International Journal for Housing Science and Its Applications
Publish August 5, 2025. Volume 46, Issue 3 Pages 4276-4285

https://doi.org/10.70517/ijhsa463365

Research on the Optimization and Development Path of Rural Characteristic Industries in Rural Revitalization Strategy Based on AHP Method

Chao Yin[1,*] and Peibiao Liu[1]
[1] School of Business Administration, Shandong Women's University, Jinan, 2250300, Shandong, China
Corresponding authors: (e-mail: 30092@sdwu.edu.cn).

Abstract This paper explores the development strategy of rural characteristic industry, takes the development strategy of characteristic forest recreation tourism industry of village A as the research object, and introduces SWOT-AHP model to study it. The advantages, disadvantages, opportunities and threats of the characteristic forest recreation tourism industry of Village A are analyzed through SWOT, on the basis of which the evaluation index system for the development of the characteristic forest recreation tourism industry of Village A is constructed by the AHP method, followed by quantitative research. After calculating the weights of indicators and the comprehensive intensity of indicators, the four-sided diagram of the development strategy of the characteristic forest recreation tourism industry in village A is constructed by calculating the intensity of coefficients of the development strategy, azimuth angle and other parameters. The weights of the guideline layer in the evaluation index system of the forest recreation tourism industry in village A are advantages (0.2568), disadvantages (0.2574), opportunities (0.2626), and threats (0.2232). The development strategy of the characteristic forest recreation tourism industry in village A is based on the AHP method, and then the quantitative research is carried out. P point of the center of gravity of the development strategy of the village's characteristic forest recreation tourism industry is within the scope of the opportunity-type area, and the coefficient of strategic intensity is greater than 0.5, and the opportunity-exploitation type of development strategy should be adopted.

Index Terms SWOT analysis, AHP, rural characteristic industry, development strategy, rural revitalization

I. Introduction

The rural revitalization strategy is an important strategic plan to promote the modernization of agriculture and rural areas and to achieve the integrated development of urban and rural areas. The implementation of the rural revitalization strategy not only injects new vitality into rural development, but also provides unprecedented opportunities for the development of rural characteristic industries. On the one hand, policy support and capital investment have provided strong support for rural specialty industries and promoted the rapid development of the industries [1]. On the other hand, changes in market demand and the diversity of consumer preferences have also brought new development opportunities for rural specialty industries [2]. Based on this, the study of the development mode of rural characteristic industries helps to promote the diversified and sustainable development of rural economy, promote farmers' income and wealth, and realize the high-quality development of rural revitalization strategy [3]-[5].

The development of local specialty industries is a good way to promote the rapid development of local economy and the growth of people's income [6]-[7]. Rural characteristic industries mainly refer to the agricultural and characteristic processing industries developed based on the characteristic advantages of the countryside [8]. These industries are marked by distinctive regional and local characteristics, covering a number of sub-divisions such as specialty horticulture, specialty food, specialty crafts, specialty culture, etc., showing a diversified development trend and possessing great development potential [9]-[11]. These industries not only have distinctive local characteristics, but also are deeply integrated with the local production and life style In addition, the rural specialty industries take unique resources as the cornerstone, position themselves in specific spatial scales, and develop closely around specific consumer demand, forming a highly efficient agricultural industrial system with significant competitive advantages that is different from other regions [12]-[15]. Through the role of market mechanism, these characteristic industries can effectively promote the transformation and development of regional economy, and transform the characteristic resource advantages into real economic advantages and competitive advantages [16]-[18]. Therefore, studying the optimization and development of rural characteristic industries is not only an important means to

accelerate the structural reform of the agricultural supply side, but also an important way to promote the growth of farmers' income, which is of great significance to stimulate the vitality of the countryside and enhance the kinetic energy of industrial revitalization [19]-[22].

In this paper, the research on the development path of rural characteristic industry is carried out, and the development strategy of forest recreation tourism industry, a characteristic industry of village A, is chosen as the research object for research design. Firstly, the advantages, disadvantages, opportunities and threats of the development of the characteristic forest recreation tourism industry in Village A are analyzed one by one through the SWOT analysis method. Then, the hierarchical analysis method (AHP) is used to construct the evaluation index system for the development of characteristic forest recreation tourism industry in Village A. Use SWOT-AHP analysis model to quantitatively analyze the development of characteristic forest recreation tourism industry in Village A. Calculate the weights and comprehensive intensity of the evaluation indexes of each layer, according to which calculate the center of gravity, strategic azimuth, and intensity of strategic coefficients of the development strategy of the characteristic forest recreation tourism industry of Village A, in order to construct the SWOT strategic coordinate system.

II. Research design

II. A. Purpose and significance of the study

II. A. 1) Purpose of the study

Through the research on the optimization and development path of rural characteristic industries, we aim to understand the actual situation of the optimization and development of rural characteristic industries, and analyze the advantages, disadvantages, opportunities, challenges and other influencing factors of the current optimization and development path of rural characteristic industries through the SWOT analysis method [23], and then combine the AHP analysis method with the quantitative and qualitative comprehensive research on the optimization and development path of rural characteristic industries on this basis [24], so that the proposed optimized development path of rural characteristic industry is more feasible and operable.

Firstly, this study analyzes the advantages, disadvantages, opportunities and challenges of the optimization and development path of rural characteristic industries in a more comprehensive and systematic way through SWOT analysis.

Second, using the SWOT-AHP analysis method, we explore the types of development strategies and strategic attitudes of the optimized development path of rural characteristic industries as well as the strategic direction of future development.

Thirdly, through the development strategy direction, it proposes effective paths for the optimization and development of rural characteristic industries to further promote the development of rural characteristic industries and realize rural revitalization.

II. A. 2) Significance of the study

(1) Theoretical significance

Through the establishment of SWOT-AHP quantitative analysis model to fully understand the real strengths and challenges currently available in the development of rural characteristic industries, in order to choose the most suitable development strategy from a large number of development strategies, which facilitates the rural characteristic industries to differentiate between the main and secondary in the development of rural revitalization and seize the main contradictions, and to better enhance the carrying out and popularization of the characteristic industries in the countryside, and at the same time, it provides an effective At the same time, it provides an effective analytical framework for rural characteristic industries and enriches the relevant theoretical research.

(2) Practical significance

Through the scientific analysis and summary of the optimization and development of rural characteristic industries, it provides scientific decision-making basis for the managers and decision-makers of the optimization and development of rural characteristic industries, and helps them to better formulate the development strategies and plans. The research results can guide the practical actions to promote the healthy development of rural characteristic industries, strengthen the construction of rural economy and culture, and enrich the life of rural people. By analyzing the SWOT factors of the optimized development path of rural characteristic industries and applying the SWOT-AHP method to determine the priority, it helps to rationally allocate resources and improve the efficiency of resource utilization. At the same time, it can be used for other regions or similar rural development projects to learn from the methods and results of this study and strengthen their own development planning and strategy formulation. Finally, the publicity and promotion of the optimized development path of rural characteristic industries will help to improve the level of rural development in China.

II. B.Research Subjects and Methods

II. B. 1) Objects of study

This paper takes the characteristic industry of village A--recreation tourism industry as an example, and takes the development path of recreation tourism industry of village A as the research object to carry out investigation and research, and analyzes the actual reality carried out in the recreation tourism industry of village A in detail, and applies the SWOT-AHP analysis method, and combs out from the aspects of advantages, disadvantages, opportunities and threats. By using SWOT-AHP analysis method, we sorted out the weights of sub-factors of recreation and tourism industry in Village A, calculated the path vector, and provided guidance direction for the development path of rural characteristic industry.

II. B. 2) Research methodology

(1) Literature analysis method

First of all, through the tutor, classmates, friends and the local university library, journal search and other academic websites to access a large number of literature and books about the development of rural characteristic industries, and its study, analysis and organization. Secondly, we studied and searched for the literature and videos related to SWOT-AHP analysis, sorted out the current research status in sports, and sorted out the basic construction of SWOT-AHP model. Finally, through combing the relevant literature, the important views, methods and conclusions of the existing research are analyzed in depth, and these contents are further integrated and summarized to provide a reliable theoretical support for the research design and conception of this paper.

(2) Expert Interview Method

According to the content of the study, communication and understanding of the relevant managers and economics experts in Village A are conducted through face-to-face interviews and telephone interviews. Through expert interviews, we gained a deep understanding of the advantages, disadvantages, opportunities and threats of the characteristic recreation and tourism industry of Village A, which provided an important source of information for the preliminary formulation of the SWOT factors for the development of the characteristic recreation and tourism industry of Village A in this study.

(3) Questionnaire survey method

A questionnaire on the current situation of the development of rural specialty industries was designed based on the review of literature. When setting up the questionnaire, 12 experts, mainly from the village committee of Village A, professors of economics in local universities, and personnel from the governmental financial department, were also invited to participate in the modification and supplementation of the questionnaire content by means of the electronic questionnaire and the paper questionnaire, as well as the later also participated in the screening of the SWOT factors and the importance scoring.

(4) Delphi method

The Delphi method can fully focus the opinions of many experts, brainstorming, with anonymity, feedback and statistical characteristics. The operational steps of using the Delphi method in this paper include: first, selecting and confirming the members of the expert group in a specific field. Second, the indicator screening questionnaire is provided to the experts, who propose modifications based on theoretical knowledge and practical experience, collate the first round of expert suggestions and produce the next round of expert questionnaires; subsequently, the indicator influencing factors are refined several times through multiple rounds of expert questionnaires until an expert consensus is reached. Finally, the final impact factor indicators are determined according to expert screening and opinions. Based on the research needs of this paper, a total of 10 experts in the field of rural specialty industry development are selected, mainly from experienced experts in the field of agricultural and rural development.

(5) SWOT-AHP analysis method

SWOT-AHP analysis is a multi-objective decision analysis method proposed by Satie in the 1970s [25], combining qualitative and quantitative, with systematic and hierarchical characteristics. In this study, a quantitative SWOT-AHP analysis model is constructed through SWOT-AHP analysis, and then the importance and priority of each factor are determined through calculation in order to find out the current strategic approach for the development of rural characteristic industries and provide directions for further proposing the optimization path for the development of rural characteristic industries.

III. SWOT analysis and AHP evaluation system construction for rural characteristic industries

III. A. SWOT Analysis of Rural Specialty Industries

This subsection provides a SWOT analysis of Village A's specialty industry (forest recreation and tourism industry).

III. A. 1) Strengths analysis

(1) Rich in historical and cultural resources: Village A has a long history and is one of the main birthplaces of Chinese culture, and its long history and culture is not only a treasure of traditional Chinese culture, but also creates favorable conditions for the development of forest recreation.

(2) Abundant natural resources: the area where Village A is located is rich in material resources and plant varieties, which lays a solid foundation for the development of forest recreation.

(3) Pleasant climate and environment: Village A is located in an area with four distinct seasons, mild climate, excellent air quality and clean water. The favorable climate and environmental conditions are suitable for the development of forest recreation.

(4) Variety of local specialties: The area where Village A is located is rich in local specialties, which is conducive to the establishment of forest food bases and the development of a series of agricultural experience activities, which will increase the sense of experience of tourists and improve economic benefits. In addition, as the local cuisine is not only rich in regional characteristics of fresh flavor, but also steeped in historical and cultural heritage, for the development of forest recreation products bring great advantages.

III. A. 2) Analysis of disadvantages

(1) Shortage of professional talents. At present, most of the local forest recreation practitioners come from the tourism industry, which can meet the basic needs of food, lodging, and play services, but can not meet the needs of the overall management of forest recreation and recreation, and there is no complete training system, and there is a lack of professional recreation service team.

(2) Insufficient marketing and publicity. Although the government has vigorously supported the development of forest recreation in recent years, due to the small scale, the promotion work has not been fully implemented, and the publicity effect of forest recreation has not reached the expected effect.

(3) Lack of supporting facilities: the area where Village A is located is a relatively late development of forest recreation, the resources and landscape attractions in the base are in the development stage, and the facilities dedicated to recreation and convalescence are not perfect, and the theme has not yet been developed into a clear, unique forest recreation products, resulting in the attraction of the tourists is not strong enough to meet the needs of tourists. Medical care and recreation is not well integrated, catering and accommodation in line with the concept of health care is very little.

(4) Insufficient industrial integration. At present, the local forest recreation is in the primary stage of development, has not yet formed a systematic industrial system, the local forest recreation to leisure and tourism, there is a trend towards the development of traditional tourism, not combined with its own characteristics and the local medical and health care industry, pension industry, green agriculture and other organic integration.

III. A. 3) Analysis of opportunities

(1) Increasing health demand. Along with the high incidence of chronic diseases and the aging of the population, forest recreation, as an emerging pension health industry, is able to meet people's growing health needs. At the same time, since the new coronavirus pneumonia epidemic, people attach great importance to health, with rest, health care, old age many functions of forest recreation is increasingly favored by the people, for the forest recreation has brought opportunities for development.

(2) Strong policy support. The State Council and the State Forestry and Grassland Administration and other ministries and commissions have issued a series of guidelines and policies to encourage and support the development of forest recreation, such as the Circular of the State Forestry and Grassland Administration on Vigorously Promoting the Development of Forest Experiencing and Forest Nutrition and Opinions on Promoting the Development of Forest Recreation Industry. The support of relevant policies is conducive to promoting the rapid development of forest recreation.

(3) Consumption concept change. The trend of upgrading consumption concepts has prompted the public's demand for tourism to gradually shift from pure sightseeing tourism to recreation tourism for leisure, convalescence and health care, and to pay more attention to quality in the process of tourism. At present, the quality of residents' consumption has been significantly improved, and the demand tends to be diversified and comprehensive, while the increasing pressure of life prompts people to desire to integrate into nature, soothe the body and mind, and promote the development of forest recreation is conducive to improving people's well-being and creating greater value.

III. A. 4) Threat analysis

(1) Ecological protection is arduous. The development of forest recreation relies on good forest resources, and in recent years, forest fire accidents have occurred frequently in the area where Village A is located, neglecting the

protection of forest resources. At the same time, along with the increase in the popularity of the base, the number of tourists will also increase accordingly, the base ecological protection will face greater difficulties, garbage, sewage improper treatment will have a serious impact on the ecological environment.

(2) Limited financial input. Forest recreation base supporting facilities construction, recreation product development, the introduction of talent and other aspects of the limited capital investment, social investment in the main body to improve the enthusiasm.

(3) Industry competition pressure. At present, the competition within the industry is becoming increasingly fierce, other regions rely on their own forest resource advantages, forest recreation industry is developing rapidly, has a wide range of popularity and mature business management system.A village in the region has the advantage of development, but it is always in the groping stage, forest recreation product development, planning and design, there is homogenization, there is no formation of the core of the recreation products and highlight the local characteristics, the lack of promotion and advertisement. There is a lack of promotion and advertising.

III. B. AHP evaluation system

Based on the above analysis, the evaluation index system of characteristic forest recreation industry in Village A is constructed as shown in Table 1.

Table 1: Evaluation index system of A village forest health industry

Target layer	Criterion layer	Index layer
A village forest health industry	Strength	Rich historical and cultural resources (S1)
		Rich natural resources (S2)
		Pleasant climate and environment (S3)
		Diverse local specialties (S4)
	Weakness	Professional shortage (W1)
		Lack of marketing publicity (W2)
		Lack of supporting facilities (W3)
		Inadequate industrial integration (W4)
	Opportunity	Increased health demand (O1)
		Strong policy support (O2)
		Consumption idea shift (O3)
	Threat	Arduous ecological protection (T1)
		Limit capital investment (T2)
		Industry competition pressure (T3)

IV. SWOT-AHP quantitative analysis

IV. A. Weights and consistency tests

IV. A. 1) Results of intra-group weighting and consistency tests for normative level indicators

The results of the weights and consistency test within the group of guideline layer indicators are shown in Table 2. According to Table 2, the weight of S advantage is 0.0757, the weight of W disadvantage is 0.2576, the weight of O opportunity is the largest, 0.5313, and the weight of T challenge is 0.1354. The CR value is 0.0625, which is less than 0.1 to satisfy the consistency test requirement.

Table 2: Criterion layer index group internal weights and consistency test results

	Strength	Weakness	Opportunity	Threat	Index weight	Consistency test result
Strength	0.0795	0.0712	0.1124	0.0399	0.0757	λmax=4.0756 CR=0.0625<0.1
Weakness	0.2968	0.2598	0.2694	0.2044	0.2576	
Opportunity	0.3783	0.5374	0.5507	0.6586	0.5313	
Threat	0.2454	0.1316	0.0675	0.0971	0.1354	

IV. A. 2) Results of intra-group weighting and consistency tests of indicators at the indicator level

The results of the weights and consistency test within the indicator groups of the indicator layer are shown in Table 3. According to Table 3, in group S, the weight of S1 is 0.1714, the weight of S2 is 0.2632, the weight of S3 is the largest, 0.3950, and the weight of S4 is 0.1704. The CR value is 0.0155, which is less than 0.1 and meets the requirement of consistency test. In group W, W1 has a weight of 0.1144, W2 has a weight of 0.2674, W3 has a

weight of 0.0709, and W4 has the largest weight of 0.5473. The CR value is 0.0137, which is less than 0.1 and meets the requirement of consistency test. In group O, O1 had a weight of 0.2581, O2 had the largest weight of 0.5985, and O3 had a weight of 0.1434. The CR value is 0.0153, which is less than 0.1 and meets the requirement of consistency test. In group T, T1 had the highest weight of 0.4562, T2 had a weight of 0.4407, and T3 had a weight of 0.1031. The CR value is 0.0147, which is less than 0.1 and meets the requirement of consistency test.

Table 3: Index layer index group internal weights and consistency test results

S	S1	S2	S3	S4	Index weight	Consistency test result
S1	0.1563	0.1896	0.1642	0.1754	0.1714	λmax=4.0756 CR=0.0155<0.1
S2	0.2743	0.2578	0.3074	0.2135	0.2632	
S3	0.3286	0.4182	0.4168	0.4163	0.3950	
S4	0.2408	0.1344	0.1116	0.1948	0.1704	
W	W1	W2	W3	W4	Index weight	Consistency test result
W1	0.1152	0.0866	0.1426	0.1134	0.1144	λmax=3.1154 CR=0.0137<0.1
W2	0.2946	0.2457	0.3028	0.2265	0.2674	
W3	0.0678	0.0635	0.0874	0.0648	0.0709	
W4	0.5224	0.6042	0.4672	0.5953	0.5473	
O	O1	O2	O3		Index weight	Consistency test result
O1	0.1426	0.1274	0.5042		0.2581	λmax=4.0278 CR=0.0153<0.1
O2	0.8058	0.6264	0.3632		0.5985	
O3	0.0516	0.2462	0.1326		0.1434	
T	T1	T2	T3		Index weight	Consistency test result
T1	0.4578	0.4426	0.4682		0.4562	λmax=4.0368 CR=0.0147<0.1
T2	0.4578	0.4426	0.4216		0.4407	
T3	0.0844	0.1148	0.1102		0.1031	

IV. B. Calculation of weights and ranking of combinations of indicators at each level

Based on the weight calculation method in section 4.1, 10 experts in related fields are invited to determine the weight of indicators according to the assignment data of the experts and the previous calculation method, and all of them pass the consistency test. The total weight ranking of the factors on the decision-making objectives in the program layer is shown in Table 4, and the weight indicators of the impact of each factor on the forest recreation tourism industry in Village A are, in descending order, as follows: increase in the demand for health (O1) > strong policy support (O2) > change in the concept of consumption (O3) > pressure of competition in the industry (T3) > arduous ecological protection (T1) > rich natural resources (S2) > insufficient marketing and publicity (W2)> Pleasant climate environment (S3)> Limited capital investment (T2)> Shortage of professionals (W1)> Lack of supporting facilities (W3)> Abundant historical and cultural resources (S1)> Insufficient industrial integration (W4)> Diverse local specialties (S4).

Table 4: Total weight rank

Group	Weight	Factor	Weight	Composite weight	Intergroup rank	Overall rank
Strength	0.2568	S1	0.2264	0.0581	3	12
		S2	0.2879	0.0739	1	6
		S3	0.2683	0.0689	2	8
		S4	0.2174	0.0558	4	14
Weakness	0.2574	W1	0.2645	0.0681	2	10
		W2	0.2819	0.0726	1	7
		W3	0.2322	0.0598	3	11
		W4	0.2214	0.0570	4	13
Opportunity	0.2626	O1	0.3645	0.0957	1	1
		O2	0.3246	0.0853	2	2
		O3	0.3109	0.0817	3	3
Threat	0.2232	T1	0.3384	0.0755	2	5
		T2	0.3084	0.0688	3	9
		T3	0.3532	0.0788	1	4

IV. C. Strategy Quadrilateral Diagram Construction and Path Analysis

IV. C. 1) Calculation of the combined intensity of the indicators at each level of SWOT

The calculation of the comprehensive intensity of each indicator level of SWOT is to obtain the actual intensity of each indicator level, in order to obtain the actual intensity, this study scores each factor by issuing questionnaires to 10 relevant experts again, and the estimated intensity of each factor is the actual level, which is expressed by the score value of 0-5, the advantages and opportunities are expressed by the positive value, and the disadvantages and threats take the value of the negative value, and the higher the absolute value indicates that the intensity is greater. The actual intensity of each indicator is the average of the scores scored by these 10 experts, and finally the comprehensive intensity is obtained by multiplying the comprehensive weight of each level by the actual intensity. The results of the comprehensive intensity and ranking of the evaluation indicators of each element are shown in Table 5, and the ranking of the comprehensive intensity of each indicator in Table 5 shows that the ranking of the influence degree of the development path of the characteristic forest recreation tourism industry in Village A is calculated.

The top six rankings are: abundant natural resources (S2), increasing health demand (O1), pleasant climate environment (S3), strong policy support (O2), changing consumer attitudes (O3), and competitive pressure in the industry (T3).

Table 5: The comprehensive strength and ranking of each factor evaluation index

SWOT	Evaluation index	Composite weight	Actual strength	Composite strength	Rank
Strength	S1	0.0581	3	0.1743	10
	S2	0.0739	4	0.2956	1
	S3	0.0689	4	0.2756	3
	S4	0.0558	2	0.1116	14
Weakness	W1	0.0681	-3	-0.2043	9
	W2	0.0726	-2	-0.1452	12
	W3	0.0598	-2	-0.1196	13
	W4	0.0570	-3	-0.1710	11
Opportunity	O1	0.0957	3	0.2871	2
	O2	0.0853	3	0.2559	4
	O3	0.0817	3	0.2451	5
Threat	T1	0.0755	-3	-0.2265	7
	T2	0.0688	-3	-0.2064	8
	T3	0.0788	-4	-0.2364	6

IV. C. 2) Development of a strategic coordinate system

(1) Calculation of total intensity of SWOT intergroup matrix

In order to establish the strategic coordinate system for the development of the characteristic forest recreation tourism industry in Village A, the total intensity of the SWOT intergroup matrix needs to be calculated. The total intensity of SWOT intergroup matrix is calculated by adding up the comprehensive intensity of each secondary index, which can get the total intensity of advantage S, disadvantage W, opportunity O and threat T. The total intensity of SWOT intergroup matrix is calculated as follows. The details are as follows:

$$Total\ strength\ of\ Strength = 0.1743 + 0.2956 + 0.2756 + 0.1116 = 0.8571 \quad (1)$$

$$Total\ strength\ of\ Weakness = (-0.2043) + (-0.1452) + (-0.1196) + (-0.1710) = -0.6401 \quad (2)$$

$$Total\ strength\ of\ Opportunity = 0.2871 + 0.2559 + 0.2451 = 0.7881 \quad (3)$$

$$Total\ strength\ of\ Threat = (-0.2265) + (-0.2064) + (-0.2364) = -0.6693 \quad (4)$$

The establishment of the strategic quadrilateral is an important basis for formulating the development of the characteristic forest recreation tourism industry in Village A. The type of strategy is selected according to the quadrant in which the coordinates of the falling point in the quadrilateral are located. The strategic azimuth is determined by the center of gravity P of the strategic quadrilateral, and the quadrant where the point P is located is the prioritized development strategy. The formula for calculating the point P is:

$$P(X,Y) = (\frac{\sum_{i=1}^{2} X_i}{4}, \frac{\sum_{i=1}^{2} Y_i}{4}) \quad (5)$$

X value = 0.8571 + 0 + (-0.6401) + 0 = 0.2170 and Y value = 0 + 0.7881 + 0 + (-0.6693) = 0.1188.

It can be seen that the center of gravity coordinates P(X, Y) = (0.2170/4, 0.1188/4) = (0.0543, 0.0297), thus yielding P(0.0543, 0.0297).

After deriving the coordinates of the center of gravity based on the calculation, the strategic azimuth angle θ can be calculated, using the inverse trigonometric function to derive $\tan\theta$ = Y/X = arctan (0.0297/0.0543) $\approx$ 54.70°, which is in the first quadrant of the strength type, i.e., the region of (0, π/4).

(2) Coefficient of strategic strength

After deriving the azimuth angle θ of the strategy type through the above, using the derived data we can calculate the strategic intensity coefficient ρ. The development strategy of the characteristic forest recreation tourism industry in village A:

$$Positive\ strength: U = 0.8571 * 0.7881 = 0.6755 \quad (6)$$

$$Negative\ strength: V = (-0.6401) * (-0.6693) = 0.4284 \quad (7)$$

After calculating the intensity values of strategic positive intensity and strategic negative intensity, the strategic intensity coefficient of the development of the characteristic forest recreation and tourism industry in Village A can be comprehensively calculated:

$$Strategic\ coefficient\ strength: \rho = U / U + V = 0.6755 / (0.6755 + 0.4284) = 0.6119 \quad (8)$$

The calculation of the strategy strength coefficient yields ρ = 0.6119, which reflects the implementation strength of the strategy type, and the calculation result is asserted in accordance with the range of values [0, 1], and the size of the value of ρ reflects the operational strength of the strategy type ρ ∈ [0, 1], so that the pioneering type of strategy can be adopted.

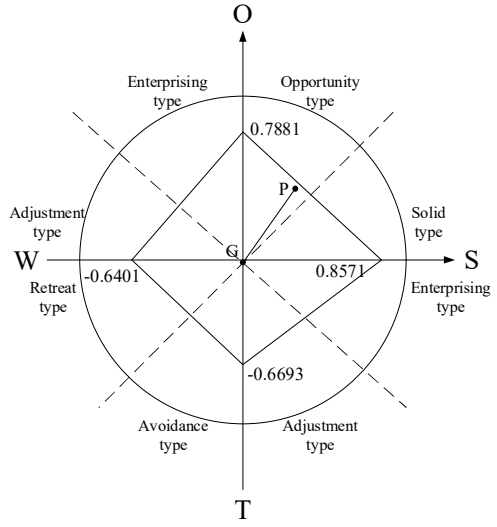

Figure 1: A village feature forest health tourism industry development strategic coordinate system

(3) Constructing the SWOT strategy quadrilateral

By synthesizing the above, through in-depth analysis of the development of the characteristic forest recreation tourism industry in Village A, calculating the intensity value of the advantage group, the intensity value of the disadvantage group, the intensity value of the opportunity group, and the intensity value of the threat group and creating a four-dimensional coordinate system, marking the four points of S, W, O, and T on the coordinate axes, and connecting the four points together, the overall strategic quadrilateral for the development of the characteristic forest recreation tourism industry in Village A can be obtained,. By calculating the coordinates of the center of gravity P of the strategic quadrilateral according to the above, marking the point P on the coordinate axis, and finally using the strategic azimuth angle θ = 54.70° and the strategic intensity coefficient ρ = 0.6119, that is, the positioning

coordinates (θ , ρ) = (54.70°, 0.6119). The data fall point of the strategic azimuth θ is located between S and O, G is the origin of the coordinate axis, and the strategic coordinate system for the development of the characteristic forest recreation tourism industry in village A is shown in Figure 1. Among them, between S and O is a pioneering strategic area, between W and O is a striving strategic area, between W and T is a conservative strategic area, and between S and T is a resisting strategic area.

According to the calculation of the relevant analysis results and the construction of the A village characteristics of the forest recreation tourism industry development strategy coordinate system, the strategic area is an opportunity to open up the strategic area, strategic azimuth angle θ = 54.70 °, that is, the positioning coordinates of the P point (θ, ρ) = (54.70 °, 0.6119) belongs to the scope of the opportunity-type area, the strategic intensity coefficient ρ = 0.6119, greater than 0.5, can be adopted as an opportunity-type strategic area. The strategy of opportunity exploitation type can be adopted.

V. Conclusion

In the context of rural revitalization of rural characteristic industry development, this paper chooses Village A as the research site, takes the development strategy of the village's characteristic industry - forest recreation tourism industry as the research object, and quantitatively analyzes it through the SWOT-AHP analysis model.

In the evaluation index system of forest recreation tourism industry in Village A constructed in this paper, the weights of the guideline layer from high to low are opportunity (0.2626), disadvantage (0.2574), advantage (0.2568), and threat (0.2232).The top 6 indicators of the comprehensive intensity of the development path of the featured forest recreation tourism industry in Village A are natural resource abundance (0.2956), health demand increase (0.2871), pleasant climate environment (0.2756), strong policy support (0.2559), change of consumption concept (0.2451), and high pressure of competition in the industry (-0.2364).The center of gravity of the strategic quadrilateral for the development of the characteristic forest recreation tourism industry in village A, point P (54.70°, 0.6119), is located in the scope of the opportunity-type area, and the coefficient of the intensity of the strategy ρ=0.6119>0.5, and the forest recreation tourism industry of Village A should adopt an opportunity-exploiting development strategy.

References

[1] Yan, Z., Peng, L., & Wu, X. (2023). Evaluation System for Agricultural and Rural Modernization in China. Agriculture, 13(10), 1930.

[2] Huang, B. W., & Yang, Y. C. (2018). Evaluation indicators and development strategies of agricultural revitalization for rural rejuvenation. Journal of Reviews on Global Economics, 7, 269-279.

[3] Yang, J. (2023). Analysis of agricultural economic development opportunities and innovative development paths in the context of rural revitalization. International Journal of Frontiers in Sociology, 5(15).

[4] Xiang, H., Zhai, B., & Yang, Y. (2024). The realization logic of rural revitalization: Coupled coordination analysis of development and governance. PloS one, 19(6), e0305593.

[5] Wang, H., & Zhuo, Y. (2018). The necessary way for the development of China's rural areas in the new era-rural revitalization strategy. Open Journal of Social Sciences, 6(6), 97-106.

[6] Yu, Y., Meng, L., & Zhong, P. (2019). Development of Rural Characteristic Industries under the Background of Beautiful Countryside——A case study of Wanan County of Jiangxi Province. Asian Agricultural Research, 11(2), 44-46.

[7] Yin, C., & Liu, P. (2025). Research on Optimization of Rural Characteristic Industry Development Path Based on Multi-Objective Planning in the Context of Rural Revitalization. J. COMBIN. MATH. COMBIN. COMPUT, 127, 8249-8264.

[8] Ren, Y., Xin, Z., & Yuancheng, L. (2021). The differentiation characteristics of regional type of agricultural specialized villages and comprehensive enlightenment to the revitalization of rural industry: A case study of Guangdong Province. Economic geography, 41(8), 34-44.

[9] Fu, X., Zhang, P., & Zhang, Z. (2022). Types, Distribution Characteristics, and Development Strategies of Rural Characteristic Industry in Xi'an Metropolitan Area. Journal of Geographical Research/Mağallaẗ Al-buḥūṯ Al-Ǧuġrāfiyyaẗ, 15(4).

[10] Cui, Y., & Luo, J. (2022). The Development of Rural Non-characteristic Industries Helps Rural Revitalization. Scientific Journal of Economics and Management Research Volume, 4(5).

[11] Zhang, L., Sun, Y., Li, C., & Li, B. (2024). Promoting sustainable development in urban–rural areas: a new approach for evaluating the policies of characteristic towns in China. Buildings, 14(4), 1085.

[12] Wang, R., Shi, J., Hao, D., & Liu, W. (2023). Spatial–temporal characteristics and driving mechanisms of rural industrial integration in China. Agriculture, 13(4), 747.

[13] Zhao, Y., Li, J., Liu, K., & Shang, C. (2024). Impact of urban-rural development and its industrial elements on regional economic growth: An analysis based on provincial panel data in China. Heliyon, 10(16).

[14] Haiyirete, X., Xu, Q., Wang, J., Liu, X., & Zeng, K. (2024). Comprehensive Evaluation of the Development Level of China's Characteristic Towns under the Perspective of an Urban–Rural Integration Development Strategy. Land, 13(7), 1069.

[15] Deng, X., Wang, G., Song, W., Chen, M., Liu, Y., Sun, Z., ... & Shi, W. (2022). An analytical framework on utilizing natural resources and promoting urban–rural development for increasing farmers' income through industrial development in rural China. Frontiers in Environmental Science, 10, 865883.

[16] Peng, H., Yang, F., & Yue, O. (2024). How Rural Industry Revitalization Affects Farmers' Incomes in China. Sustainability, 16(21), 9182.

[17] Tian, Y., Liu, Q., Ye, Y., Zhang, Z., & Khanal, R. (2023). How the Rural Digital Economy Drives Rural Industrial Revitalization—Case Study of China's 30 Provinces. Sustainability, 15(8), 6923.
[18] Zheng, S., Ling, W., Zhou, R., & Zheng, J. (2025). Rural Industrial Revitalization and the Common Prosperity of Rural Inhabitants in China: Exploring Synergies Between Efficient Governance and Effective Markets. Sustainability, 17(8), 3298.
[19] Hu, Q., Zhang, T., Jiao, Z., Duan, Y., Dewancker, B. J., & Gao, W. (2022). The impact of fishery industrial transformation on rural revitalization at village level: A case study of a Chinese fishing village. Ocean & coastal management, 227, 106277.
[20] Xiaomeng, F. U., Pei, Z. H. A. N. G., Mengjiao, Z. H. A. N. G., & Zhijun, L. I. (2023). Performance Evaluation of Rural Characteristic Industry Development in Metropolitan Areas Based on the Topsis Method—Taking the Xi'an Metropolitan Area as an Example. Journal of Resources and Ecology, 14(5), 1044-1052.
[21] Li, Z., Yan, H., & Liu, X. (2023). Evaluation of China's rural industrial integration development level, regional differences, and development direction. Sustainability, 15(3), 2479.
[22] Lu, X. (2021). Literature review on rural revitalization industry revitalization. Insight-Information, 3(1).
[23] Vedant Singh,Harbansh Singh & Tej Singh. (2025). Hydropower-driven electric vehicle infrastructure in the Himalayan region: Integration dynamics and strategic SWOT analysis for sustainable transportation. Energy for Sustainable Development,87,101732-101732.
[24] Mattas Konstadinos,Georgiou Pantazis,Lazaridou C. Dimitra,Mattas Christos,Nastis A. Stefanos,Seddaiu Giovanna... & Ramson Adombilla. (2025). Assessing sustainable water management in a resource-scarce environment (Ghana, West Africa) via the Analytic Hierarchy Process. Agricultural Water Management,313,109497-109497.
[25] Yi Qing,Liu Zuhong,Liu Xutao,Wang Yidan & Li Rongzhi. (2024). The development strategies of amateur table tennis matches in China based on the SWOT-AHP model: a case study in Shanghai. Scientific Reports,14(1),12060-12060.