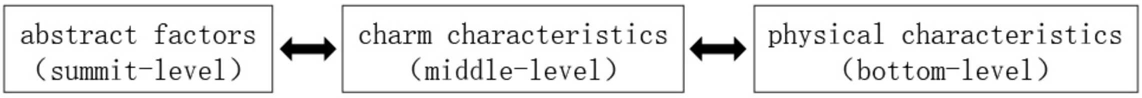

Figure 1. EGM structure chart.

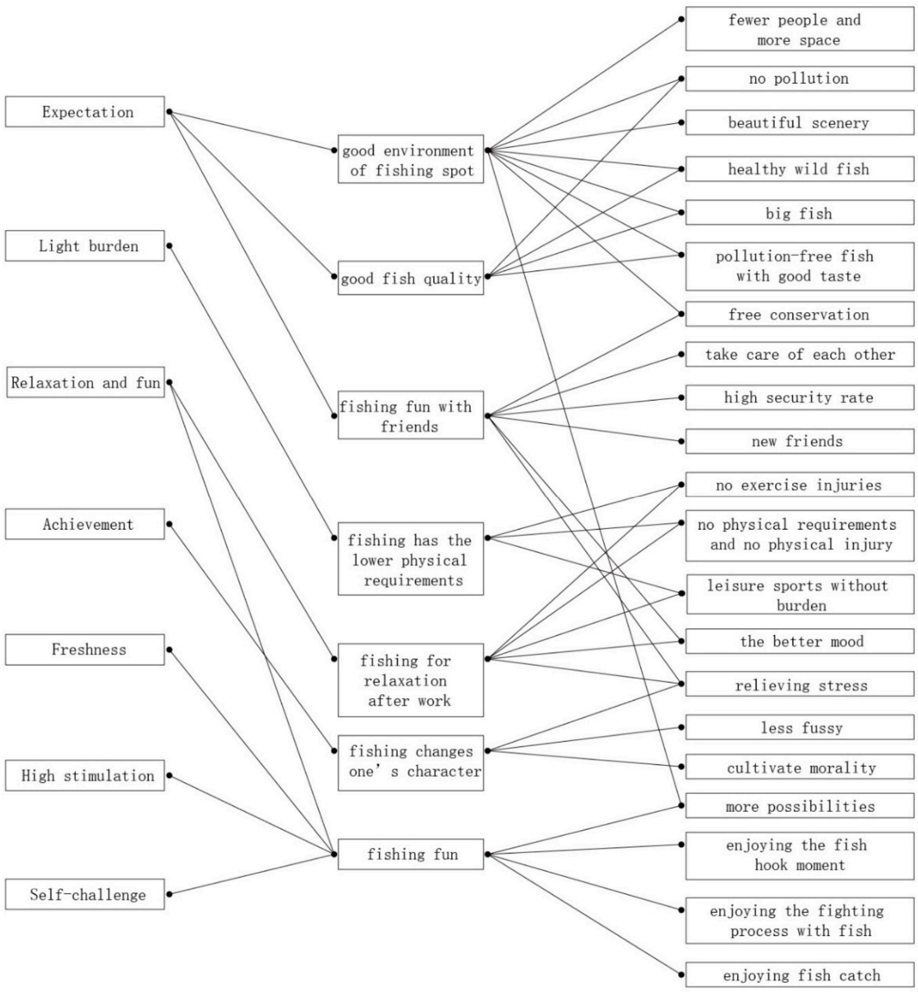

Figure 2. EGM evaluation structure chart.

Twenty-one bottom-level items (Figure 2) are summarized in this study: B1 (fewer people and more space), B2 (no pollution), B3 (beautiful scenery), B4 (healthy wild fish), B5 (big fish), B6 (pollution-free fish with good taste), B7 (free conservation), B8 (take care of each other), B9 (high security rate), B10 (new friends), B11 (no exercise injuries), B12 (no physical requirements and no physical injury), B13 (leisure sports without burden), B14 (the better mood), B15 (relieving stress), B16 (less fussy), B17 (cultivate morality), B18 (more possibilities), B19 (enjoying the fish hook moment), B20 (enjoying the fighting process with fish), and B21 (enjoying fish catch). Seven middle-level items are summarized as: M1 (fishing fun), M2 (fishing changes one's character), M3 (fishing for relaxation after work), M4 (fishing has the lower physical requirements), M5 (fishing fun with friends), M6 (good fish quality), and M7 (good environment of fishing spot). Seven items of the bottom-level are summarized as: S1 (high stimulation), S2 (expectation), S3 (achievement), S4 (freshness), S5 (self-challenge), S6 (relaxation and fun), and S7 (light burden).

3.2. Focus Groups

To efficiently complete the research, local fishing enthusiasts were contacted, four fishing enthusiasts and an expert engaged in tourism research were invited to form a focus group in this study. Four fishing enthusiasts have been fishing in the waters of Tainan and Kaohsiung for many years. The tourism research expert has also been engaged in the study of tourism activities in Taiwan for many years. Detailed descriptions of focus groups are listed in Table 1.

Table 1. Details of focus group members.

No.	Nature	Education	Age	Fishing years	Average Weekly Fishing Times
1	Fishing enthusiasts	Bachelor Degree	35	9	3
2	Fishing enthusiasts	Master Degree	37	6	2
3	Fishing enthusiasts	Bachelor Degree	53	20	5
4	Fishing enthusiasts	Bachelor Degree	44	12	3
5	Tourism Research Specialist	Doctor Degree	40	10	

3.3. Theoretical Model of Recreational Fishing Development in Southern Taiwan Based on Miryoku Engineering

Based on the discussion and analysis of focus groups, seven middle-level charm factors in the EGM evaluation chart drawn by Miryoku engineering can be aggregated into a cluster of charm factors. The upper seven abstract factors can be grouped into a cluster of abstract factors. There were 21 items of physical characteristics in the lower-level. After discussing with the focus group, 21 items of physical characteristics were divided into seven clusters, corresponding to the items of charm factors. M1 corresponds to items7 (B18, B19, B20, B21), M2 corresponds to items6 (B16, B17), M3 corresponds to items5 (B13, B14, B15), M4 corresponds to items4 (B11, B12), M5 corresponds to items3 (B7). M6 corresponds to items2 (B4, B5, B6), M7 corresponds to items1 (B1, B2, B3). In addition to the corresponding relationships mentioned above, it should be noted that, there are other interaction relationships. Since many projects interact with each other, this condition is illustrated in the next chapter of this article.

In the following research, theoretical methods and direction of recreational fishing development in Southern Taiwan are laid by these three types of clusters, based on the attractive factors of recreational fishing activities in Southern Taiwan. Meanwhile, according to the characteristics of ANP, the theoretical model can be directly used as the prototype of the ANP model. The ANP model can be constructed by determining the interaction and interdependence of each project on the basis of the prototype. More details are listed in Figure 3.

3.4. Establishment of Relative Weights with ANP

In this study, the evaluation model of ANP is obtained according to the EGM evaluation chart. 21 lower-level items are classified into seven clusters based on the interview results. Accurate weights are obtained in the EGM evaluation structure charm, as shown in Figure 3. Moreover, all items in the item clusters are interdependent.

For example, the middle-level projects M2 and S3, M3, M5, B15, B16, B17 interact and depend on each other. The interaction of each project is shown in Table 2.

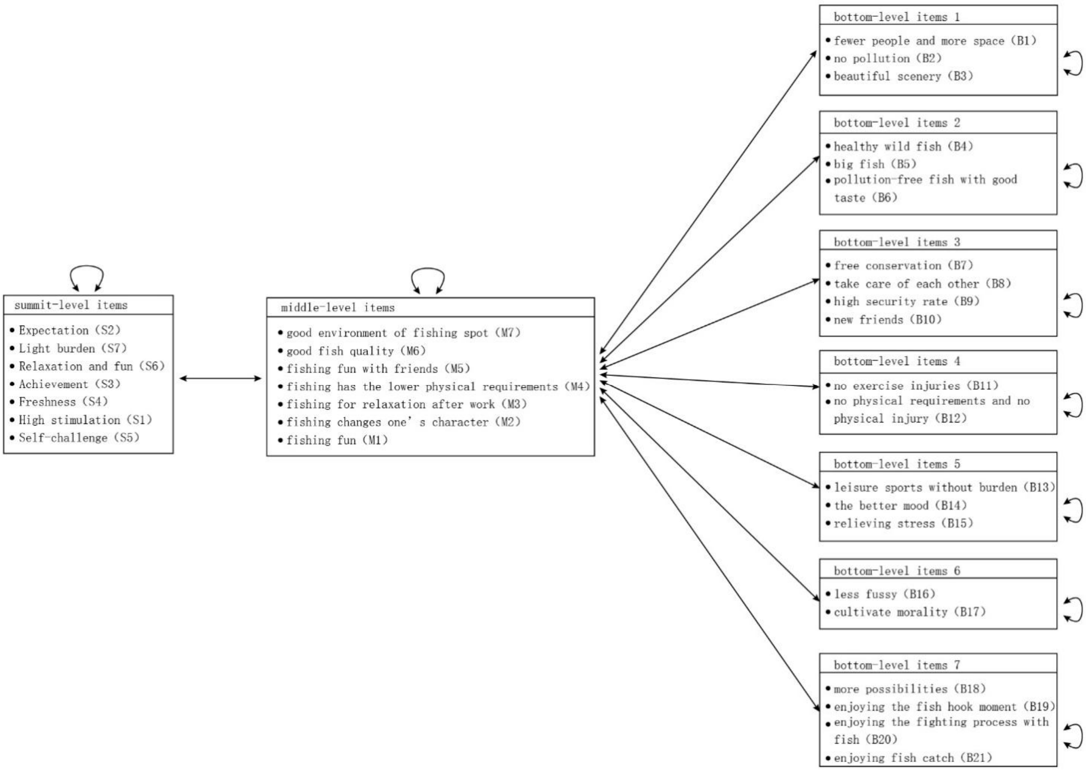

Figure 3. The ANP model.

Table 2. Interaction table.

No.	Affecting											
S1	S4	S5	M1									
S2	M5	M6	M7									
S3	M2											
S4	S1	S5	M1									
S5	S1	S4	M1									
S6	M1	M3										
S7	M4											
M1	S1	S4	S5	S6	M7	B18	B19	B20	B21			
M2	S3	M3	M5	B16	B17	B15						
M3	S6	M2	M4	B13	B14	B15	B11	B12				
M4	S7	M3	B13	B11	B12							
M5	S2	M3	B14	B15	B7	B8	B9	B10				
M6	S2	M7	B4	B5	B6	B2						
M7	S2	M1	M5	M6	B18	B7	B4	B5	B6	B1	B2	B3
B1	B2	B3	M7									
B2	B1	B3	M6	M7								
B3	B1	B2	M7									
B4	B5	B6	M6	M7								
B5	B4	B6	M6	M7								
B6	B4	B5	M6	M7								
B7	B8	B9	B10	M5	M7							
B8	B7	B9	B10	M5								
B9	B7	B8	B10	M5								
B10	B7	B8	B9	M5								
B11	B12	M4										
B12	B11	M4										
B13	B14	B15	M3	M4								
B14	B13	B15	M3	M5								
B15	B13	B14	M2	M3	M5							
B16	B17	M2										
B17	B16	M2										
B18	B19	B20	B21	M1	M7							
B19	B18	B20	B21									
B20	B18	B19	B21	M1								
B21	B18	B19	B20	M1								

3.5. Pairwise Comparison Matrix

When the ANP model is established, the interaction and interdependence among the projects are determined, then a pairwise comparison matrix is conducted. The pairwise comparison matrix in this study is based on the judgment of the fishermen and experts. To calculate the weights of each item, an important scale of 1–9 is used in this study [43]. In this scale, each number represents an important degree. For example, 1 indicates the equal importance. Table 3 lists the importance of 1–9.

Table 3. Details of focus group members.

Importance	Definition
1	Equal importance
3	Moderate importance
5	Strong importance
7	Very strong importance
9	Absolute (extreme) importance
2, 4, 6, 8	Intermediate values

In the study, focus groups were asked to score pairwise comparison matrices with 1–9 and put the relevant importance into pairwise comparison matrices. The importance of each item was determined by the focus groups. Table 4 is a paired comparison matrix applied to item M5. Because of the large number of paired comparison matrices in the study, the paired comparison matrices of other items are placed in Appendix A.

Table 4. Paired comparison matrix for M5.

M5	B7	B8	B9	B10
B7	1	2	1	3
B8		1	2	2
B9			1	3
B10				1

When the ANP evaluation model is completed, the consistency of the model can be determined. If the CR value was less than 0.1, these items pass the consistency test [44]. CR values in this study are calculated to be less than 0.1.

3.6. Super-Matrix

After establishing the ANP evaluation model, the interactions and interdependencies among each item can be obtained through an unweighted supermatrix (Figure 4). However, if the influences of all items and dimensions were considered simultaneously, the global weight of all the items should be determined by the weighted super-matrix [37]. The numbers of each column of the weighted super-matrix are summed up to 1 with a random effect, so items in each column of the matrix can be proportionally transformed into the weights with standardized characteristics, according to the importance degree of impacts and dependency (Figure 5). The weights and ranking of all items are listed in Table 5.

	S1	S2	S3	S4	S5	S6	S7	B18	B19	B20	B21	B16	B17	B13	B14	B15	B11	B12	B7	B8	B9	B10	B4	B5	B6	B1	B2	B3	M1	M2	M3	M4	M5	M6	M7
S1	0.000	0.000	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000
S2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000	1.000
S3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
S4	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000
S5	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000
S6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	1.000	0.000	0.000	0.000	0.000
S7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
B18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.400	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.286	0.000	0.000	0.000	0.000	0.000	1.000
B19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.000	0.400	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.286	0.000	0.000	0.000	0.000	0.000	0.000
B20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.400	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.286	0.000	0.000	0.000	0.000	0.000	0.000
B21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.200	0.200	0.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.143	0.000	0.000	0.000	0.000	0.000	0.000
B16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000
B17	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000
B13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.163	1.000	0.000	0.000	0.000
B14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.540	0.000	0.667	0.000	0.000
B15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.297	0.000	0.333	0.000	0.000
B11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.667	0.000	0.000	0.000
B12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.333	0.000	0.000	0.000
B7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.429	0.540	0.413	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.351	0.000	1.000
B8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.297	0.000	0.297	0.327	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.189	0.000	0.000
B9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.540	0.429	0.000	0.260	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.351	0.000	0.000
B10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.163	0.143	0.163	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.109	0.000	0.000
B4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.297	0.297
B5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.163	0.163
B6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.540	0.540
B1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.297
B2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.667	0.000	0.000	0.000	0.000	0.000	1.000	0.540
B3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.163
M1	1.000	0.000	0.000	1.000	1.000	0.750	0.000	0.857	0.000	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.582
M2	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000	0.000	0.000	0.163	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000
M3	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.333	0.297	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	1.000	1.000	0.000	0.000
M4	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000
M5	0.000	0.683	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.540	0.000	0.000	0.833	1.000	1.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.348
M6	0.000	0.117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.333	0.333	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.069
M7	0.000	0.200	0.000	0.000	0.000	0.000	0.000	0.143	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.667	0.667	0.667	1.000	0.667	1.000	1.000	0.000	0.000	0.000	0.000	1.000	0.000

Figure 4. Unweighted super-matrix.

	S1	S2	S3	S4	S5	S6	S7	B18	B19	B20	B21	B16	B17	B13	B14	B15	B11	B12	B7	B8	B9	B10	B4	B5	B6	B1	B2	B3	M1	M2	M3	M4	M5	M6	M7
S1	0.000	0.000	0.000	0.167	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.062	0.000	0.000	0.000	0.000	0.000	0.000
S2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.309	0.309	0.232
S3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.309	0.000	0.000	0.000	0.000	0.000
S4	0.167	0.000	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.062	0.000	0.000	0.000	0.000	0.000	0.000
S5	0.167	0.000	0.000	0.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.062	0.000	0.000	0.000	0.000	0.000	0.000
S6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.185	0.000	0.309	0.000	0.000	0.000	0.000
S7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.309	0.000	0.000	0.000
B18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	0.133	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.124
B19	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.133	0.000	0.133	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.000
B20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.133	0.400	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.056	0.000	0.000	0.000	0.000	0.000	0.000
B21	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.200	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.000	0.000
B16	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000
B17	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.082	0.000	0.000	0.000	0.000	0.000
B13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.083	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.164	0.000	0.000	0.000
B14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.222	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.089	0.000	0.110	0.000	0.000
B15	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.222	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.164	0.049	0.000	0.055	0.000	0.000
B11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.110	0.000	0.000	0.000
B12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.055	0.055	0.000	0.000	0.000
B7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.143	0.180	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.058	0.000	0.124
B8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.099	0.000	0.099	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.031	0.000	0.000
B9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.180	0.143	0.000	0.087	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.058	0.000	0.000
B10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	0.048	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.000	0.000
B4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.222	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.037
B5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.020
B6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.222	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.089	0.067
B1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.222	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.037
B2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.222	0.000	0.000	0.000	0.000	0.000	0.164	0.067
B3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.083	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020
M1	0.667	0.000	0.000	0.667	0.667	0.750	0.000	0.571	0.000	0.667	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.159
M2	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.667	0.000	0.000	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.242	0.000	0.000	0.000	0.000
M3	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.222	0.198	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.121	0.000	0.363	0.363	0.000	0.000
M4	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.167	0.000	0.000	0.667	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.121	0.000	0.000	0.000	0.000
M5	0.000	0.683	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.444	0.360	0.000	0.000	0.556	0.667	0.667	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.242	0.000	0.000	0.000	0.000	0.095
M6	0.000	0.117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.222	0.222	0.222	0.000	0.222	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
M7	0.000	0.200	0.000	0.000	0.000	0.000	0.000	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	0.000	0.000	0.000	0.444	0.444	0.444	0.667	0.444	0.667	0.434	0.000	0.000	0.000	0.000	0.363	0.000

Figure 5. Weighted super-matrix.

Table 5. Weight values of charm items of fishing.

Factors	Normalized by Cluster	Rank	Limiting
S1 high stimulation	0.051	5	0.009
S2 expectation	0.339	1	0.060
S3 achievement	0.099	4	0.018
S4 freshness	0.051	5	0.009
S5 self-challenge	0.051	5	0.009
S6 relaxation and fun	0.294	2	0.052
S7 light burden	0.115	3	0.020
M1 fishing fun	0.179	3	0.097
M2 fishing changes one's character	0.104	6	0.057
M3 fishing for relaxation after work	0.202	2	0.110
M4 fishing has the lower physical requirements	0.121	5	0.066
M5 fishing fun with friends	0.214	1	0.116
M6 good fish quality	0.028	7	0.015
M7 good environment of fishing spot	0.153	4	0.083
B1 fewer people and more space	0.297	11	0.006
B2 no pollution	0.532	2	0.010
B3 beautiful scenery	0.172	17	0.003
B4 healthy wild fish	0.327	10	0.006
B5 big fish	0.190	16	0.004
B6 pollution-free fish with good taste	0.484	4	0.009
B7 free conservation	0.471	5	0.021
B8 take care of each other	0.165	18	0.007
B9 high security rate	0.269	12	0.112
B10 new friends	0.095	20	0.004
B11 no exercise injuries	0.583	1	0.025
B12 no physical requirements and no physical injury	0.417	6	0.018
B13 leisure sports without burden	0.235	14	0.020
B14 the better mood	0.404	8	0.035
B15 relieving stress	0.361	9	0.031
B16 less fussy	0.500	3	0.007
B17 cultivate morality	0.500	3	0.007
B18 more possibilities	0.414	7	0.023
B19 enjoying the fish hook moment	0.202	15	0.011
B20 enjoying the fighting process with fish	0.250	13	0.014
B21 enjoying fish catch	0.134	19	0.007

4. Results and Discussion

4.1. Abstract Factors

The weight values of abstract factors are shown in Table 6. The larger weight value indicates that the corresponding psychological experience is the charm factor of recreational fishing in Southern Taiwan. The weights of abstract factors are obtained as: S2 (0.339), S6 (0.294), S7 (0.115), and S3 (0.099). The weights of S1, S4, and S5 are 0.051 and rank the fifth, indicating that the recreational fishing in Southern Taiwan gives anglers a major feeling of relaxation, happiness and expectations. Abstract charm factors are significantly different from those in Europe and the United States (Table 6).

Table 6. Weight values of abstract factors.

Factors	Normalized by Cluster	Rank	Limiting
S1 high stimulation	0.051	5	0.009
S2 expectation	0.339	1	0.060
S3 achievement	0.099	4	0.018
S4 freshness	0.051	5	0.009
S5 self-challenge	0.051	5	0.009
S6 relaxation and fun	0.294	2	0.052
S7 light burden	0.115	3	0.020

4.2. Miryoku Characteristics

From the middle-level perspective, the weights of charm factors of recreational fishing in Southern Taiwan are obtained as M5 (0.214), M3 (0.202), M1 (0.179), M7 (0.153), M4 (0.121), M2 (0.104), and M6 (0.028) (Table 7). Combined with the summit-level items, recreational fishing enthusiasts in Southern Taiwan believe that, the greatest charm of fishing is going fishing with friends for relaxation after work. Nevertheless, the fish catch or other related items is not the most important determinants (Table 7).

Table 7. Weight values of Miryoku characteristics.

Factors	Normalized by Cluster	Rank	Limiting
M1 fishing fun	0.179	3	0.097
M2 fishing changes one's character	0.104	6	0.057
M3 fishing for relaxation after work	0.202	2	0.11
M4 fishing has the lower physical requirements	0.121	5	0.066
M5 fishing fun with friends	0.214	1	0.116
M6 good fish quality	0.028	7	0.015
M7 good environment of fishing spot	0.153	4	0.083

4.3. Physical Characteristics

From the point of view of physical characteristics, the top 10 items and corresponding weights are B11 (0.583), B2 (0.532), B16, B17 (0.500), B6 (0.484), B7 (0.471), B12 (0.417), B18 (0.414), B14 (0.404), B15 (0.361), and B4 (0.327). The weights and rankings of all items in the bottom-level are shown in Table 8. The main attractive reason for fishing in Southern Taiwan is that fishing is an easy, interesting, and healthy leisure activity with low burden. The weight of B2 is the second highest, 0.532. Therefore, the less polluted environment also significantly affects the attractiveness of fishing. In addition, from the weights of bottom-level items, the size of fish or the number of fish catch is not the most important item. The item also ranks low because anglers do not value the ultimate result of fishing. Lyach and Cech [45] found that recreational fishing activities in some central European countries are increasing, but the overall fish catch is declining. The trend in European countries is similar to that in Southern Taiwan (Table 8).

Table 8. Weight values of physical characteristics.

Factors	Normalized by Cluster	Rank	Limiting
B1 fewer people and more space	0.297	11	0.006
B2 no pollution	0.532	2	0.010
B3 beautiful scenery	0.172	17	0.003
B4 healthy wild fish	0.327	10	0.006
B5 big fish	0.190	16	0.004
B6 pollution-free fish with good taste	0.484	4	0.009
B7 free conservation	0.471	5	0.021
B8 take care of each other	0.165	18	0.007
B9 high security rate	0.269	12	0.112
B10 new friends	0.095	20	0.004
B11 no exercise injuries	0.583	1	0.025
B12 no physical requirements and no physical injury	0.417	6	0.018
B13 leisure sports without burden	0.235	14	0.020
B14 the better mood	0.404	8	0.035
B15 relieving stress	0.361	9	0.031
B16 less fussy	0.500	3	0.007
B17 cultivate morality	0.500	3	0.007
B18 more possibilities	0.414	7	0.023
B19 enjoying the fish hook moment	0.202	15	0.011
B20 enjoying the fighting process with fish	0.250	13	0.014
B21 enjoying fish catch	0.134	19	0.007

4.4. Management Strategy of Charm Factors and Fishing Development in Southern Taiwan

Based on the overall research and in-depth discussions with focus groups, three development strategies for recreational fishing activities in Southern Taiwan are summarized below.

4.4.1. Environmental Sustainability

Based on the theoretical model of the development of recreational fishing activities in Southern Taiwan, the physical characteristics of research results, B2 (no pollution) ranks in the second place, while B1, B3, B4, B5, and B6 are all related to the environment, while charm factors of M6 and M7 directly show that fishing enthusiasts have requirements for the quality of fish and the environment of the fishing site. Therefore, local recreational fishing management should continue to control and manage the water quality of Southern Taiwan waters and the environment of fishing grounds. Taking Finland's fisheries as an example, since the 1970s, the fisheries in the Finnish Islands began to transform, and the conservation of the natural environment was one of the key points of the transformation [46]. It is believed that this action can enhance the S2 (Expectation) of fishing enthusiasts. Meanwhile, the improvement of environmental quality may expand the audience area of fishing activities.

4.4.2. New Recreational Fishing Model

Based on physical characteristics in the theoretical model, from the factor items 4, 5, and 6 of B11–B17, it is concluded that recreational fishing in Southern Taiwan has the opportunity to develop into the tourism mode. The weights of B11–B17 rank in the top ten places, which can affect the charm factors of M2, M3, M4, M5. Through the charm factors, the recreational fishing in Southern Taiwan has low physical requirements. Fishing in Southern Taiwan can relax one's body and mind. Meanwhile, it has the characteristics of relaxation, enjoyment and low burden. In the future, if combined with the local characteristics of traditional culture, recreational fishing can be promoted vigorously with very large potential. From past studies, it is found that many states in the United States have actively carried out tourism, including recreational fishing [4].

4.4.3. Convenient and Fast Fishing Mode

From the results of the study, M5 (fishing fun with friends), and M3 (fishing for relaxation after work) are the first and the second most charm factors. Physical feature items B7–B15 are included. It shows that recreational fishing in Southern Taiwan can also develop into a convenient mode. Reducing the entry threshold of fishing, it can be developed into a relaxing or gathering leisure activity after work. For example, small-scale recreational fishing places can be established to ensure the quality of water and fish. At the same time, related services can be increased, such as fishing tools leasing. Some scholars have studied the recreational fishing industry in England and Wales, and believed that the development of urban fishery should be planned with the establishment of fishing sites and relevant services. This is similar to the strategy proposed in this study [47]. In addition, physical characteristics (B18, B19, B20, B21) affected by the M1 charming factor can also be considered together. In this way, it can satisfy the freshness, expectation, excitement, and other experiences for enthusiasts with relaxation and fun.

5. Conclusions

In this study, the recreational fishing in Southern Taiwan is explored with Miryoku engineering method. Research results are consistent with previous findings in other countries. For example, the number of caught fish is not the most important factor of recreational fishing activities [17]. However, the attractiveness of fishing in Southern Taiwan is that, fishing is a leisure-oriented activity with friends. As shown in the results, the size of fish, the number of fish catch, and the health condition of fish are less important charm factors. From the perspectives of fishery management and the promotion of fishery development, environmental improvements are suggested to expand the audience of fishing, and fishing can gradually become a recreational activity for family or friends gatherings. Secondly, M3 and M1, which rank the second and third, respectively, in the charm characteristics, indicate that lowering the threshold and learning costs of fishing is also a promotion direction of fishing in Southern Taiwan. However, there is no management and maintenance in fisheries, thus, potential fishing participants are prevented from joining the activity to some degree. At the same time, harsh geographical and climatic environment in Southern Taiwan also hinders fishing to become a family gathering activity.

Moreover, fishing in Southern Taiwan has a variety of charm characteristics, which can be amplified by many technical methods. This study provides important information for decision-making. Besides, conclusions are drawn as follows:

A mixing leisure fishery research method is developed. The direction of ANP model establishment is provided by EGM. This study can provide a theoretical basis for relevant studies. Recreational fishing should be further analyzed in different regions.

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Appendix A. Pairwise Comparison Matrices

S1	**S4**	**S5**
S4	1	1
S5		1

S2	**M5**	**M6**	**M7**
M5	1	5	4
M6		1	2
M7			1

S4	**S1**	**S5**
S1	1	1
S5		1

S5	**S1**	**S4**
S1	1	1
S4		1

S6	**M1**	**M3**
M1	1	3
M3		1

B18	**M1**	**M7**
M1	1	6
M7		1

B19	**B18**	**B20**	**B21**
B18	1	1	2
B20		1	2
B21			1

B20	**B18**	**B19**	**B21**
B18	1	1	2
B19		1	2
B21			1

B21	**B18**	**B19**	**B20**
B18	1	1	1
B19		1	1
B20			1

B13	**B14**	**B15**
B14	1	2
B15		1

B14	**B13**	**B15**
B13	1	2
B15		1

B15	**B13**	**B14**
B13	1	3
B14		1

B7	**B8**	**B9**	**B10**
B8	1	2	2
B9		1	3
B10			1

B8	**B7**	**B9**	**B10**
B7	1	1	3
B9		1	3
B10			1

B9	**B7**	**B8**	**B10**
B7	1	2	3
B8		1	2
B10			1

B10	**B7**	**B8**	**B9**
B7	1	2	1
B8		1	2
B9			1

B4	**B5**	**B6**
B5	1	3
B6		1

B5	**B4**	**B6**
B4	1	2
B6		1

B6	**B4**	**B5**
B4	1	2
B5		1

B1	**B2**	**B3**
B2	1	3
B3		1

B2	**B1**	**B3**
B1	1	2
B3		1

B3	**B1**	**B2**
B1	1	2
B2		1

M2	**B16**	**B17**
B16	1	1
B17		1

M3	**B13**	**B14**	**B15**
B13	1	3	2
B14		1	2
B15			1

M4	**B11**	**B12**
B11	1	2
B12		1

M5	**B14**	**B15**
B14	1	2
B15		1

M6	**B4**	**B5**	**B6**
B4	1	2	2
B5		1	3
B6			1

M7	**B4**	**B5**	**B6**
B4	1	2	2
B5		1	3
B6			1

S1	**S4**	**S5**
S4	1	1
S5		1

B18	**B19**	**B20**	**B21**
B19	1	1	2
B20		1	2
B21			1

B13	**M3**	**M4**
M3	1	3
M4		1

B14	**B13**	**B15**
B13	1	2
B15		1

B15	**M2**	**M3**	**M5**
M2	1	2	3
M3		1	2
M5			1

B7	**B8**	**B9**	**B10**
B8	1	2	2
B9		1	3
B10			1

B4	**M6**	**M7**
M6	1	2
M7		1

B5	**B4**	**B6**
B4	1	2
B6		1

B6	**M6**	**M7**
M6	1	2
M7		1

B2	**M6**	**M7**
M6	1	2
M7		1

M2	**M3**	**M5**
M3	1	2
M5		1

M3	**B11**	**B12**
B11	1	2
B12		1

M3	**B13**	**B14**	**B15**
B13	1	3	2
B14		1	2
B15			1

M7	**B1**	**B2**	**B3**
B1	1	2	2
B2		1	3
B3			1

M7	**M1**	**M5**	**M6**
M1	1	2	7
M5		1	6
M6			1

M1	**S1**	**S4**	**S5**	**S6**
S1	1	1	1	3
S4		1	1	3
S5			1	3
S6				1

M1	B18	B19	B20	B21
B18	1	1	1	2
B19		1	1	2
B20			1	2
B21				1

M5	B7	B8	B9	B10
B7	1	2	1	3
B8		1	2	2
B9			1	3
B10				1

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