

An analysis of the critical factors that affect the competitive advantages and developmental strategies of leisure farms in Taiwan

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Abstract: Leisure farms in Taiwan are currently undergoing a fast development. The utilization of distinctive strategies to create successful operational competitiveness is becoming the guiding policy of enterprises for their future development. This study adopts the value chain perspective to develop criteria for different dimensions and to develop a strategic hierarchical structure by using the fuzzy Delphi method. Through the FANP (Fuzzy Analytic Network Process) method, this study discovers the critical factors influencing the competitive advantages of leisure farms in Taiwan: (1) the uniqueness of the landscape and ecological resources, (2) the richness of agricultural resources, (3) the attractiveness of the landscape and ecological resources, (4) service quality, (5) the convenience of the accommodation, (6) the provision of education and guiding services, and the like. Finally, according to the research results of the study, the authors make suggestions on the corresponding developmental strategies of leisure farms, including (1) creating the characteristics of a leisure farm through the development and utilization of the farm's internal and surrounding environmental resources and (2) perceiving the tourists' needs and improving the service quality. With the suggestions made and the reference data concluded in this study, the authors expect to enhance effectively the current competitive advantages of leisure farms.

Key words: leisure farms, competitive advantages, critical factors, developmental strategies

In Taiwan, the land business scale for farmers has been small, and it has followed the type of small peasant farming style. As the wage level rises in Taiwan, the agricultural operation costs are increasing. The declining agricultural output and population have resulted in management predicaments for the Taiwan's agricultural business. In early 2002, Taiwan officially became a WTO member; Taiwan's agricultural industry encountered a more difficult situation, and became bound to the agricultural structural transformation and upgrading. Without transformation, it would be extremely hard for Taiwan to confront the future international competition. In recent years, the Taiwanese Government has actively provided counselling services to farmers and expects to promote a vigorous development of leisure farming in Taiwan and to combine agriculture with the leisure industry – the ultimate goal is to lead the overall transformation of the agriculture industry.

According to the definition of the Taiwan's "Agricultural Development Act," "recreational agriculture means the use of the pastoral landscape, ecological and environmental resources combined with forestry, fishing and animal husbandry, agricultural operations, and rural culture, which are the spontaneous rural

resources, in order to provide counselling services to farmers for transforming their farming business into a leisure and tourism business. The aim is to create employment opportunities and to increase the income level of farmers." Based on this definition, we can see that leisure agriculture is composed of features from the agriculture, manufacturing, and services industries to provide consumers with agricultural products, rural life, and its relevant life experience. In other words, a leisure farm in the form of a service process and operation provides tangible and intangible agriculture-related services to the consumer. Currently, leisure farming in Taiwan can be broadly classified into the following main business categories: tourist farms, farms for ecological pedagogy, citizens' farms, leisure farms, and the like. Farms managed in the styles mentioned above usually aim to satisfy a variety of customer needs with sedentary or dynamic activities through the settlement of the particular natural spaces, natural landscapes, agricultural resources, and so on. Therefore, speeding up the transformation of leisure farms in Taiwan into commercialization and leisure and ecological styles to ensure that Taiwan's agriculture can be developed sustainably has become an area towards which the relevant people, depart-

ments, and competent authorities need to direct their efforts in the future (Lee et al. 2006).

To help transforming leisure farms into legal organizations, the Taiwanese Government in 2006 again revised the "Regulation for Guidance and Management of Recreational Agriculture". At present, various types of public and private large-scale leisure farms are gradually being formed. These farms provide the services of accommodation, food, education, and other intellectual journeys for tourists. After the announcement and implementation of the "Regulations for the Management of Home Stay Facilities" in 2001, leisure farms were given a greater flexibility and a higher level of economic benefits – as they can undergo a multi-faceted development and thus create more business space for development. However, the area of the transformed traditional agriculture farms mostly covers less than three hectares, and their entertainment facilities are inadequate (Chao 2006). Thus, to meet the tourists' needs to experience agricultural life, the farm administrators have to consider how to provide a better service quality to attract visitors and to establish a good reputation in the terms of the word of mouth (WOM). In addition, under the premise of ecological conservation, the question of how these leisure farms can create higher economic benefits after the transformation is indeed an important issue.

In fact, the Taiwan's leisure farms, from the hardware to software planning, and from the perspective of the construction of the small sites and the large-scale landscape, are still suffering from the limitation sourcing from the traditional agriculture in terms of creative ideas. In addition, following the implementation of two-day weekends, people tend to take part in more leisure pursuits. Domestic tourism is becoming popular in Taiwan, and it is highly promoting the growth potential of the leisure farm industry. Therefore, discovering the critical competitive factors for Taiwanese leisure farms and developing coping and developing strategies, as the reference data of businessmen who are currently or expect to be engaged in the leisure farm business, have become a significant issue. The information acquired from this study should be able to help the administrators of leisure farms to attract tourists and to create profitability.

Daniel (1961) indicated that most industries have three to six success factors. If a company is able to perform well in terms of these critical factors, it can be successful. In other words, the key factor is to enhance the success of the enterprise, and to ensure that the company performs particularly well on these tasks. Afterwards, scholars continuously proposed similar concepts, and applied these concepts to the fields of

management and negotiation and the management decision-making theory within the economic system of the country. As for the organizational theory of dynamic systems, scholars suggest that the critical factor is also the largest resource within an organization (Commons 1974; Barnard and Nix 1976; Tillett 1989). The critical factor consists of the characteristics, conditions, or variables of an industry that are associated with the product attributes, assets, competitiveness, and market access, and must be closely linked to the profitability of the firm. Besides, the critical factor is also one approach to achieving the strategic advantages of the firm; if its managers can continuously and appropriately maintain and manage these conditions, the company's competitiveness in its particular industry can be significantly increased (Leidecker and Bruno 1984; Hofer and Schendel 1985; Ohmae 1991; Aaker 2009; Thompson et al. 2010).

According to the literature indicated above, the critical factors of an industry are the prioritized elements that need to be taken into account – as the critical factors are also the important perceived variables of the management process and the source of competitive advantages. The factors influencing leisure farms' competitive advantages are from different aspects and levels. By the way of a hierarchical structure and framework, a variety of factors can be summarized, clarified, and simplified, which facilitate and offer reference for decision making. Individuals inevitably tend to view things in subjective ways when expressing their points of views. Besides, decision problems that have multiple attributes and levels are very complicated, and their relevant factors are interactively connected and affected (Saaty 2006). This study uses the Delphi and FANP analytical methods, which utilize the fuzzy theory, to deal with the ambiguity issue arising from the process of measurement and judgment of the standards, and to improve the accuracy of the research results.

In short, this study draws samples from the legal leisure farms rated as excellent by the government, and based on the perspective of the value chain and the analytical methods of the fuzzy Delphi analysis and the fuzzy analytic network process (FANP) to integrate opinions from the academics and industry experts for the development of leisure farms. The aim of this study is to extract the critical factors that affect the development of leisure farms in Taiwan, to advice on the corresponding strategies, and provide reference data for the administrators and competent authorities of leisure farms. The authors expect to enhance the competitive advantages of leisure farms, and to promote Taiwan's sustainable competitiveness and the development of leisure agriculture.

RESEARCH DESIGN

The development of the measurement constructs

Porter (1980) had the notion that competitive advantage is generated through strategic planning and creates superior conditions in sustainable competitive advantage. To create competitive advantages, enterprises need to substantially create sustainable competitive advantage (Aaker 1984). Sustainable competitive advantage (SCA) has the following three characteristics: (1) SCA covers the critical factors of the industry; (2) an enterprise has a significantly different SCA from its competitors; (3) an enterprise's SCA can successfully respond to environmental changes and resist the competitors' actions. Porter (1985) went a step further by using the concept of a "value chain" in his book *Competitive Advantage* to analyze and evaluate the basic source of competitive advantage. The total value, which is presented by the value chain, is composed of value activities and profits. The so-called enterprise value activities are substantially the various types of physical and technical specific activities, which are also the bases for an enterprise to create valuable products for corporate customers. Porter (1985) indicated that value activities, which are made distinctive based on the value chain, can be modified in accordance with different characteristics of the industry. The value chains in the service and manufacturing sectors are slightly different. That is because the main source of profitability for the service industry comes from the enterprises' provision of their core products or services to the end-users and thus the generation of value activities. Leisure farm administrators' provision of tourism products or services in tourist destinations or travel agents directly or indirectly delivering products or services to the hands of customers must all be included in the analysis of the value activities. Therefore, the value chain can be used as the analytical tool to explore the value activities of the leisure farm industry.

According to the literature review above, this study uses the value chain as the basis to introduce the characteristics of leisure agriculture and to explore the value chain that is suitable for leisure farms, and takes a step further to develop constructs for the measurement of the critical factors that influence leisure farms in Taiwan. The value chain of leisure farms is described in the following.

In relation to the primary activities, owing to the fact that leisure farms' main product is leisure service, their main activity is slightly different from the original leisure activities. The main difference results

from the natural resources, farms, and local features that attract tourists. Leisure farm activities involve almost no external logistics issues. Therefore, their output in the rear service stage is not obvious. The material purchasing and the rear service stage are related to the material handling. The major materials of leisure farms are the natural environment, local culture, and the like. For this reason, this study modifies this measurement construct into local resources. The production stage is related to the transformation of the raw materials into finished goods, and the finished goods of leisure farms are their attendant service-provision activities to visitors – the situation is similar to the concept of an after-sales service. Hence, this research combines both the production and the after-sales service. The marketing and sales stage mainly concerns delivering the product to customers, in which "customers" refers to the leisure farm tourists. Therefore, this study modifies this construct into marketing activities. The after-sales stage mainly concerns increasing or maintaining the product's quality, for which leisure farms need to carry out their programs of education and explanation, or the service of accommodation. Thus, this study modifies this construct into the services of the farm.

Regarding the supporting activities, during the process of the formation of tourism products, the proprietor of a leisure farm mainly focuses on the natural resources and the trip planning for visitors, instead of other factors such as the purchase of production elements. Hence, the procurement activities in leisure farms are less obvious. Leisure farms require the infrastructure and management to support the entire value chain system – though the main focus is the infrastructure of recreation, maintenance, and management of the farm and other local resources. As for technology development, leisure farms try to develop farm-related leisure products and activities, and to emphasize the importance of the developmental potential of the farm. In relation to human resource management, leisure farms need to have professionals who are talented in the trip planning, the educational narration, the protection of the natural environment, and so on (Lee et al. 2011).

Based on the literature review results described in the above sections, this study develops a value chain that is suitable for leisure farms, in which the primary activities include the value activities sourcing from the local resources, marketing activities, and farm services, etc. and the supportive activities include the value activities sourcing from the infrastructure and management, the product or technology development, and the human resource management. Based on these concepts, the study further extensively develops the measurement dimensions of the critical factors influ-

encing the competitive advantage of leisure farms in Taiwan, which represent local resources, marketing activities, farm services, infrastructure and management, product or technological research and development, and human resources management, respectively. Six dimensions are developed by this study in total. The six dimensions are the bases for the development of the initial hierarchical structure described in the next section, which in turn is directed to developing the “critical factors influencing the competitive advantage of leisure farms in Taiwan” as the ultimate goal. The authors expect to enhance the competitive advantage of leisure farms and to promote the sustainable operation and development of leisure agriculture in Taiwan.

The development of a hierarchical structure

The literature indicates that before the establishment of a hierarchical structure, all the issues and problems have to be confirmed and solved, including all the possible factors that may affect the problem and its scope; the generation of the assessment criteria helps simplify the problem, to establish a hierarchical structure, and to achieve the levels of consistency – by using the Delphi or literature review methods, which consequently facilitate reasonable and effective pairwise comparisons. Therefore, combined with the literature review described in the above section, this study utilizes the Porter’s (1985) value chain perspective regarding competitive advantages to form the six major dimensions of this study (see the last section) and to explore in more depth the critical factors and developmental strategies influencing the development of the competitive advantages for leisure farms in Taiwan (Crouch and Ritchie 1999; Mihalic 2000; Ritchie and Crouch 2003; Hawkins 2004; Wei and Wall 2005; Chao 2006; Getz and Brown 2006; Weaver and Lawton 2007; Cheng and Lin 2008; Lee and Hsu 2008; Lee and Lin 2010; Lee et al. 2011). By matching the characteristics of the Taiwan’s leisure farm industry and carefully selecting and developing the criteria for evaluation, this study establishes the initial hierarchical structure as the base for the criteria for the evaluation and development of a questionnaire, which is designed according to the Delphi method, in order to facilitate conducting of the empirical studies.

The framework of this study is constructed based on the research goal of this paper – to discover the critical factors influencing the competitive advantages of leisure farms in Taiwan – then sequentially proceeds in accordance with the major objective, the second objective, and the items for assessment, the three layers. The process is able to demonstrate

substantially the theoretical characteristics of the value chain developed by Porter (1985). In order to achieve consistency of the levels and to make reasonable and effective pairwise comparisons, Saaty (1980) suggested that the number of elements in each level should be fewer than seven. This becomes one criterion of this study: the number of elements in each level is in total fewer than seven (Figure 1).

The questionnaire design and sample objects

The first stage (phase I) of this study is to design the Delphi experts’ questionnaire, which is based on the initial hierarchical structure. The main purpose is to assess the appropriateness and importance of different measurement criteria. The content of the fuzzy Delphi questionnaire consists of “respondents’ basic information,” “instructions for filling out the questionnaire,” and the content of the questionnaire: the three major parts. In the questionnaire, the evaluation of the experts is divided into 10 grades (levels); higher scores represent a greater importance. In addition to the scopes pre-arranged to indicate the level of importance to the respondents, each evaluative item of the questionnaire provides an open space for the experts to write down any of their valuable experiences and judgments (opinions), so that they can actively provide better strategic factors and indicators, and fill in integer scores for various strategies’ factors and indicators.

In phase II, according to the research result of phase I, the authors screen the factors with high importance – as indicated by the experts’ consensus, and develop the phase II FANP questionnaire. The composition of the questionnaire includes: “respondents’ basic information,” “instructions for filling out the questionnaire,” and the content of the questionnaire. The content of the questionnaire can be divided into: (1) sorting of the importance with regard to the criteria for assessment and (2) the paired comparison of the importance with regard to the criteria for assessment, and the like. The second part (the paired comparison action) is presented by the way of a 1- to 9-point scale. Then, the experts can fill in the questionnaire using the pairwise comparison method.

In terms of sample objects, this study draws samples from the fields of the leisure agriculture industry, government, and academics. The respondents from the leisure agriculture industry are the proprietors of leisure farms that are rated and identified by the government as excellent; the respondents from the government are senior workers who are in charge of the supervision of the leisure farm businesses; and the academic respondents are researchers and professors

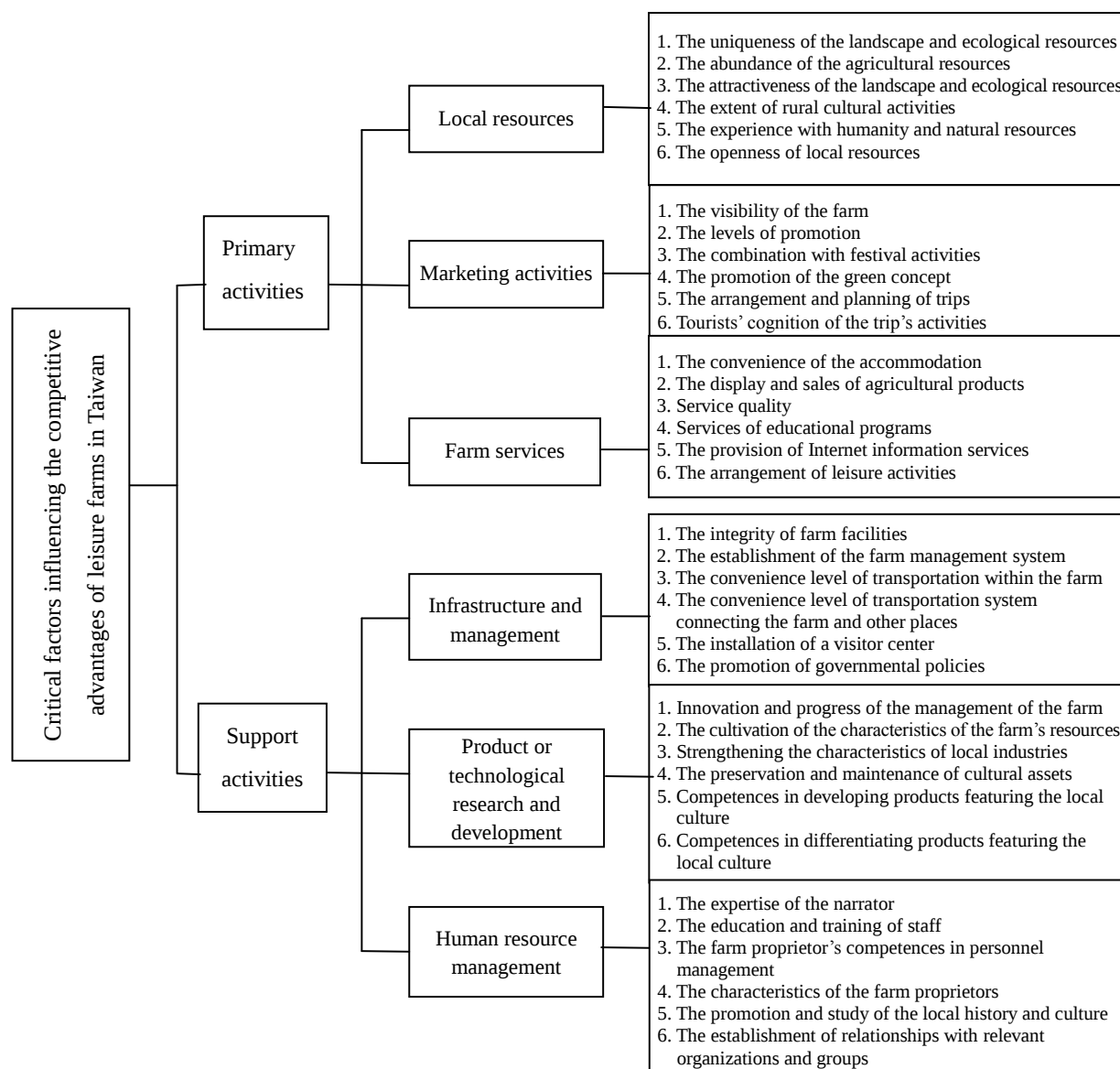


Figure 1. The initial hierarchical structure of “critical factors influencing the competitive advantages of leisure farms in Taiwan”

Note: The data for building on this hierarchical structure are collected and modified from the literature

working in universities and engaging in research on or teaching the management of leisure agriculture and other related courses. Regarding the number of respondents, Robbins (1994) pointed out that it is better to have decision-making groups composed of 5 to 7 experts. In order to ensure the accuracy and objectivity of the dimensions, the authors decided to collect 7 copies of valid questionnaires from each field, respectively. According to these principles, using the non-probability sampling method (the judgment of sampling), the authors distributed 24 copies of the fuzzy Delphi expert questionnaire, and received 21 valid questionnaires. Phase II is also based on the same judgment of sampling; the authors distributed 25 copies of the fuzzy Delphi expert questionnaire,

and received 21 valid questionnaires. At the same time, the questionnaires' contents provided instructions and examples to help the respondents to complete them.

DATA ANALYSIS

Using the fuzzy Delphi method to select the assessment criteria in accordance with the consensus of the experts' opinions

Fuzzy Delphi method

The so-called fuzzy Delphi method introduces the concept of fuzzy theory into the Delphi method, which

Table 1. The analytical results of the Delphi survey in Phase I

Dimension	Assessment criteria	Double triangular fuzzy numbers in terms of the most conservative cognitive value			Double triangular fuzzy numbers in terms of the most optimistic cognitive value			Highest possible geometric mean value	F^i
Local resources	Uniqueness of the landscape and ecological resources	5	6.3	8	9	9.8	10	8.6	8.1
	Abundance of the agricultural resources	5	6.1	8	8	9.3	10	8.1	7.7
	Attractiveness of the landscape and ecological resources	5	6.5	8	9	9.8	10	8.6	8.2
	Extent of rural cultural activities	4	5.1	8	8	8.7	10	7.5	6.9
	Experience with humanity and natural resources	3	5.3	8	7	8.8	10	7.4	7.4
	Openness of local resources	3	4.9	8	5	8.1	10	6.8	6.5
Marketing activities	Visibility of the farm	3	5.7	8	8	9.2	10	8.0	7.5
	Levels of promotion	4	5.3	8	7	9.1	10	7.9	7.4
	Combination with festival activities	4	5.2	7	7	8.9	10	7.6	7.1
	Promotion of the green concept	3	5.0	8	7	8.9	10	7.3	7.4
	Arrangement and planning of trips	3	5.9	8	7	9.0	10	7.8	7.5
	Tourists' cognition of the trip's activities	3	5.2	8	7	8.7	10	7.6	7.4
Farm services	Convenience of the accommodation	5	6.3	8	8	9.0	10	7.9	7.7
	Display and sales of agricultural products	3	5.3	7	6	8.6	10	7.2	6.6
	Service quality	5	6.9	9	9	9.7	10	8.7	8.3
	Services of educational programs	5	6.9	10	9	9.6	10	8.5	9.2
	Provision of Internet information services	5	5.5	8	8	9.3	10	7.8	7.4
	Arrangement of leisure activities	5	6.3	8	7	9.2	10	8.0	7.6
Infrastructure and management	Integrity of farm facilities	5	6.4	8	8	9.5	10	8.3	8.0
	Establishment of the farm management system	5	6.0	7	8	9.4	10	7.7	7.7
	Convenience level of the transportation within the farm	4	5.3	7	6	8.3	10	7.0	6.6
	Convenience level of the transportation system connecting the farm and other places	4	6.2	8	8	9.3	10	7.9	7.8
	Installation of a visitor centre	2	4.9	7	6	8.2	10	6.7	6.5
	Promotion of governmental policies	3	5.3	7	7	8.5	10	6.8	6.9
Product or technological research and development	Innovation and progress of the management of the farm	4	6.2	8	9	9.8	10	8.2	8.0
	Cultivation of the characteristics of the farm's resources	5	6.6	8	9	9.8	10	8.5	8.2
	Strengthening of the characteristics of local industries	5	5.8	8	8	9.2	10	7.7	7.5
	Preservation and maintenance of cultural assets	3	5.8	8	8	8.8	10	7.3	7.3
	Competences in developing products featuring the local culture	5	5.9	7	7	8.8	10	7.4	7.4
	Competences in differentiating products featuring the local culture	4	5.7	7	7	8.7	10	7.2	7.2
Human resource management	Expertise of the narrator	5	6.6	8	9	9.6	10	8.5	8.1
	Education and training of staff	5	6.5	8	9	9.6	10	8.2	8.1
	Farm proprietor's competences in personnel management	5	6.2	8	9	9.5	10	8.1	7.9
	Characteristics of the farm proprietors	3	5.7	8	8	9.2	10	7.6	7.5
	Promotion and study of the local history and culture	3	5.3	8	7	8.7	10	7.3	7.4
	Establishment of relationships with relevant organizations and groups	3	4.8	7	7	8.3	10	6.9	6.6
Threshold value of this study: the arithmetic mean calculated according to the geometric mean = 7.7									

Notes: The gray area represents the deleted assessment criteria

Source of data: this study

utilizes “double triangular fuzzy numbers” to integrate the views of experts and scholars, and through the “gray zone test method” it tests whether the opinions of the experts and scholars achieve an acceptable convergence level – because the level of consensus regarding the opinion of experts can only be calculated under the prerequisite that their opinions are convergent (Hwang and Lin 1987; Hsu 1998; Cheng 2001; Lee 2008). The testing procedures mentioned above are rigorous. The steps can be summarized as follows: (1) according to Figure 1, the initial hierarchical structure, the authors design the fuzzy Delphi expert questionnaire; (2) according to “the most conservative cognitive value” and “the most optimistic cognitive value” of the items being evaluated “ i ”, the authors analyze and develop the double triangular fuzzy numbers; (3) the authors test the level of consensus of the experts; (4) for every number filled out by the experts, the authors calculate the geometric mean and accordingly produce the arithmetic mean, which is the threshold value of this study. Finally, this study selects the appropriate number and generates the assessment criteria with the expert consensus.

Selection of assessment criteria with expert consensus

First, according to the initial hierarchical structure depicted in Figure 1, this study designs the fuzzy

Delphi expert questionnaire, and carries out the data operations in the Excel – after the interviews. The results emerge as the triangular fuzzy numbers, which are the assessments of the most conservative cognitive value and the most optimistic cognitive value of item i . Moreover, with the gray zone test method, it is found that all the evaluated items achieve the level of convergence in the first expert interview without the need for repeated visits of the interviewees. Therefore, we can calculate the value indicating the level of importance in terms of the expert consensus on item i , F^i . The authors calculate the threshold value of this study, which is 7.7. Taking the threshold value as the standard, this study selects 14 significant criteria that are identified as being of a high level of importance by the expert consensus (Table 1).

Based on the information in Table 1, we can see 14 importance indicators located in 5 measurement dimensions. The criteria located in the local resources include: the uniqueness of the landscape and ecological resources, the richness of the agricultural resources, and the attractiveness of the landscape and ecological resources. The criteria located in the dimension of the farm service include: the convenience of the accommodation, service quality, and the provision of education and guiding services. The criteria located in the dimension of infrastructure and management include: the integrity of farm facilities, the establishment of the farm management system, and the convenience of the transportation system connecting the farm and other places.

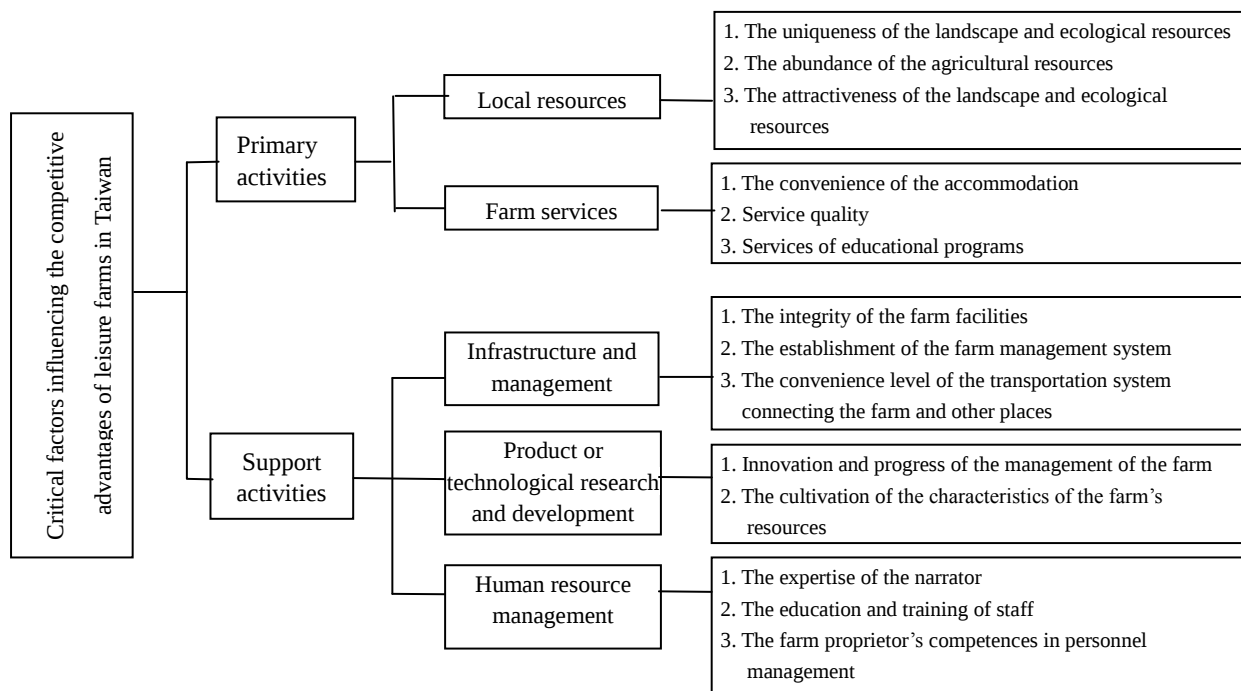


Figure 2. The hierarchical structure depicting the critical factors influencing the competitive advantages of leisure farms in Taiwan

Source of data: this study

venience level of the transportation system connecting the farm to other places. The criteria located in the dimension of the product or technological research and development include: the innovation and progress of the management of the farm, and the cultivation of the characteristics of the farm's resources. The criteria located in the dimension of human resource management include: the expertise of the narrator, the education and training of the staff, and the farm proprietor's competences in personnel management.

Therefore, according to the sequences of the ultimate goal, the major goal, second goal, and assessment criteria, this study proposes the strategic hierarchical structure (Figure 2) as the basis for designing the phase II expert questionnaire for further sorting of the importance level of different evaluative elements. According to the suggestions of some of the experts, the six dimensions and their evaluative items are mostly inner-dependent. Thus, this study adopts the FANP method to calculate the weight of the overall hierarchical structure.

Furthermore, although the assessments in the dimension of "marketing activities" were all eliminated, its consensual importance level is only slightly less than the threshold value of 7.7 (higher than 7.10). This shows that the experts have a consensus that "marketing activities" are important and cannot be ignored. However, the most concurrent and important task is to decide on the 14 assessment criteria of the 5 dimensions, which are considered by the experts as the most critical ones. In other words, according to the research results of phase I, the experts all believe that leisure farms should first focus on having or cultivating the rich agricultural ecology and natural landscape, fostering employees' professional knowledge to provide a high-quality service, constructing the integral equipment, continuously innovating and progressing, and the like. When these conditions have all been fulfilled, the proprietor can follow up the promotion of the leisure farm's competitiveness through marketing activities, so that the effectiveness of the marketing activities can truly be achieved.

The use of FANP to screen critical factors

Fuzzy Analytic Network Process (FANP)

Using the FANP method and integrating the concepts of different scholars (Buckley 1985; Robbins 1994; Hsu 1998; Büyüközkan et al. 2004; Lin 2006), this study combines the fuzzy theory with the analytic network process (ANP) developed by Saaty (1996) to establish ratings of the weights and importance of different

assessment criteria; the goal is to develop objective and reasonable critical factors. The operational steps according to the hierarchical structure (Figure 2) are as follows: the authors (1) establish a pairwise and comparative matrix, (2) establish a triangular fuzzy number, (3) establish a fuzzy positive reciprocal matrix, (4) test the consistency of the fuzzy matrix, (5) calculate the fuzzy weights at various stages of the fuzzy matrix and perform de-fuzzification and standardization, (6) establish and analyze a super-matrix, and (7) calculate the overall weights of the hierarchy.

Critical factors and their implications

After completing the analysis of the fuzzy Delphi expert questionnaire in phase I, based on the hierarchical structure (Figure 2), this study designs an FANP expert questionnaire, and then conducts the interviews. The collected data are computed by the Excel. First, the study uses triangular fuzzy numbers to establish a fuzzy positive reciprocal matrix as the basis for the computation of the fuzzy weights. Then, according to all the clear values given by the experts, the authors conduct the consistency test. The results show that the CI (consistency index) and the CR (consistency ratio) values of this study are both ≤ 0.1 , which is consistent with the acceptable range suggested by Saaty (1980). This implies that the judgments of the experts are consistent – before and after the test. In addition, the results are also consistent with the acceptable range of the CRH value (consistency ratio hierarchy) ≤ 0.1 , which implies that the strategic hierarchical structure constructed by this study has a good allocation of the correlations between the elements in different hierarchies. Therefore, we can analyze the weights of the overall hierarchy. Finally, according to the sorted results of the weights of importance of different assessment criteria, we can find out the assessment criteria to which the experts pay a great deal of attention. The detailed analytical results are shown in Table 2.

The data in Table 2 show that according to the value chain perspective and for enhancing the competitive advantage of leisure farms, on the third level, the experts think that the assessment criterion "the uniqueness of the landscape and ecological resources" is the most important item and thus has the highest weight of 0.218. The second weighted factor is "the abundance of agricultural resources" (weight of 0.211); the third weighted factor is "the attractiveness of the landscape and ecological resources" (weight of 0.193); and the fourth to sixth are the following dimensions in sequence: service quality (weight of 0.079); the convenience of the

Table 2. The weighted analytical results of critical factors influencing the competitive advantages of leisure farms in Taiwan

First level		Second level		Third level	
Dimension	weights	sub-dimension	weights	assessment criteria	weights sorting of importance
Primary activities	0.84	Local resources	0.622	Uniqueness of the landscape and ecological resources	0.218 1
				Abundance of the agricultural resources	0.211 2
				Attractiveness of the landscape and ecological resources	0.193 3
		Farm services	0.218	Convenience of the accommodation	0.076 5
				Service quality	0.079 4
				Services of educational programs	0.063 6
Support activities	0.16	Infrastructure and management	0.052	Integrity of farm facilities	0.020 9
				Establishment of the farm management system	0.019 10
				Convenience level of transportation system connecting the farm and other places	0.013 14
		Product or technological research and development	0.055	Innovation and progress of the management of the farm	0.031 7
				Cultivation of the characteristics of the farm's resources	0.024 8
		Human resource management	0.053	Expertise of the narrator	0.017 12
				Education and training of staff	0.017 13
				Farm proprietor's competences in personnel management	0.019 11
		C.R.H=0.05			

Source of data: this study

accommodation (weight of 0.076); and services of educational programs (weight of 0.063). The rest of the criteria are all weighted less than 0.31, showing a lesser importance of the items.

In 1961, Daniel had the idea that most industries normally have three to six critical factors that decide their success or otherwise. If a firm can manage these factors well, it will become a successful company. In other words, the critical factors are the significant tasks that a company has to perform particularly well in order to operate its business successfully. In addition, this study further uses the LSD test (least significance difference test) method to sort and distinguish different criteria, and finds that six most important critical factors and eight least important factors achieve a 5% significance level in terms of their differences. Therefore, the authors decide to use the most important six factors (the last row in Table 2) as the critical factors influencing the competitive advantages of leisure farms in Taiwan. The six most important dimensions are: the uniqueness of the landscape and ecological resources, the abun-

dance of agricultural resources, the attractiveness of the landscape and ecological resources, the service quality, the convenience of the accommodation, and the services of educational programs. The first three belong to the dimension of local resources, and the last three belong to the dimension of farm services.

In other words, according to the survey results of phase II, the interviewed experts consider that to promote the competitive advantages of leisure farms, the proprietors should first care about the local resources, especially regarding whether the resources in terms of landscape and ecological resources surrounding or inside the farm are unique or not, and whether they are good enough to attract visitors. For instance, the natural environment factors include cliffs, canyons, peaks, caves, swimming, waterfalls, other special natural resources that change with the seasons, particular plants' processes of bringing forth flowers and bearing fruit, or rare insects, butterflies, birds, fish, amphibians, and so on. Agricultural abundance includes the breeding, cultivation, and management of a variety of agriculture, forests, fish, and herds, as

well as the harvesting, manufacturing, viewing, and the production and research of food and different types of agricultural products, and so on.

When leisure farms have the conditions listed above, and an advantageous service quality, including a convenient accommodation, a good service quality, an active educational narration, and so on, their competitiveness should be significantly promoted. For example, if a leisure farm can provide a clean and comfortable internal environment, a convenient and safe accommodation, a seasonal and specifically local rural food, a warm and a friendly serving attitude, and good-quality services, visitors should have the feeling of being at home. Also, if the leisure farm can provide a variety of active educational programs and the like, it will be possible to attract more tourists and consumers to visit.

THE DEVELOPMENTAL STRATEGY IN PROMOTING THE COMPETITIVE ADVANTAGES OF LEISURE FARMS

Leisure farms are places that provide recreational services, and aim at making profit through offering satisfactory services to tourists. During the service procedure, the proprietors of leisure farms have to make accurate decisions to facilitate the resources well, in order to achieve their business goal. Therefore, in accordance with the critical factors of competitive advantages of leisure farms as identified in the above sections, this study forms the corresponding development strategies in order to provide the proprietors of leisure farms and the relevant competent authorities with the appropriate reference data to assist in the development of a leisure farm's competitive advantages.

Creating the characteristics of leisure farms through the development and utilization of the farm's internal and surrounding environmental resources

From the perspective of market competition, to avoid being eliminated through the competition within the market, the proprietors of leisure farms have to develop features as a type of competitive advantage. Therefore, the critical factors under the dimension of local resources are the uniqueness of the landscape and ecological resources, the abundance of agricultural resources, and the attractiveness of the landscape and ecological resources; the corresponding strategies for development should be cultivation and a good

utilization of the farm's internal and surrounding environmental resources.

Porter (1985) considered that when an enterprise is able to create a specific value for customers and to guide customers to accept this value, the goal of differentiation is achieved, which leads to the establishment of competitive advantages. Wu (1996) indicated that during the process of strategic planning, enterprises can in one way be in line with the trend of the environmental change, and in another way to make appropriate adjustments to the business's operation scope. Alternatively, the enterprises can continuously construct and apply their own operating conditions to confront the changes in the external environment – the intention is to analyze whether (1) the business has been effectively developed, (2) its resources have been well facilitated, (3) these advantageous resources have been well utilized for the development of the most appropriate strategies. These three points are used in the leisure farm management in order to create features felt to be valuable by the customers, so that the competitive advantages of the leisure farm can be promoted, and the farm can avoid being replaced by the competitors in terms of the market position. However, how can a leisure farm create its characteristics? It depends on the advantages resulting from the resources. Advantageous resources have the characteristics of value, rarity, being difficult to imitate, and non-substitutability (Barney 1991; Makadok 2001). Leisure farms' resource advantages are the special internal and surrounding environmental resources. So, the successful creation of the features of the leisure farm depends on the cultivation and use of these special leisure and agricultural resources.

The internal and surrounding agricultural resources of the leisure farmhouse can be broadly divided into (1) the landscape and ecological resources and (2) farm resources from the industries of agriculture, forestry, animal husbandry, fisheries, and others. Furthermore, the landscape and ecological resources include the natural and environmental landscapes caused by natural factors – even the cultural landscape resources that have a historical and cultural value fall into this category. The agricultural resources from agriculture, forestry, fishing, animal husbandry, and other relevant industries are: all kinds of seedlings, cultivation, and management in the fields of agriculture, forestry, fishing, and animal husbandry; harvesting, processing, viewing, and food production of the relevant resources; and the resources for research. Most landscape and ecological resources have the characteristics of being regional, seasonal, practical, industrial, cultural, traditional, emotional, aesthetic, and knowledge-oriented. These are all topics related

to the construction of leisure farm characteristics, and are sufficient for creating the differentiation between a leisure farm and its competitors in terms of farm products and services. For example, a leisure farm can use the seasonal changes in the landscape and ecological resources surrounding it to construct characteristics of the farm and the industry, such as the themes of “viewing cherry blossom in spring;” “enjoying the sight of the lotus in summer;” “appreciating the maple tree in autumn;” “visiting the winter plums;” and so on. Besides, the leisure farm can use the uniqueness of its landscape and the ecological resources of its regional location, which has the advantage of attractiveness, to establish its particular regional feature, or use the complete demonstration of the growing process of the particular types of animals or plants and the provision of educational programs relating to the ecological protection in the form of a conservation classroom, to attract tourists to visit. In addition, regarding the aspect of the richness of agricultural resources, the leisure farm can offer visitors the chance to foster different types of seasonal agricultural products to enrich the agricultural resources in order to offer visitors the experience of taking care, breeding, managing, harvesting, food processing, and other activities to encourage the enjoyment of pastoral pleasures, and thus promote the marketing of agricultural products.

Toucheng Leisure Farm uses natural landscapes and spontaneous ecological resources to establish educational programs that have features of the ecological conservation of the outdoor nature. On the other hand, *Aliban Ecological Farm* uses the concept of “creating a saving account for nature” to emphasize the restoration of nature, the low level of development, and the conservation of the beautiful and natural environment for future generations. *Flying Cow Ranch* utilizes its natural terrain to cultivate a large tract of forage grass, focusing on the conservation and restoration of the ecological environment and providing a variety of dairy products. *Tai-Yi Ecological Education Leisure Farm* uses the concept “to observe the profound life from one seed” to highlight the growth process of plants, and thus to provide a feature for the customers who aim to have an intellectual trip. These leisure farms in Taiwan are all successful cases that use the characteristics of the internal and surrounding environmental resources to build up the features of the farms. In other words, through substantially building up the features based on the cultivation and facilitation of the internal or external environmental resources of the farm, such as emphasizing the beauty of landscapes, features of agricultural products, conservation and education of

natural ecology, and the like, a leisure farm can attract tourists to visit (Chao 2006; Cheng and Lin 2008).

Besides, in the book *The Experience Economy*, Pine and Gilmore (1999) indicated that consumers have been looking for great personal experiences. Only thoughtful products and services can create a memorable and enjoyable experience, and a unique value for the leisure farm. To allow visitors to feel the unique values, a leisure farm has to create a great psychological feeling for the tourist. Therefore, to leave tourists with a good psychological feeling, cultivating and using a farm’s advantageous resources located within and outside the farm in order to design activities that attract visitors to participate have become a very important strategy for the development of a leisure farm. One can imagine that a leisure farm that has very beautiful and spontaneous agricultural resources, and a vital ecological environment, would not be able to attract visitors to visit and experience these agricultural resource in depth without the guidance of appropriate and well-designed activities aiming at increasing the agricultural experiences of the consumers. If the tourists do not stay on the leisure farm for long, the business opportunities for the farm to create profitability are then lost.

Perceiving the needs of tourists and improving service quality

The goal of the leisure farm is to achieve its business and operational target, through providing satisfactory services to its customers, thus making an operational benefit. Therefore, with regard to the critical factors of “farm service,” which are the service quality, the convenience of accommodation, and the education and guiding services, this study proposes corresponding strategies to perceive the needs of the tourists and to improve the service quality.

Following the implementation of the two-day weekend, the public has more leisure time to pursue their intellectual life. Thus, when choosing sites to visit, the tourists are not only concerned with the local natural resources and the features of the landscape, but also whether the farm offers a convenient accommodation, a lively educational program and guides, and a satisfactory service quality, so that the visitors are able to experience quiet leisure hours on the farm, to admire the farm and its local rural scenery, and to enjoy the local cuisine and agricultural products, under relaxing moods that release the visitors from stress. From another point of view, leisure farms are an industry composed of production, manufacturing, and service. To visitors, a leisure farm is almost

the equivalent of the tourism industry, providing a place where the tourists can acquire recreation and relaxation. With this service industrial mode, a leisure farm has to understand and meet the unique needs of the consumers. The leisure farm's operational pattern is totally different from that of the traditional farm, in which farmers are only concerned with the production of agricultural products (Lee et al. 2006).

According to a government survey, many leisure farms provide services of food, accommodation, and educational programs to tourists, in order to increase their services to customers (Chao 2006). However, in the past, most of the proprietors of the farms focused on the operation of the traditional agricultural production, and lacked the concepts of the management and service provision. Therefore, when the traditional farms were transformed into leisure farms, the proprietors were normally at a loss. At that time, farmers could not continuously create and provide a variety of static- and dynamic-state activities and services to meet the consumer demand for a diversified recreation, as well as achieving profits and growth in the competitive environment (Lin and Huang 2002; Lee and Hsu 2008). Parasuraman et al. (1991) suggested that through the promotion of service quality, the enterprises can promote customer satisfaction, whereas, to promote service quality, the firms have to conceive and satisfy their customers' specific demands in depth. Zeithaml et al. (1996) went a step further in expressing that the level of the service quality positively affects the customer commitment, which means that as the level of the service quality increases, the level of the customer commitment also increases (Lee et al. 2006). Cheng and Lin (2008) believed that a leisure farm should establish its unique competitiveness and a better service quality according to its existing advantageous resources, to place emphasis on the promotion of customer satisfaction, and to take a further step in establishing an advanced word of mouth to attract visitors. In sum, the urgent task of a leisure farm is to strengthen its idea of service management, to the customer demands, and to promote the service quality to win acclaim from the customers and to attract tourists to visit them again.

Regarding the aspect of "service quality", Sasser et al. (1978) suggested that it must have the features of security, consistency, good manners, integrity, emotional regulation, immediacy, and the like. In other words, if leisure farms hope to improve their competitive advantages, they need to have an integral and safe service hardware that the visitors can trust. To the tourists, leisure farms, after all, are the places for pleasure and recreation. It is needless to say that the basic requirements for leisure farms are to have a

safe and proper hardware. Therefore, the proprietors of leisure farms should integrate their hardware and equipment into the features of the farms, as well as the natural landscapes surrounding the farms, and to maintain or update the equipment periodically in order to prevent customers from transforming their first good impression (sober style) to a bad impression due to the aging facilities, cluttered furnishings, and the lack of aesthetics, which can result in a decrease in the service quality (Lee et al. 2006). In addition, the service personnel must smile, be friendly and polite, meet customer demands in a timely manner, and not adopt different attitudes in serving tourists due to any variations in the personal feelings.

In relation to the convenience of the accommodation, while taking the vacation and joining in the recreational activities, the tourists expect not only to have fun, but also a convenient accommodation during trips. Hence, the convenience of the accommodation is a significant influential factor positively affecting the visitors' revisiting possibility. For this reason, leisure farms should focus on being safe, clean, neat, having efficient service and a friendly attitude, and finally practical and sincere operational ideas, which in turn are to take care of the customer relationships so that the customers can feel at home. Leisure farms can also provide customers with rural cuisine that has local characteristics and demonstrate the convenience of accommodation with local characteristics.

Mahaffey (1970) considered that the purpose of the educational program service is to inspire visitors to develop a cognitive understanding of the environment. Therefore, as well as training workers with the professional knowledge and skills in guiding and offering educational programs, leisure farms should also perceive the interests and experience of the tourists – based on the specific demands of the customers – to plan a vital educational service program. The workers can adopt an appropriate education and lecturing style such as an active guiding and narration, which can assist the visitors to gain a deep understanding of the natural landscapes, ecological environment, agricultural products, and the specific culture that they have viewed, to acquire a great and decent impression of the farm and also to learn many things at the same time. The guiding and educational service program not only consists of the workers explaining the natural ecology and landscapes to the visitors, but it is also a bridge between the visitors and the administrative units of the farm, which show the visitors the relevant administrative activities that farms perform in order to ensure the trip safety of the tourists. Also, these activities can respond to the customers' demands for right timing,

so that to increase the service quality, opportunities can be offered for the visitors to have leisure hours, and to practically increase their experiences. As the customers' intellectual trips increase their satisfaction level, they are attracted to visit these sites again. Thus, leisure farms create opportunities for themselves in sustainable business opportunities and making profits (Chao 2006; Cheng and Lin 2008).

CONCLUSION

With the implementation of the two-day weekend, the public can have more leisure time to pursue an intellectual leisure life. Domestic tourism has become popular and it is increasing the development potential of leisure farms in Taiwan. The leisure farm industry is in a state of flourishing and a strong competition. Hence, the following matters have become the goals and significant issues directing the development of this research: discovering the critical factors influencing the competitive advantage of leisure farms in Taiwan, developing coping strategies, and creating successful business advantages, as the reference for the current or future farm proprietors for attracting more tourists to come and to create business opportunities and profit for them. In addition, the critical factors influencing the competitive advantages of leisure farms are from multiple aspects and different levels. Through the hierarchical structure analytical method, this study integrated, simplified, and clarified the relevant dimensions, which are complicated, in order to assist in decision making and to provide reference data to people involved in the management of leisure farms, and it expects to promote the development and competitiveness of leisure farms in Taiwan. At the same time, the interviewees may be over-subjective when expressing their points of view, and the issues of leisure farms are mostly complicated and belong to the hierarchical structural decision-making problems, in which the factors are connected and will be influenced by each other. Thus, the authors introduced the Delphi technique, which is based on the fuzzy theory, and the FANP to deal with the possible fuzzy problems resulting from the interviewing process, in order to promote the accuracy of the research results.

In conclusion, this study attempted to use the experts from the field of agricultural leisure farms as the sample object to carry out the phase I fuzzy Delphi questionnaire survey. The design of the questionnaire was based on the literature; the authors also utilized the Porter's (1985) value chain perspective to compile the factors that influence the competitive

advantages for leisure farms in Taiwan, for the assessment in the first stage. Then, in the second stage, the authors used the Delphi method to select 14 highly important factors for the assessment as identified by the experts in consensus. Among these 14 criteria for assessment, the factors belonging to the dimension of local resources included the uniqueness of the landscape and ecological resources, the abundance of the agricultural resources, and the attractiveness of the landscape and ecological resources; the factors belonging to the dimension of farm service included the convenience of the accommodation, the service quality, and the service of educational programs; the factors belonging to the dimension of infrastructure and management included the integrity of farm facilities, the establishment of the farm management system, and the convenience level of the transportation system connecting the farm and other places; the factors belonging to the dimension of product or technological research and development included the innovation and progress of the management of the farm, and the cultivation of the characteristics of the farm's resources; the factors belonging to the dimension of human resource management included the expertise of the narrator, the education and training of staff, and the farm proprietor's competences in personnel management. Moreover, according to the ultimate, major, and minor goals of this study, as well as the sequence of the evaluative factors, this study established the hierarchical structure (Figure 2) to be the base for development of the FANP questionnaire in the second stage.

Subsequently, the study conducted the phase II survey through the FANP questionnaire, calculated the weight of the overall level, and then used the LSD test to distinguish significant results according to the sorting output. Furthermore, according to Daniel's (1961) point of view, this study extracted six factors – “the uniqueness of the landscape and ecological resources,” “the abundance of the agricultural resources,” “the attractiveness of the landscape and ecological resources,” “service quality,” “the convenience of the accommodation,” and “service of educational program” – as the critical factors influencing the competitive advantages of leisure farms in Taiwan. Among them, the three former critical factors are included in the dimension of “local resources,” and the latter three factors belong to the dimension of farm service.

Finally, according to the critical factors influencing the competitive advantage of leisure farms in Taiwan as described in the above section, this study made suggestions in response to the development of strategies, which are namely: (1) to create the characteristics of a leisure farm through the development and utilization

of the farm's internal and surrounding environmental resources and (2) to perceive the needs of the tourists and to improve the service quality. With the suggestions made and the reference data concluded in this study, the authors expect to enhance effectively the current competitive advantages of leisure farms.

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