# Assessment of Factors Influencing Consumer Behavior in Iran's Airline Industry Using AHP Technique

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**Abstract:** This paper uses a hierarchical method, i.e. AHP, for evaluation of the indexes influencing consumer behavior in Iran's airline industry. Having conducted a review of literature in the first step, AHP algorithm is introduced, its application for evaluation of consumer behavior in Iran's airline industry is described, and the research methodology components and its eclectic approach are examined .With the introduction of the AHP method and using Expert Choice software program, weights and the degree of importance of each of the main indexes as well as their sub-indexes are specified, and from the data analysis we can see that competitive price has the highest weight among performance criteria. The findings show that other indexes, i.e. quality of services, loyalty, competitive market, brand, management experience, e-commerce as well as advertising, are ranked next in terms of importance.
**Keywords:** Iranian airlines, consumer behavior, AHP, competitive advantage, marketing.

## INTRODUCTION

This paper is aimed at using AHP hierarchical method for Iran's airline sector to assess the factors influencing consumer behavior in the sector. This analysis provides useful information for Iranian airlines to assess their goals and strategies. For this purpose, some information is provided in the form of review of literature and then the steps of AHP are described and the application of this method for assessing consumer behavior in Iran's airline industry will be discussed ultimately. After execution of AHP method using pairwise comparisons questionnaires and Expert Choice software program, we will analyze the results.

Consumers are the focal point of all marketing activities of the companies. Thus, identifying the consumers and understanding the factors that affect their behavior shall play an important role in shaping the company's marketing program. Knowledge of an airline regarding the customer needs as well as its capabilities leads to a type of marketing in which customer preferences will have top priority in attracting passengers. Consumers' views should be taken into consideration for creation of new services and using new equipment. Thus an airline needs to know the needs of its customer base and to provide offers and promotions based on their needs. (Sharifi, 2010)

Since many airlines offer more or less identical services and products, it is very difficult to differentiate between the airlines services. Differentiation in providing products and services occurs when customers feel than the product or service is different in physical or non-physical characteristics such as ticket prices comparing competitors. Airlines are forced to market their product by means of portraying that their services and prices are different than their competitors to attract customers (Pourzarabi, 2010).

The aim of this study is to investigate the factors influencing consumer behavior in Iran's airline industry, including advertising, product quality, cost competitiveness, customer loyalty, market share, customer service, e-commerce, management experience and brand. Conclusions have been provided in the last section.

### Literature Review

In reviewing the research performed in the aviation industry in the past three decades, the key success factors has helped the decision makers in developing appropriate strategies , including "benchmarking from successful companies in the industry" (Brophy & George, 2003), "outsourcing" (Flouris and Oswald, 2007), "knowledge management" (Flouris and Oswald, 2007), "simplification of business processes" (Barkin, 1995 & Morison, 2003), and "prudent and planned growth and development" (Barkin, 1995 & Griaslet, 1998).

Today, managers desperately need to expand their perspectives and attitudes. What is needed more than the strategic planning itself is having "strategic thinking". The most important feature of strategic thinking is "holistic approach" towards business space. The approach creates an outline of the business in mind. Although such an outline is imprecise and sometimes inexpressible, its concepts is the base for organizational decision making in the form of a conceptual framework (Ghafarian & Kayani, 2004).

Value creation in airlines can be conducted by understanding the customer needs using new methods. This means that value can created with an entrepreneurial focus on the desired attractions by the customers, rapid innovation in response to new opportunities and relying on the strengths of the company (Rae, 2001).

Currently, extended use of information technologies in Iran's airline service industry will lead to increased efficiency, and consequently to higher profitability. The level of such impact is much more when combined with structural reform, especially increasing competition (Mehdi Rezvan, 2006).

Airlines use variety of waysto collect the opinions passengers regarding the level of their satisfaction with the quality of their services, such as in-flight surveys, online surveys or installing kiosks in the airports. A complex decision, such as carrier selection, requires simultaneous attention to different factors. The models in connection with the analysis of reasons for choosing a specific transportation model by customers requires a special attention to the combination of these factors in the holistic approach (Hanna & Drea, 2002).

There are eight key factor considered by costumers of an airline: aircraft type which is associated with the interior of the cabin, noise level and cruise speed; the cabin layout, which represents the distance between the seats, aisle width and legroom; time schedule which corresponds to the flight network, number of flights and their timing. Punctuality is one of the most important considerations for business travelers. In-flight services are also important and include quality of food and beverages as well as interior decoration and entertainment during the flight. Finally, airport services and ticket booking seems important (Shaw, 2009). Ease of access to the booking and ticket issuance system as well as additional services leads to the comfort of the airlines' costumers (Doganis, 2011).

In order to improve the quality of services, airlines must focus on those factors that they have full control over them, such as baggage management and control, staff training and management of booking of flights (Gourdin, 2002).

Pricing is one of the major factors that distinguish a company from its competitors; the two other factors include timetable and flight routes (Banfe, 2009).

Frequent traveler program plays a significant role for selection by customers (Nako, 2005). Among the eight factors for passengers of an airline, frequent traveler program is in the fifth rank, while the higher ranks are allocated to the appropriate flight timetable, on-time flight, low price and quality of in-flight services, respectively (Toh & Hu, 2001).

According to the studies, many airline companies understand the reduced price of tickets more influential than the things like booking control, quality of meals and on-time flights (Frost & Kumar, 2000).

Aviation industry has reached a stage in which it has to create new images for its shareholders to follow. Since comfort-based factors can be changed more simply comparing with other factors, they should be constantly monitored and controlled (Fink, 2003).

There are various discussions over the impact of satisfaction on loyalty. Satisfied customers become loyal and dissatisfied customers will go to other vendors (Heskett et al., 1994). According to the American Customer Satisfaction index (ACSI) in 1984, satisfaction to develop customer loyalty includes receiving quality, receiving value and customer experience; while in accordance with the European Customer Satisfaction Index (ECSI), customer satisfaction consists of two components, i.e. hardware (product quality) and soft software (human factors) (Johnson et al., 2000). In both models, satisfaction is a factor for increasing loyalty, when satisfaction level decreases, you lose your loyal customers, and they become confused and finally go to the rivals.

## RESEARCH METHODOLOGY

### Background Information on the Methodology

The analytic hierarchy process (AHP) can be used in decision-making when there are multiple alternatives and multiple decision criteria. Both quantitative and qualitative criteria can be employed. The basis of the method is decision-making with regard to pairwise comparisons. Decision-maker starts analysis by providing a decision-making hierarchy tree. At zero level, the goal of the decision-making is taken into consideration, at the first level indexes (criteria) and the second level, alternatives for determining priorities; although the number of levels may be more regarding the type of problem and the number of criteria and sub-criteria (Momeni, 2008).

### AHP Algorithm

To perform analytic hierarchy process, we will follow the following algorithm:

Normalizing a matrix of paired comparisons
Obtaining the arithmetic mean of each row of the matrix of paired comparisons (also called relative weights)
Multiplying the relative weights of indexes by the arithmetic mean of alternatives
Ranking the alternatives
Then, inconsistency ratio is calculated.To calculate this index, the following steps are calculated:
The first step is calculating the weighted sum vector (WSV): Matrix of pairwise comparisons (D) is multiplied by vector of relative weights. The obtained vector is called "weighted sum vector".

$WSV = D \times W$   (1)

The second step is to calculate the consistency vector (CV): The elements of weighted sum vector is divided by vector of relative weights. The obtained vector is called "consistency vector".
The third step is calculation of the maximum eigenvalue of pairwise comparison matrix (λmax): To calculate the maximum eigenvalue of pairwise comparison matrix, the mean of consistency vector elements is calculated.
The fourth step is determining Inconsistency Index (II): Inconsistency index is calculated as follows.

$II = \frac{\lambda max - n}{n-1}$           (2)

The fifth step is to determine inconsistency ratio (IR): This is done as below:

$IR = \frac{II}{IRI}$           (3)

Her we have Random Inconsistency Index

**Application of AHP technique in assessment of consumer behavior in Iran's airline industry**
In the first step, a panel was formed consisted of 24 experts of selected companies from different departments such as procurement, quality, production and planning involved in devising marketing strategy. Using semi-structured interviews with these individuals, a list of nine criteria for the process of devising strategy was prepared. These criteria concern the various aspects of the strategy, including advertising, product quality, cost competitiveness, customer loyalty, market share, customer services, e-commerce, management experience and brand. The characteristics of such criteria in the aviation sector of Iran are as follows.

**Advertising**
Advertising in the airline business is a means to stimulate customers to buy and use the products and services of the airline or become assured of the continued efforts of the marketing mix. Existence of different airline companies with different ticket prices in airline industry suggests that advertising programs have become an important and necessary issue for air carriers. Overall, they guarantee the advertising programs of airlines as well as increase the sales and market share. In airline business, advertising is a way for creating an image of the company, selling products and offering services as well as motivating the crew (Al Koch, 2004).

**Product Quality**
Product quality in the airline business is composed of a process that begins with purchasing a ticket and includes the behaviors and characteristics of the cabin crew and executives. The quality of services offered in airline business may include: the expected time for ticket purchase, ticket fares, waiting time for check-in and boarding the airplane, the delay before the flight, the distances between the seats inside the airplane, the number of services provided by stewardesses, quality of services, emergency materials and equipment, on-time landing, waiting time for collecting baggage and the number of damaged or lost baggage (Gorses, 2006).

**Competitive price**
Proper calculating of costs of services in aviation business plays a vital role in determining the costs of tickets. Airline companies need to minimize their costs and omit those operations that do not provide added value to their final product. Fixed and variable costs that have a direct impact on the costs in the aviation sector include: (1) fixed costs: amortization, depreciation, insurance costs, engineering costs, operating costs and infrastructure costs, and (2) variable costs: costs of fuel, maintenance and repair costs, personnel expenses and the costs of passengers and meals.

**Customer Loyalty**
Airline companies are continually developing and improving their products and services to satisfy customers' needs. The companies use loyalty programs to ensure the integrity of the customers. In such programs, the client's data is stored in some databases, and thereby some promotions can be offered directly to the groups of clients. The result of such a clear strategy and planning is low costs and high profits for airlines (Yildirim, 2007).

Domestic airlines that are in a fierce competition in terms of quality and services offer similar or identical products and services. Customers cannot distinguish between the products or services of these companies. That is why customer loyalty to a particular brand cannot be felt in airline industry. Customers can easily change their brands to obtain the desired products or services (Kavas, 2004).

## Market Share

Market share is a percentage of the total market that a company has secured for certain categories of products or a specific product. Market share is usually classified based on geographic region (state, country, etc.), gender, ethnicity and other demographic factors. Companies try to increase their market share to be able to achieve economies of scale for production, distribution, advertising and other fields of application of categories, and to increase their profit margins and earnings (Karasu, 2007).

## Customer Services

Airlines must be aware of the needs of their customers at the time of planning for products and services. The services offered in airline business include: cabin orders, aircraft type, flight frequency, flight network, ticket booking points, punctuality and services offered at the travel time (Shaw, 1986).

## E-commerce

Although air travel is one of the fastest types of travel, however, it is too costly for many people. Thus, airline companies must invest in e-commerce infrastructure and expand their operations in this field to make the most of e-commerce applications, and to meet their customers' demands as well as to increase their profit margins. E-commerce provides a suitable environment for airlines to communicate with their customers in a reliable and timely manner (Kaya and Koyocak, 2004).Due to benefitting from advanced technology, speed, quality of services, security and convenience as well as from continuous and low-cost e-commerce applications, air travels have become one of the building blocks of civic and contemporary life.

Airlines can alleviate their problem of high costs or completely resolve it by means of their e-commerce measures (Kaya and Koyocak, 2004). According to IATA, typical ticket cost is about $10, while online ticket cost is nearly $1. That is why e-commerce provides the airline companies with many advantages such as savings in distribution costs, growing competition, a dynamic and market-oriented pricing as well as availability and provision of direct services to customers (Doganis, 2001).

## Management Experience

The airline's management is crucial for keeping the costs down. Management should inspire the employees to use effective strategies for reducing costs. Motivation of employees is one of the major keys is performing more efficient work and lowering the costs.

## Brand

With regard to branding in the airline industry, some factors play vital roles such as promotional and advertising measures, logo and colors of the company, aircraft interior design, ticket sales points, waiting halls at the airports and the variety and quality of provided services during flight. Booking and purchasing tickets are the early interactions during customers' contact with the airline. Hence, the design of ticket reservation points is an important milestone for the airlines. If the first encounter will not be pleasing, there will be a direct negative impact on the brand. Employees working in these positions should be skilled, trained and qualified. Interactions for booking and purchasing tickets via telephone should be understandable, simple and clear.

After a brief introduction of the criteria from a managerial viewpoint, the managers are asked to rank the criteria in accordance with their relative importance. Then, using AHP technique and Expert Choice software program, the values (weights) of those criteria will be obtained.

## Using AHP technique for assessment of consumer behavior in Iran's airline industry

In AHP method, pairwise comparison is done among each level of criteria and Expert Choice software program is used for analysis of pairwise comparison questionnaires and determining inconsistency ratio. If consistency ratio of comparisons will be less than 0.1, performed pairwise comparisons are acceptable. Finally consistent pairwise comparisons are integrated using Expert Choice software, and ranking of criteria and sub-criteria is determined.

## Ranking of sub-criteria for "advertisement"

Ranking of "advertisement" sub-criteria, inconsistency ratio of comparisons is less than 0.1.
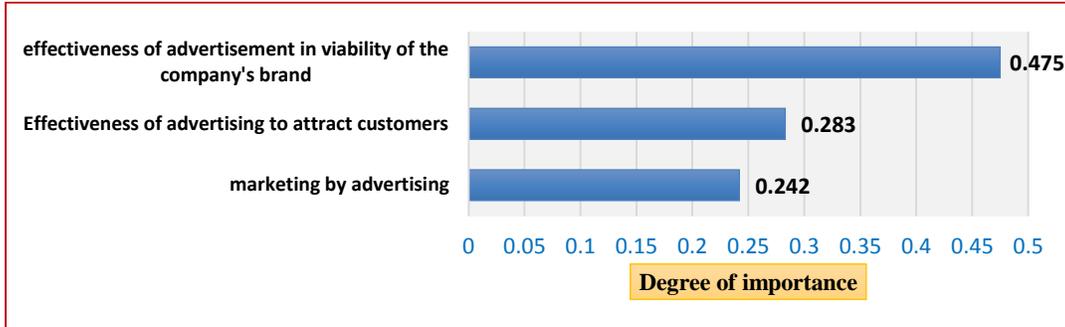
Figure 3.1. Results of ranking of "advertisement" sub-criteria

The findings in the above figure show that for "advertisement", the sub-criterion "effectiveness of advertisement in viability of the company's brand" is ranked first, and the sub-criterion "marketing by advertising" is ranked last.

## Ranking of sub-criteria for "quality of services"
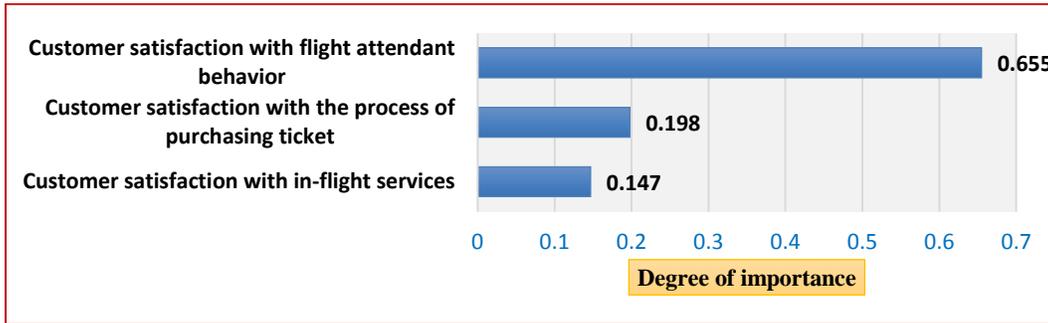Ranking of "quality of services" sub-criteria, inconsistency ratio of comparisons is less than 0.1.



Figure 3.2. Results of ranking of "quality of services" sub-criteria

The findings in the above figure suggest that for "quality of services", the sub-criterion "customer satisfaction with flight attendant behavior" is ranked first, and the sub-criterion "customer satisfaction with in-flight services" is ranked last.

## Ranking of sub-criteria for "competitive price"
Ranking of "competitive price" sub-criteria, inconsistency ratio of comparisons is less than 0.1.
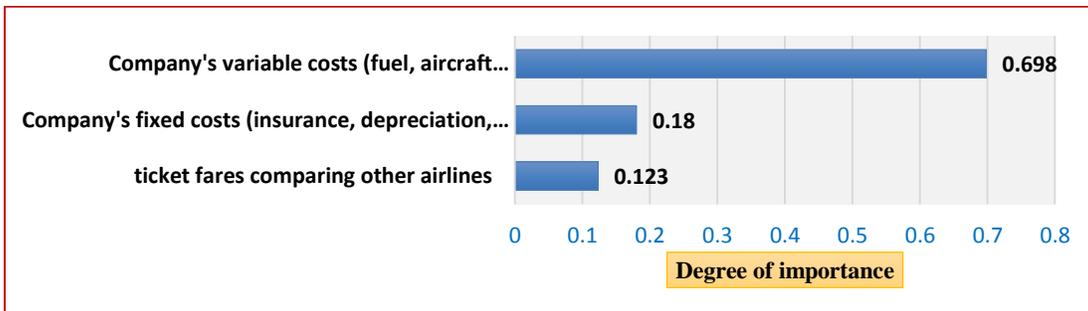


Figure 3.3. Results of ranking of "competitive price" sub-criteria

The results in the above figure indicate that for "competitive price", the sub-criterion "company's variable costs (fuel, aircraft maintenance, staff payroll)" is ranked first, and the sub-criterion "ticket fares comparing other airlines" is ranked last.

**Ranking of sub-criteria for "customer loyalty"**
Ranking of "customer loyalty" sub-criteria, inconsistency ratio of comparisons is less than 0.1.
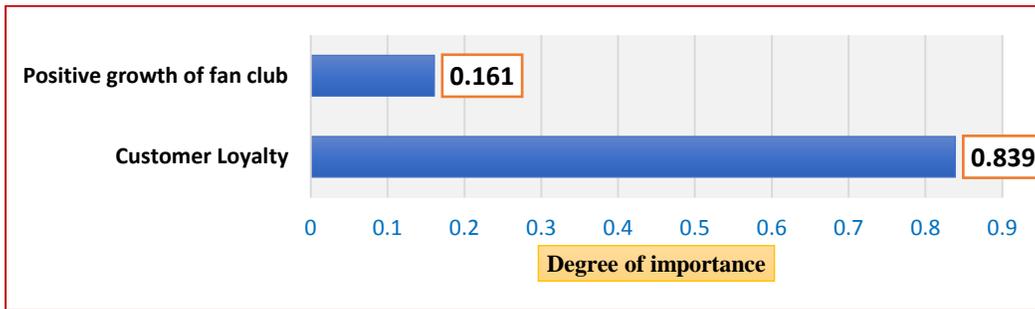


Figure 3.4. Results of ranking of "customer loyalty" sub-criteria

The findings in the above figure show that for "customer loyalty", the sub-criterion "customer loyalty" is ranked first, and the sub-criterion "positive growth of fan club" is ranked last.

**Ranking of sub-criteria for "market share"**
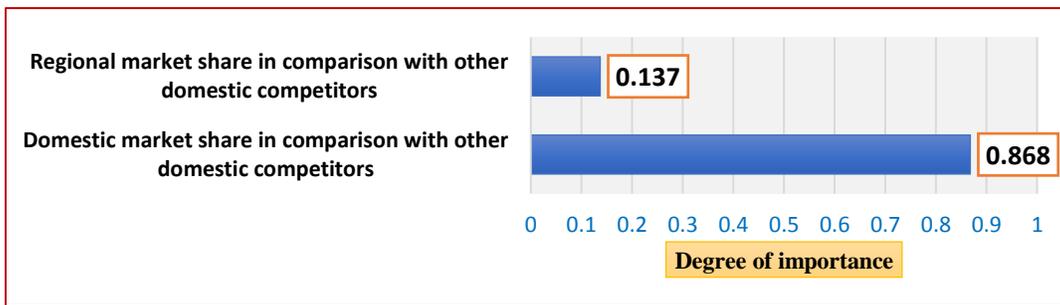Ranking of "market share" sub-criteria, inconsistency ratio of comparisons is less than 0.1.



Figure 3.5. Results of ranking of "market share" sub-criteria

The results in the above figure suggest that for "market share", the sub-criterion "domestic market share in comparison with other domestic competitors" is ranked first, and the sub-criterion "regional market share compared to other domestic competitors" is ranked last.

**Ranking of sub-criteria for "customer service"**
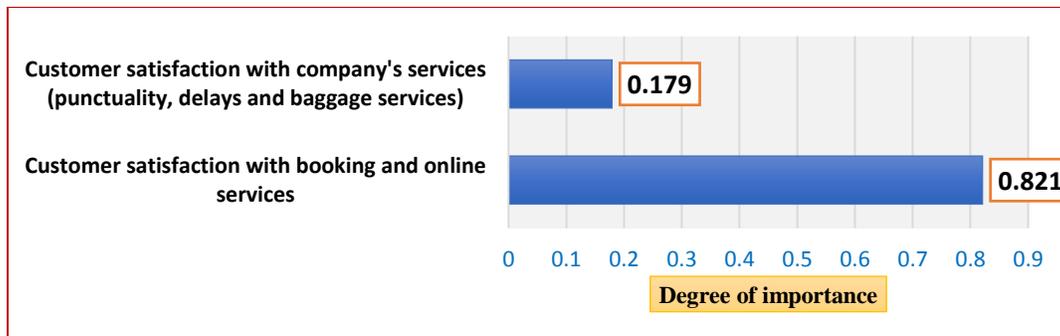Ranking of "customer service" sub-criteria, inconsistency ratio of comparisons is less than 0.1.



Figure 3.6. Results of ranking of "customer service" sub-criteria

The findings in the above figure demonstrate that for "customer service", the sub-criterion "customer satisfaction with booking and online services" is ranked first, and the sub-criterion "customer satisfaction with company's services (punctuality, delays and baggage services)" is ranked last.

**Ranking of sub-criteria for "e-commerce"**
Ranking of "e-commerce" sub-criteria, inconsistency ratio of comparisons is less than 0.1.



Figure 3.7. Results of ranking of "e-commerce" sub-criteria

The findings in the above figure indicate that for "e-commerce", the sub-criterion "infrastructure for e-commerce activities" is ranked first, and the sub-criterion "company's trend towards e-commerce" is ranked last.

**Ranking of sub-criteria for "management experience"**
Ranking of "management experience" sub-criteria, inconsistency ratio of comparisons is less than 0.1.
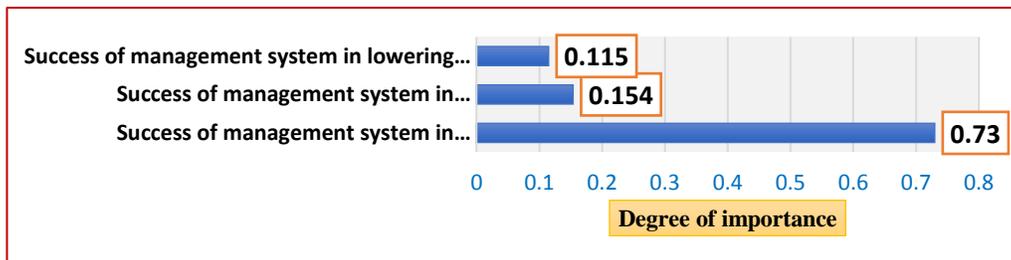


Figure 3.8. Results of ranking of "management experience" sub-criteria

The results in the above figure show that for "management experience", the sub-criterion "success of management system in development of staff motivation and increasing productivity" is ranked first, and the sub-criterion "success of management system in lowering the costs" is ranked last.

**Ranking of sub-criteria for "brand"**
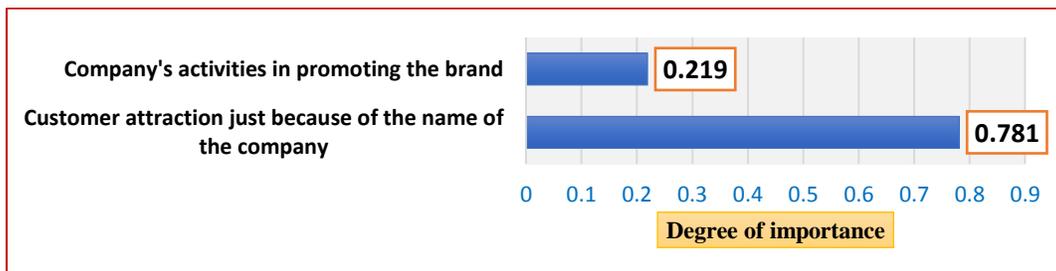Ranking of "brand" sub-criteria, inconsistency ratio of comparisons is less than 0.1.



Figure 3.9. Results of ranking of "brand" sub-criteria

The results in the above figure suggest that for "brand", the sub-criterion "effectiveness of brand in viability of the company's brand" is ranked first, and the sub-criterion "marketing by brand" is ranked last.

**Determining the final weights of sub-criteria**

Now, the weights of main criteria are multiplied by the weights of its sub-criteria to obtain the weights of those sub-criteria. The weights of those sub-criteria are calculated below.

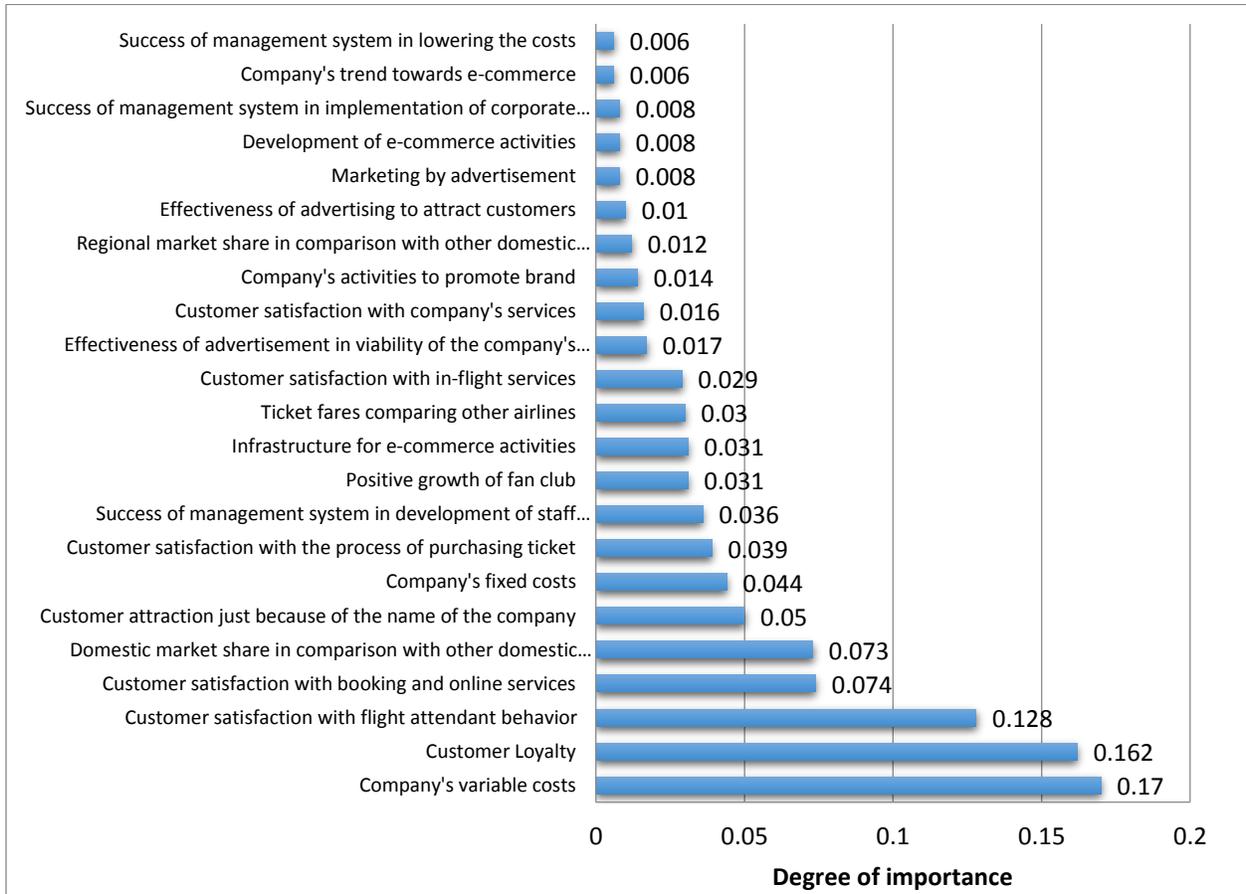The following table and figure show the sub-criteria in order of priority.



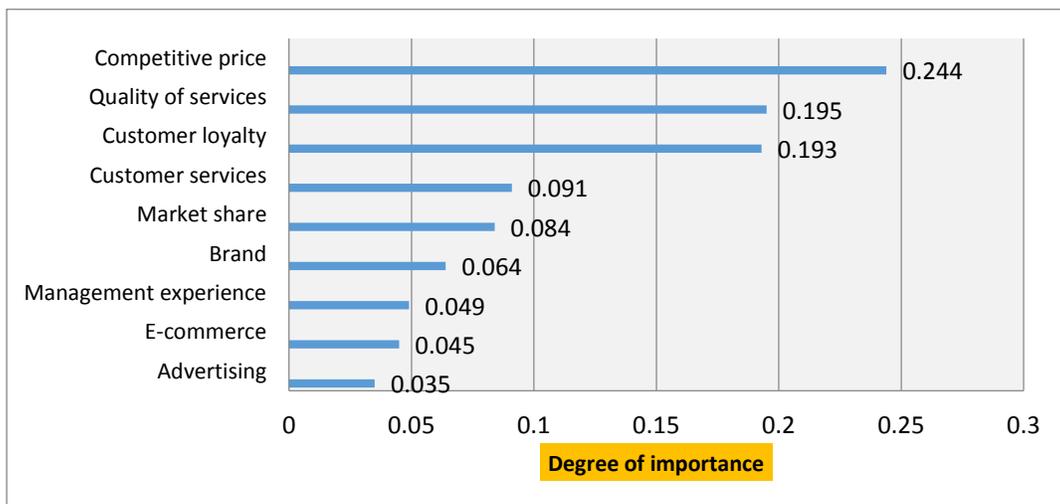Figure 3.11. The final ranks of sub-criteria



Figure 3.13. The results of the ranking criteria (combined)

The findings in the above figure suggest that generally speaking, the sub-criteria "company's variable costs (fuel, aircraft maintenance, staff payroll)", "customer loyalty" and "customer satisfaction with flight attendant behavior", are in the first place to the third place with weights of 0.17, 0.162 and 0.128 respectively; on the other hand, the sub-criteria "success of management system in implementation of corporate strategies", "company's trend towards e-commerce" and "success of management system in lowering the costs" are the lowest importance sub-criteria.

**Ranking of main criteria**

Ranking of the main criteria using AHP method, as the results show inconsistency ratio of comparisons is less than 0.1.

The findings in the above figure demonstrate that "competitive price" with the weight of 0.244 is in the first place and criteria of "quality of services" and "customer loyalty", with weights of 0.195 and 0.193 are in the second and third place. "E-commerce" and "advertisement" criteria with weights of 0.045 and 0.035 respectively are ranked last.

Table 3.1. The final ranks of sub-criteria

| Sub-criteria | Final weight |
| --- | --- |
| Company's variable costs (fuel, aircraft maintenance, staff payroll) | 0.17 |
| Customer Loyalty | 0.162 |
| Customer satisfaction with flight attendant behavior | 0.128 |
| Customer satisfaction with booking and online services | 0.074 |
| Domestic market share in comparison with other domestic competitors | 0.073 |
| Customer attraction just because of the name of the company | 0.05 |
| Company's fixed costs (insurance, depreciation, infrastructure) | 0.044 |
| Customer satisfaction with the process of purchasing ticket | 0.039 |
| Success of management system in development of staff motivation and increasing productivity | 0.036 |
| Positive growth of fan club | 0.031 |
| Infrastructure for e-commerce activities | 0.031 |
| Ticket fares comparing other airlines | 0.03 |
| Customer satisfaction with in-flight services | 0.029 |
| Effectiveness of advertisement in viability of the company's brand | 0.017 |
| Customer satisfaction with company's services (punctuality, delays and baggage services) | 0.016 |
| Company's activities to promote brand | 0.014 |
| Regional market share in comparison with other domestic competitors | 0.012 |
| Effectiveness of advertising to attract customers | 0.01 |
| Marketing by advertisement | 0.008 |
| Development of e-commerce activities (baggage, flight transit) | 0.008 |
| Success of management system in implementation of corporate strategies | 0.008 |
| Company's trend towards e-commerce | 0.006 |
| Success of management system in lowering the costs | 0.006 |

## DISCUSSION AND CONCLUSION

After performing the AHP technique for pairwise questionnaires and determining the weights of variables, we be analyze the key factors that can affect consumer behavior in Iran's aviation industry from a managerial and marketing perspective.

As the results show, competitive price has the most impact on the behavior of customers, i.e. offering a reasonably price for tickets can attract the competitive market to successful companies in this regard. To do this, the airlines must focus on lowering variable costs. Laying off surplus personnel, efficient use of human resources, saving in fuel consumption, and lowering maintenance costs are among the effective factors in lowering ticket prices. Less profit due to such laying off as mentioned above will let the airlines to lower ticket prices, this also gives airlines a competitive advantage to attract most passengers.

Airlines decision makers believe that in-flight services have a significant positive impact on the behavior of customers to choose an airline. Therefore, improving the quality of food, cleanliness, accountability, entertainment, etc., can affect this; training flight attendants and constant monitoring of their performance are among the ways to improve the in-flight service quality.

The more the air passenger as the consumers of this sector will be satisfied with services, prices, responsiveness, ease of access, and other factors, their loyalty will increase more. Retaining loyal customers has lower costs than attracting new customers for the airlines, so having an active, responsive and efficient unit to address the complaints and record suggestions will be much effective in the process of eliminating the problems. One of the weaknesses of Iranian airlines is the lack of fan clubs. Formation of such clubs can play an important role in attracting new customers and retaining old customers' loyalty by providing appropriate promotions and distinct airport facilities for club members. Mahan Air has taken action in the field.

Today, online purchasing of airlines tickets' has grown significantly in Iran. In the meanwhile, it is essential for airlines to understand the customer behavior to improve their marketing and sales strategies. There are three criteria, i.e. quality, usefulness and reliability of the websites that have direct impact upon willingness to buy tickets online, while perceived risk has an indirect impact. Having replacement aircrafts in order to avoid delays caused by technical and operational problems will instill punctuality of airline in the mind of customers and can create a positive attitude in them and provide their satisfaction.

Iranian airlines, due to their aging fleet, lower service quality than foreign airlines, higher ticket rates etc. has lost their regional and international markets to foreign competitors. This has caused the expanded activities of foreign competitors in major cities of Iran, and such a problem has changed the attitudes of Iranian passengers in international flights; that is why the market of international flights is mostly left to foreign airlines. Iranian airlines can compete in this area, only if they can upgrade their fleet and enhance the quality of their services from all aspects.

In the year 2016, British Airways was introduced as Brand of the Year in England, while the Iranian airlines have done no much work in this field of marketing. Promoting and distinguishing the brand identity change the attitudes as well as costumer behavior towards the products and services. While brand-oriented marketing has increasingly grown in all industries, Iran's airlines have not had much success in this regard. Brands can be revived by promoting the electronic services, personnel training, reducing delays, and proper and distinctive promotions.

Managerial inexperience and inefficiency are among the major weaknesses in Iran's air industry. Lack of management knowledge, and lack of organizational and marketing strategy have had a considerable impact on the airlines' objectives and performance. In this field, management is more focused on political and organizational issues than marketing issues, so to have a marketing strategy seems necessary.

Due to the lack of proper infrastructure and inattention to e-commerce in Iranian airlines, they have not been able to make most of all potentials in the market for moving domestic and international passengers. According to the results of this research, managers and decision-makers of this industry in Iran are convinced that e-commerce infrastructure has many shortcomings and the movement is too slow in this direction. However, the majority of successful airlines in the competitive market are doing considerable investments in this sector; they use advanced software programs, create a coherent network of flights, cooperate with other airlines in contributing to transit flights, create distinctive promotions, perform considerable activities in cyberspace, provide additional services such as hotel reservations, etc.and thus have managed to attract consumers and won the competitive market.

Advertising has a major impact on marketing of airline companies. According to the results of this study, the decision-makers of this sector believe that advertising is mostly conducted to introduce the brands of airlines. This is despite the fact that foreign airlines perform advertising based on their marketing strategy. These airlines pay a close attention to some aspects such as cultures, subcultures, motivations, reference groups, situational factors, lifestyle and so on in their advertising. However, advertising by Iranian airlines is mainly focused on in-flight supplies and advertising at the airports, and passengers choose their airlines mostly based on their own understanding of the airlines, their loyalty, recommendations of travel agencies as well as the ticket prices. For this purpose, in addition to the aforementioned factors, using outdoor, television and cyberspace advertising is recommended in this area.

Based on the findings of this study, it can be understood that ticket price has the greatest impact on consumer behavior and their choices. Other indexes, i.e. quality of services, loyalty, competitive market, brand, management experience, e-commerce as well as advertising, are ranked next in terms of importance. We should note that all factors have a positive impact on changing the customer behavior of this industry, and by focusing on them, airlines can create competitive advantage for themselves.

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