

Ranking Restaurants Based on Tourists' Preferences Qualities

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Abstract: A few published studies have been done investigating and ranking the tourists key preferences in selecting restaurants. Making Investments on restaurant type ranking can affect tourist satisfaction and restaurants management. Some factors can be seen as the most important in this process. To determine the factors that explain tourists preferences in Iran restaurants (case of Ardabil Province), we asked 390 tourists, traveled to Ardabil since May until November 2009, to answer questionnaire. Six dimensions identified by factor analysis. These factors were named: Price, Staff Performance, Place Internal Differentiation, Food Differentiation, Familiarity and Place External Differentiation. To study tourists' preferences in restaurant type selection, applied TOPSIS between four type restaurants in Ardabil (Sonnati, Ordinary, Fast food, Kababi) based on preferences factors as indicators to evaluating and ranking them. Ranking restaurants showed that restaurant managers can understand their relative desirability to tourists and can provide alternative factors to attract more tourists in competition environment. The findings of the study also lend support to this claim that ranking restaurants can help enhance restaurant performance and also provide insight into how tourists select restaurants. The results also could provide restaurant managers with valuable strategies to develop better marketing strategies. Implications for Ardabil province restaurants were discussed.

Key words: Tourist · Satisfaction · Restaurant qualities · Factor analysis · TOPSIS

INTRODUCTION

In recent years tourism has become one of the growing sectors of the world economy and is widely recognized for its contribution to regional and national economic development [1]. By the year 2010, tourism, measured in terms of international arrivals, is expected to double to more than 1,000 million (one billion), while the number of jobs in the sector will also grow to over 385 million, benefiting developing countries as much as industrialized areas [2].

With the increasing role of tourism in the global economy and growing competition in the global tourism market, the importance of developing the quality of tourism products (like food industry) has been recognized both by the public and private tourism sectors [3].

Food as a lifestyle issue is an increasingly important component of tourism experience; no longer simply occupying a supporting role but often a driving force explaining why people visit a certain holiday destination [4, 5, 6] and plays special role in other aspects.

Food is a basic factor that can add value to the image of a destination [4, 7, 8] and can allow tourists to achieve desired goals of relaxation, excitement, escapism, status, education and lifestyle [9]. Indeed, the few publications on food in tourism mostly deal with it as a significant attraction [5]. Whereas food and its related elements study, (same as restaurants) cannot be neglected in tourism and only a few published studies have been done investigating the key criteria used by customers in choosing restaurants [10].

Research studies already conducted (e.g., Sparks *et al.* and Dailey) have shown that restaurants are an important factor in choosing a holiday destination for some tourists. They also found that the restaurants at a destination can enhance the guests' overall satisfaction [11, 12]. So, restaurant ranking can help manage investments in competitive tourism market and can lead to better understanding of customer preferences. Ranking restaurant in Ardabil province has been conducted based on some indexes such as good food or service. But offering decent food and good service does

not seem to be enough for attracting and retaining consumers because tourists differ in their preferences regarding restaurants [13, 14]. The ranking of restaurants has been done in many countries (eg, United States, UK, France...) based on some models such as ASCI, SERVQUAL. The ranked lists can be a useful marketing tool for restaurant managers and tourism organizations in finding new markets and re-examining their current market needs. But Iran, however, appears to have a different story with no ranking based on tourists preferences.

Food Delivering in Restaurants: Food might be delivered in three ways: in restaurants (generally), festivals and in box, especially in Taiwan [15].

We would concentrate upon food delivering in Ardabil Province at four type restaurants. Ardabil was chosen for the investigation because it shares borders with three other provinces in the neighborhood; so many people visit it because it has been blessed with splendid mountainous landscape and mineral springs. In addition, because of a high capability due to the agricultural, livestock and trophic industry, the restaurants of this province have potentiality to prepare various foods. According to the types of food they offer, restaurants in Ardabil can be divided into four categories: Sonnatti (S), Fast foods (F), Kebaby (K) and Ordinary (O). Of these restaurants Fast foods and Ordinary are almost like those found in other countries across the country. Restaurants of Kebaby and Sonnatti, however, are quite different. Sonnatties are supposed to offer traditional foods such as Dizi in traditional environment, while Kebabies only offer different types of Kebab.

It goes without saying that restaurants can benefit from increasing number of tourists. The relationship between tourism industry and restaurants not long studied. Restaurants as tourist attractions amidst the recent growth of the restaurant and tourism industries, a trend has emerged. Restaurants are becoming more than just a place to eat; they are becoming a place to experience [16]. Foodservice has long been classified as an essential part of the tourism industry [17, 18]. Previous studies examined the effect of foodservice on vacation choice and experience, gastronomy as a tourist motivation and factors influencing restaurant selection by travelers stopping at visitor information centers [19, 20]. Many researchers (e.g., Choi *et al.*,) have studied customer satisfaction in restaurant and some others compared of restaurant selection criteria by demographic categories [21]. Only few surveys have investigated restaurant segmentation [22] and tourists' preferences [23]. Then it is plausible to suggest that

restaureteurs should seek to differentiate their operations by attributes other than food quality and food type. Thus we study attributes involved in motivations and preferences that affect restaurant type selection and rank restaurants based on the explored preferences.

TOPSIS Method: There are a variety of multiple criteria techniques to aid selection in conditions of multiple criteria. The acronym TOPSIS stands for technique for preference by similarity to the ideal solution [24]. TOPSIS was initially presented by Hwang and Yoon [25], Lai *et al.* [26] and Yoon and Hwang [27]. TOPSIS is a multiple criteria method to identify solutions from a finite set of alternatives based upon simultaneous minimization of distance from an ideal point and maximization of distance from a nadir point. The basic idea of TOPSIS is rather straightforward. It originates from the concept of a displaced ideal point from which the compromise solution has the shortest distance [28-30]. TOPSIS has been applied to a number of applications [31-34] although it is not as widely applied as other multi-attribute methods [35] but its relative advantage is the ability to identify the best alternative quickly [36] and due to its applicability in solving different scenarios of human decision problems and its mathematical simplicity measuring the relative performance of the alternatives. This approach has been widely used in different decision quality contexts, same as tourism researchs [37, 38].

The summarized basic TOPSIS technique consists of the following steps [34]:

Normalize the Decision Matrix $X = (x_{ij})_{n \times m}$: The vector normalization is used for computing r_{ij} , which is given as:

$$r_{ij} = x_{ij} / \sqrt{\sum_{i=1}^m x_{ij}^2}; \quad i = 1, 2, \dots, m; \quad j = 1, 2, \dots, n \quad (1)$$

Where r_{ij} is the normalized criteria/attribute value/rating and x_{ij} is the elements of decision making matrix.

Develop a Set of Importance Weights for Each of the Criteria: In this step, we generate "weighty dimensionless" matrix by assuming W vector ($W = \{w_1, w_2, \dots, w_n\}$) as an entry to the algorithm [34].

$$v_{ij} = w_j r_{ij} \quad (2)$$

Where $I = 1, 2, \dots, m, j = 1, 2, \dots, n$ and w_j is the relative weight of the j th criterion or attribute and $\sum_{j=1}^m w_j = 1$.

Determine the Positive Ideal and Negative-ideal Solutions: The ideal solution is formed as a composite of the best performance values exhibited (in the decision matrix) by any alternative for each attribute. The negative-ideal solution is the composite of the worst performance values. Proximity to each of these performance poles is measured in the Euclidean sense.

The positive ideal solution defined as A^+ and the negative ideal solution defined as A^- are defined in terms of weighted normalized values.

$$A^+ = \{v_1^+, \dots, v_m^+\} = \{\max_i(v_{i1}), \dots, \max(v_{im})\} \quad (3)$$

$$A^- = \{v_1^-, \dots, v_n^-\} = \{\min_i(v_{i1}), \dots, \min(v_{in})\}$$

Calculate the Distances of Each Alternative from the Ideal Solution and the Negative-ideal Solution, Respectively: After the determination of ideal solutions, we should calculate the Euclidean distance between ideal solution and negative ideal solution for each observation as

$$D_i^+ = \sqrt{\sum_{j=1}^m (v_{ij} - A_j^+)^2}, i = 1, 2, \dots, n \quad (4)$$

$$D_i^- = \sqrt{\sum_{j=1}^m (v_{ij} - A_j^-)^2}, i = 1, 2, \dots, n \quad (5)$$

Calculate the relative closeness of each alternative to the ideal solution. For each alternative, determine a ratio C_i equal to the distance to the nadir divided by the sum of the distance to the nadir and the distance to the ideal. The relative closeness of the alternative A_i with respect to A^+ is defined as

$$C_i = \frac{D_i^-}{D_i^+ + D_i^-}; i = 1, 2, \dots, m \quad (6)$$

Where $0 \leq C_i \leq 1$

Rank the alternatives according to the relative closeness to the ideal solution. The best alternative is the one with the greatest relative closeness to the ideal solution.

In this paper, we are going to rank four restaurant types in Ardabil base on "the relative similarity to the ideal solution" as the performance index. The performance

index calculated is a relative concept and indicates the relative ranking of restaurants types evaluated in terms of the tourists preferences attributes included in the survey.

MATERIALS AND METHODS

Research Instrument: This paper examines the specific attributes of food services which are satisfying and motivating tourists to prefer restaurants in Ardabil province. By comparing the different measures of service quality and selecting items derived other researches [39-44] a questionnaire was devised to measure and rank tourists' expectations of food services and restaurant attributions in Ardabil four type restaurants. Expectations could be defined in similar ways. We don't ask undoubtable elements such as Food Taste and Smell.

The questionnaire for this study included two main sections. The first section of the questionnaire consisted of tourists demographical characteristics. The second part was designed to identify the relevant restaurants attributes. Thus, a list of 34 attributes was screened out in the first stage. This list of restaurants attributes was then sent to three identified groups for comments. The three identified groups were: restaurants managers, academic staff and travel agents. Since the departments and people involved in food service to the tourists in the province fall basically into three groups, choosing experts and sampling have been based on those groups. The first group included university experts. They have been selected randomly from university professors of the fields of Management, Hospitality and Tourism and Marketing. The second group contained restaurant managers. They work in four types of restaurants as mentioned; their opinions can be useful in identifying and recognizing the importance of variables inasmuch they have a direct relationship with customers. The third group comprised of travel agencies. Because of a direct and longitudinal relationship during the trip with tourists travel agencies are familiar with their preferences in the selection of a restaurant. As a result of their long experience with tourists the travel agencies have got a better understanding of the tourists' favorite foods and restaurants attributes. Members of the three groups were asked to rate each of the 34 restaurant attributes in terms of importance when choosing a restaurant, on a 5-point Likert scale ranging from "extremely important" to "extremely unimportant". After a careful analysis and advice from academic professionals, 22 of the 34 attributes were selected. These 22 attributes were

Table 1: Profile of respondents

Demographic items (N=390)	Valid percentage	Demographic items (N=390)	Valid percentage
Sex		Children	
Male	56.0	No child	56.4
Female	44.0	One child	20.5
Age group		Two child	14.4
18-25	35.9	Three child	5.1
26-30	33.3	Four child and over	2.6
31-35	10.3	Marital status	
36-45	9	Single	43.6
46-50	6.4	Married	56.4
Over 50	5.1		
Education ^a			
High school or less	20.5		
University	66.7		
Postgraduate degree	11.6		

^a1.3 percent of respondents didn't answer to this question

regarded as the influential factors in restaurant selection. The questionnaire was structured so that each restaurant attribute was rated using a 5-point Likert scale, ranging from 1, least important to 5, most important.

The sample chosen in this study included national travelers arriving Ardabil province by tourism agencies since May until November 2009.

A total of 442 questionnaires were distributed and 390 were used. The response rate was 88.2%.

Analysis: In this study, descriptive statistics including simple frequencies and mean ratings were computed on the respondents' demographic characters (Table 1).

Exploratory factor analysis with VARIMAX rotation was employed on the data about the perceived importance of the 22 restaurant attributes. The primary objectives of using factor analysis were: (1) to create correlated variable composites from the original restaurant attributes so as to identify a smaller set of dimensions, or factors that explained most of the variances among the attributes; and, (2) to apply the derived factors in the subsequent TOPSIS. Factor Analysis facilitated the grouping of the 22 items that described the different restaurant features into a reduced number of factors or dimensions. Principal component and varimax rotation procedures were used to identify factor dimensions. Only those with eigenvalues higher than 1.0 was considered [45, 46] and factor loadings of .50 were utilized for item inclusion.

To assess the reliability of the measures, Cronbach's Alpha was calculated to test the stability of variables retained in each factor and only those variables having coefficients greater than or equal to

.50 were considered acceptable and a good indication of construct reliability. The reliability alphas, which are designed to check the internal consistency of items within each domain, were higher than or close to .70 indicating that Nunnally's criteria were met or close [47]. Then, we used Shanon Entropy to assign factors weights. This factors play indicator roles in the next step, which is TOPSIS.

Study Findings

Demographic and Characteristics of the Respondents:

A total of 390 valid questionnaires were collected. According to Table 1, the majority (56%) of the respondents interviewed were male. As shown in Table 1, over 69% of the tourists were under 30 years. With regard to the education level, the results showed that 66.7 % of respondents had a university education (This could be due to the relative relationship between academic background and traveling and due to the rising number of educated people in Iran). Over 43 % of respondents were single and 56.4 % had no child.

Tourists Restaurant Preferences Factors Derived from Factor Analysis:

Appropriateness of factor analysis is determined by examining the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity. Both tests indicate that it was appropriate to perform a factor analysis. The perceived 19 restaurant attributes was factor-analyzed, using principal component analysis with VARIMAX rotation, to identify the underlying dimensions factors. The exploratory factor analysis was conducted in order to gain a better understanding of the underlying structure of the data [48].

Table 2: Results of the factor analysis (N = 390)

	Factor 1	Factor 2	Factor 3	Factor 4
Food price	.753			
Desert price	.925			
Other services price	.876			
Order waiting time		.795		
After order waiting time		.884		
Friendly staff		.730		
Cultural attractiveness in restaurant			.691	
Criticism acceptance			.769	
Cleanliness (dishes, tables, etc.)			.628	
Dietary food				.916
Baby's special foods				.876
Eigenvalue	2.504	2.416	2.194	1.934
% of Variance explained	13.909	13.420	12.188	10.745
Cronbach's Alpha	.871	.783	.701	.862
The Bartlett's test of sphericity (significance level)				.000
The Kaiser-Meyer-Olkin measure of sampling adequacy				.661
			Factor 5	Factor 6
Customer well guide			.685	
Food menu			.733	
Restaurant's region prestige				.743
Restaurant external overview				.528
Nearness to city center				.823
Eigenvalue			1.795	1.763
% of Variance explained			9.973	9.794
Cronbach's Alpha			.704	.687
The Bartlett's test of sphericity (significance level)				.000
The Kaiser-Meyer-Olkin measure of sampling adequacy				.661

Notes: (1) "new food" variable was loaded into Factor 7 alone and thus was not selected as an independent factor with only one single item. (2) Items with a factor loading of higher than .50 are shown. Extraction method: principal component analysis. Rotation method: Varimax with Kaiser Normalization

It also served to simplify the subsequent TOPSIS procedures. The result of the principal component factor analysis indicated that there were 6 underlying dimensions (factors). The results of the factor analysis are shown in Table 2. Prior to factor analysing, the KMO measure of Sampling Adequacy and the Bartlett test of Sphericity were performed to test the fitness of the data.

The KMO was .654, which was greater than .5. The Bartlett test of Sphericity was found to be 3295.187, with significance lower than .0001. Both statistical data supported the use of factor analysis for these items. One attribute "food novelty" was considered as a factor with one single item that .684 loaded on it. This factor was deleted and thus, 3.504% of variance presentation lost. Moreover, the quality of foods depends on a variety of variables including flavor, color, etc which were included in the primary questionnaire, but was excluded due to have been a low variance.

When one variable is of minor importance to the study's objective, one may decide to eliminate that variable and respectify the factor model by deriving a new

factor solution [49]. However, "food novelty" is the independent factor, but its importance can be neglected in this study. With this item deleted a second analysis (21-item) was rerun and six factors were obtained (total variance explained = 74.91%).

Six Factors Were Named: 1- price (food, desert and other services), 2- staff performance (order waiting and after order waiting time, being friendly), 3-place internal differentiation (cultural attractiveness, criticism and cleanliness), 4- food differentiation (dietary and baby's food), 5- familiarity (customer guidance and food menu) and 6-place external differentiation (region prestige, external overview and nearness to city center).

The results of the factor analysis produced a clean factor structure with relatively higher loadings on the appropriate factors. Most variables loaded heavily on one factor and this reflected that there was minimal overlap among factors and that all factors were independently structured. The higher loadings signalled the correlations of the variables with the factors on which

Table 3: Results of the vector normalization value of factors

Restaurant	F1	F2	F3	F4	F5	F6
Ordinary	.267	.196	.587	.455	.182	.191
Fast foods	.709	.330	.434	.544	.817	.478
Kababy	.544	.670	.475	.491	.867	.521
Sonnati	.249	.129	.154	.375	.442	.460

Table 4: Results of the TOPSIS

Restaurant	D_i^+	D_i^-	Closeness to ideal solution	Rank
Ordinary	1.003	.4457	.307	4
Fast foods	.3786	.9189	.708	3
Kababy	.2063	1.0365	.834	1
Sonnati	.9511	.3741	.717	2

they were loaded. Reliability analysis (Cronbach's Alpha) was conducted to test the reliability and internal consistency of each factor. The results showed that the Alpha coefficients of the six factors ranged from .687 to .871, well above the minimum value of .50 that is considered acceptable as an indication of reliability for basic research [50].

Ranking Tourists Preferences with TOPSIS: Table 3 shows results derived from vector normalization value of factors. We used TOPSIS to rank the preferences score of each restaurant type. This preferences can be divided into six obtained factors: price; staff performance; place internal differentiation; food differentiation; familiarity; place external differentiation.

Preferences measures of each respondent are then calculated by Eqs. (1) - (6) to conduct TOPSIS ranking procedure. According to the normalization value of each factor in Table 3, overall service preferences measures for each restaurant have been shown in Table 4.

It was found that tourists prefer Kababy restaurant (based on six factors mentioned), followed by Sonnati, Fast foods and Ordinary restaurants.

We found that tourist's preferences have not equal value. Restaurants in Ardabil province should pay attention to travellers' desires and invest on them to be more attractive and profitable.

TOPSIS results showed that, any attributes of restaurants have own value to tourists and not to be equal.

DISCUSSION

The restaurant industry is highly competitive. Restaurant operators not only need a deep understanding of foods and their satisfaction factors, but also the other wants, needs and perceptions of their customers.

The present study examined consumers' preferences for restaurant selection and ranking. However, visitors' actual behavior might be different from their preference. It stands to reason to study consumers' preferences attributes for choosing a restaurant. For ranking restaurant, we have identified and categorised a number of restaurant attributes based on the tourists' preferences in Ardabil Province. Then we applied TOPSIS method to ranking restaurants based on resultant preferences by factor analysis. Results showed that some attributes can lead to high attraction and selection score based on TOPSIS.

For example, "price" has not appeared to be important for tourists that travelled to ARDABIL. And so, despite ARDABIL restaureants that didn't accentuate to special foods (e.g. dietary, baby) factor analysis showed that, it has high loading.

These preferences can improve through resource-planning decisions, making cost and controls more effective. It will be up to the restaurant managers to determine which aspects could be most economically addressed and can be more desirable for tourists, except for food quality, because it's the most important motive for customers to return to a restaurant [39].

The ranking of the restaurants based on total preferences can successfully be used as a diagnostic tool to provide a preliminary insight into restaurants for operators. Results showed that Kebaby, Sonnati, Fast foods and Ordinary ranked 1 to 4 respectively. We found that tourists prefer Kebaby restaurants based on six preferences factors.

Restaurant managers can be focused on tourist preferences and develop indicators that affect them, to be more profitable and desirable. These results can be comparing with previous consumer values research, for example, the framework proposed by Holbrook [51].

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