

FEASIBILITY STUDY OF AGRITOURISM IN SOUTH KHORASAN PROVINCE BY USING ANALYTICAL HIERARCHY PROCESS MODEL AHP

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ABSTRACT

Today, agritourism is regarded as a stimulus to the imbalanced economy of agriculture sectors and tendency for emotional and nostalgic roots of the modern world citizens and due to factors such as visit or participation in farm activities, direct purchase of products, spending a night at a farm, curiosity and learning about the farm & agriculture products has been able to create a wide target population. South Khorasan province with great agricultural potential in products such as barberry, pomegranate, and especially saffron and capabilities of different types of tourism such as Eco Tourism, astronomy, geotourism and nomadic can be determine a certain space in agritourism. The purpose of this study is to identify the features and capabilities of South Khorasan Province tourism in line with prioritizing zones possess the potential to attract tourists to promote agritourism. For this purpose, after identifying the criteria and sub-criteria of agritourism, South Khorasan Agritourism model has been explained using Analytic Hierarchy Process AHP in SUPER DECISION and with the qualitative and quantitative data entry required, the analysis took place and cities of the province were prioritized based on agritourism priorities in four zones. The results of this study show that the city of Birjand and Ghaenat have higher capability to attract tourists and if the facilities and services needed for tourists be provided in an optimal way, in the near future, the tourists are attracted and this in turn will lead to development of South Khorasan Province.

KEYWORDS: South Khorasan Province, Analytic Hierarchy Process (AHP), Agritourism, Rural Tourism, Farm Tourism

Today, despite the enormous progress achieved by mankind, yet many rural development is faced with various issues and challenges, because previous strategies has not been successful in the rural development, and they failed to solve issues like poverty, employment, health, food security, and stability of environment. (Eftekharian, 2005) To strengthen villages and underserved areas, various solutions have been proposed, but none of them have succeeded to improve the condition of disadvantaged and far areas from process of changes and development. One of the strategies that have been proposed to strengthen the disadvantaged regions and with the capability to develop is development and expansion of tourism in areas that have the potential required to develop tourism. Tourism, by relying on its economic features and effects can play an important role in dynamism of different parts of the economic local communities which results in development of rural and less developed areas (Heidari, 2008).

Decentralized economy in the world, in line with good yields forms different combinations which disrupt a division of the new economy (industry, agriculture, services). One of these combinations is the reconciliation of agriculture and services sectors and development of agritourism. This flow of tourism, on the one hand attract tourists seeking to find new places and occasionally engaging in farming stages to obtain genuine tourism experience and on the other hand, it will improve the economic situation of owners of farm

and gardens (the host). Traditional nature of these farms plays an important role in development of tourism, so that a sense of nostalgia encourages tourists to experience traditional life.

Thus, the feasibility of agritourism and recognition of the capabilities of South Khorasan is investigated. South Khorasan Province is located in the East of the country. This province with an area of 95388 sq. km allocated 8/5% of the country's total area to itself and based on latest country divisions it has 8 cities named Birjand, Ghaenat, Ferdous, Boshruyeh, Darmiyan, Sarayan, Sarbisheh, Nehbandan, Khosf and Zir Koh (Statistical Yearbook, 2011) and with a population of over 625,344 (South Khorasan, 2011) it has some advantages in agricultural products that these products either will not grow in other areas or investing on them does not produce enough profit. The province ranks first in the production of horticultural crops like barberry and jujube and the second rank in producing saffron and cotton in Iran. Also the state is the sixth producer of pomegranate among Iran provinces and the city of Ferdows is the third producer of Pomegranate after Saveh and Neyriz. Cultivation area of saffron is 10,554 hectares, of which 50 tons of dry saffron is produced annually. (24.6% of the country's total production). The province is known as the first producer of this crop in country in producing barberry with a rate of 8408 tons per year and having 97% of the cultivated area (South Khorasan Agricultural Statistical Information System, 2011). In

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this field, saffron production in the country and South Khorasan has a comparative advantage:

- High profitability and higher yields of its production compared to other provinces crops
- Availability of over 90000 families taking advantage of this product that provides accommodation specific for agritourism (accommodation, breakfast) and provides field of training saffron harvest.
- The time of harvest which has plentiful attractions, since blossomed flowers should be picked before sunrise and harvest lasts between 15 to 25 days (from late October to early November). The simultaneity of harvest of saffron and barberry increases the potential to attract tourists. Two agritourism saffron festivals called "red gold" and barberry named "ruby" will be held in the city of Ghaenat in these days.
- Saffron harvest time in October and November versus the tourist peak i.e. summer and forming agritourism at a regional scale can provide continuity time of "tourism cycle".
- In this research, it is tried to express the regional capabilities of South Khorasan based on structure of its criteria for tourist attraction through investigating the concept of agritourism and its structure and to prioritize qualified areas and its potential using AHP.

THEORETICAL BACKGROUND

Agritourism as a direct marketing activities could provide specific opportunities to reduce risk development through diversification in the conflicting and urbanized economic environment (Brunfield, 2002), which includes the rural business in two aspects of farm environment and a tourism business sector (Busby, 2000). Marginal areas, which are based on traditional and limited agriculture, are in a greater need for economic diversification and it will be more attractive for the tourists (Sharply, 2001). Words like farm tourism, rural tourism, outback tourism, culinary tourism have been used synonymously in related essays (Rilla, 1999).

Table 1. Different definitions of agritourism

Theorist	Year	Definition
Dartington Amenity Research Trust	1974	Any tourist or recreation-related companies that work on the farm.
Frater	1983	Tourism companies who work on farms and these recreational activities are largely complementary for farm activities.
Murphy	1985	Working in the farm that complete and protect basic functions (Agriculture) with some type of tourism business.
Roberts	1992	Farm tourism represents a continuous ownership, active participation by farmers and small-scale tourism investments.
Clarke	1996	It is related to agricultural production where a customer is aware of the field of agriculture.

MATERIALS AND METHODS

This study is based on purpose is applied research and in nature and method is descriptive - analytical research, because description and introduction of the phenomenon of agritourism took place through studying features, dimensions, and its limits. (Hafez Nia, 2009)

The population in question is the host society (farmers), instructors and researchers related to the subject and also tourists. Sampling method is qualitative sampling that is called "purposive sampling" or theoretical sampling.

Accordingly, 5 gardeners or farmer from each city were selected using the experience of buyers of agricultural products and knowers and the package questionnaire designed, they were interviewed and their views was entered in questionnaire by the interviewer. Farmers having the feasibility of agritourism in an acreage or garden, harvesting a crop have been selected or rural house or garden are more known than other cities' farmers.

For the community of tourists and visitors, based on purposive sampling the members of eco tourists group were selected. During a tourist trip, questions were answered by 40 members after providing a detailed description by researcher.

Questionnaires were sent to five professors and researchers to weigh criteria and sub criteria according

to the model range AHP. In data analysis stage, in addition to utilizing the techniques and programming models, such as AHP, Excel, SPSS and Super Decision to demonstrate the model, data entry, binary comparisons and choosing best option.

DISCUSSION AND CONCLUSION

In this study, selecting an option out of other options was considered. In a general definition, multi-characteristic decision-making is referred to certain decisions (the preferred), including assessment, prioritizing, or choosing from the available options (which sometimes must be made among multiple conflicting criteria). Hierarchical model of decision making AHP is a multi-characteristics model of decision-making.

AHP that was proposed in 70 AD by Sa'ati, is one of the popular techniques of multiple criteria decision-making which analyze a decision making problem into various multiple levels. AHP was

presented at the beginning for individual decision-making, but in the eighties how to use it in a group decision-making was examined.

When it is used by more than one expert to determine the priority of criteria and sub criteria, there are many techniques to achieve a holistic view. Aczel and Sa'ati(1983) have introduced using the geometric mean as the best method to combine paired comparisons(Azar and Memariani, 1994).

HIERARCHICAL PROCESS STEPS

Making Hierarchy

In this study, to evaluate the cities of South Khorasan Province, a set of different criteria are identified, finally, using two methods of analyzing both domestic and foreign successful experiences and research library, 5 criteria were specified and each of the main qualitative or quantitative criteria are divided into sub criteria that are quantifiable.

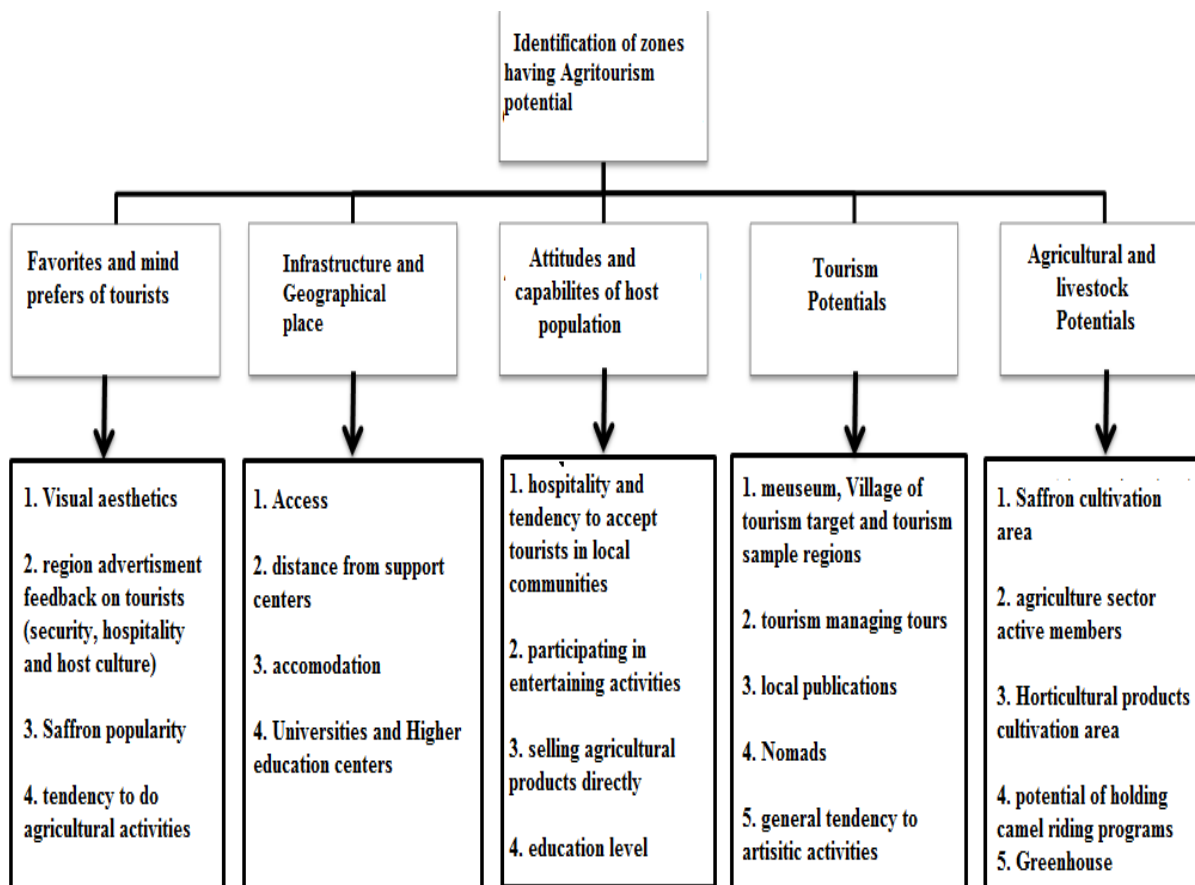


Figure 1: Research analytical model

This model consists of 5 main criteria and 22 sub criteria that 7 qualitative criteria with questionnaire and 15 more sub criteria by collecting reliable statistics have been measured.

Based on selected criteria set referred to in above graph, a set of following measures are necessary to achieve and evaluate the above mentioned criteria.

- Recognition the status and natural and historic power of each area and region (briefly);
- Primary identification and estimation the rate of willingness of the host society of each regions (Behavioral pattern);
- Identification of tourism offer system and each region and areas' potential (with an emphasis on competitor systems, other purposes and tourism sub-purposes of the province)
- Identification of the status of infrastructures of zone and areas (briefly);
- Getting familiar with the agricultural products and agritourism potential of the province
- Identification of requirements, needs, expectations, mindsets and attitudes of tourists to each cities of the province
- Evaluation of the attractiveness power, tensile strength and visual values of each city within eight spots for the final decision making

To design the analysis model in software based on the hierarchy of AHP, four clusters were defined that the highest cluster is in hierarchy of this study goal, the second cluster of criteria, third cluster sub-criteria, and in fourth cluster cities of South Khorasan Province are included.

Preferred Judgment (Paired comparisons)

At this point, experts conducted comparisons between criteria and sub-criteria of decision making and determined their points relative to each other. These comparisons are conducted based on 9 quality tables. The preference of one option or factor to itself is equal to one, therefore, the principle of inverse of an element to other and the preference of one to an option or factor toward itself are two main properties of binary comparison matrix in the AHP process. These two properties will result that to compare n criteria or options, the decision maker has to answer the $n(n - 1)/2$ question. To do this, usually comparison of options with I indices than options with j indices have been used which in following table the method of pricing indices to each other is shown.

In this stage, first weighting of criteria and sub-criteria (e.g., criteria weights are given in the table) based on 5 expert opinion and through geometric mean was calculated and then the paired comparisons was conducted among options in each sub criteria.

Table 2: Relative weight of overall measures

Criterion	The geometric mean	Normalized weight
Potential of agriculture and livestock	$\sqrt[5]{5 * 4 * 4 * 7 * 3} = 4.416$	0.169
Tourism potential	$\sqrt[5]{5 * 5 * 8 * 7 * 3} = 5.304$	0.203
Attitudes and abilities of the host society	$\sqrt[5]{3 * 5 * 6 * 7 * 9} = 5.632$	0.215
Infrastructure and geographical location	$\sqrt[5]{2 * 5 * 3 * 5 * 6} = 3.898$	0.149
Likes and mental preferences of tourists	$\sqrt[5]{9 * 5 * 6 * 8 * 7} = 6.853$	0.262

Conducting paired comparisons between one of the sub criteria is given as sample.

Conducting paired comparisons of sub criteria of "Saffron Fame"

Branding and Identity in tourism has become an important topic so that the field of brand engineering was established and brand festival was held in tourism in November 2012. Using the name and reputation of the agricultural product, celebrity, interesting places, etc for attracting tourists' needs creativity and support. In this criterion, the most important question of the tourists was that "which two cities of South Khorasando you think that South Khorasan saffron belongs to?" The results indicated the fame of Ghaenat saffron, as all respondents chose Ghaen as their choice, after Ghaen, Birjand 33, Ferdows 5 and Darmian 2.

Consistency in judgments

All calculations related to AHP took place based on the primary judgment of decision maker appeared in the form of pair wise comparisons matrix, and any errors or inconsistencies in comparison or determining the importance between options and

indicators tarnished the results obtained from the calculation.

Inconsistency Ratio is a device which identifies the consistency and indicates that to what extent we can rely on priorities obtained from comparisons. If the preferential value of A than B, 2 and B than C is 3, then the value of A than C must be the preferred value of 6. Perhaps the comparison of two options is a simple matter, but when the number of comparisons increases, ensuring the consistency of comparisons is not done easier, the ratio of trust should be achieved by applying the consistency ratio (Mehregan, 2004). In this research, the software calculated the inconsistency rate of 0.02 that is acceptable.

CONCLUSION

At this stage of the combination of weights of criteria and sub-criteria related to study goal and also the weight of options associated with each of the criteria and sub-criteria, the final score of each sites is specified. To determine the final rating of options the following formula is used: $\sum_{k=1}^N \sum_{i=1}^M W_k W_i (g_{ij})$

(1) Final score of J =

That w_k is the importance coefficient of K and w_i is the importance coefficient of sub-criteria I and g_{ij} is the importance coefficient of option g.

The process of selecting top zones requires adopting a systemic and holistic approach in which all

aspects – including criteria and the coefficient of their importance is considered. In this stage, following the approach, selection of top zone is done by using sum of scores of zones; meanwhile different importance coefficient should be applied and considered. The process of final scoring is in this way that first the sum of score of each zone is listed toward each one of criteria; then the score of each zone in each criteria is multiplied in the importance coefficient of it and then the scores are summed up. However the score of one region is higher, it has more importance, and it is in higher priority. The column of Normal in table (colored box) shows the normalized score of each city and the column Ideal also specified Birjand zone which received highest score with 1 and weighed other cities comparing to Birjand.

Table 3: Final weigh and scoring of options

Options	Normal	Ideal	score
Birjand	0.2092	1	1
Ghaenat	0.2049	0.9792	2
Ferdows	0.1304	0.6233	3
Sarayan	0.0987	0.4716	4
Nehbandan	0.0962	0.4598	5
Sarbishe	0.0944	0.4513	6
Boshruyeh	0.0831	0.3974	7
Darmian	0.0831	0.3971	8

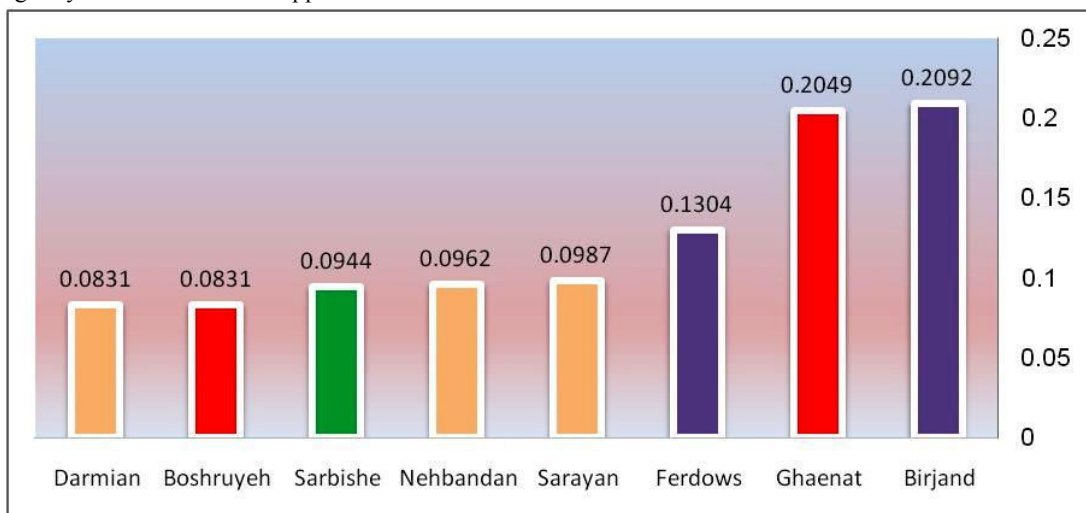


Figure 2: Final weight and rank of cities of South Khorasan Province

Birjand and Ghaenat with a total score of 0.21 and 0.2 with a difference to other cities were identified as the preferred zone for agritourism businesses in South Khorasan. Ferdows with 0.13 point ranked third

(second priority zone) and above the cities of Sarayan, Sarbishe and Nehbandan (third priority zone) which gained 0.09 points, and cities Boshruyeh and Darmian (priority zone IV) achieved the minimum score of 0.08.

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