(Araştırma)

EVALUATION OF SERVICE QUALITY IN THE AIRLINE INDUSTRY: THE CASE OF TURKEY AND AZERBAIJAN

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ABSTRACT

This study comparatively examines the evaluations of Turkish and Azerbaijani consumers of airline service quality. The obtained data were evaluated using fuzzy importance-performance-impact analysis (FIPIA) with information entropy. The results that will be transformed into actions for managers are obtained using this method. Existing literature does not adequately evaluate managers' perceptions of service quality. Thus, airline business managers can make accurate decisions regarding resource allocation. This study included 956 participants. According to the results obtained, the perceptions of the service quality of Turkish and Azerbaijani consumers are different despite cultural proximity. However, managers do not consider this difference. With the case study, the attributes for which managers (1) allocate sufficient resources are determined, (2) the attributes that require more management focus have been determined, (3) the attributes for which they allocate more than necessary have been determined, and (4) the attributes that need to be allocated resources have been determined. The most important contribution of this study is the comparison of Azeri and Turkish consumers' perceptions of airline service quality and its handling of service quality from a managerial point of view.

Keywords: Airline service quality, Resource allocation, Fuzzy importance performance impact analysis, Azerbaijan, Turkey

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Bu çalışmanın etik kurallara uygunluğu, Ondokuz Mayıs Üniversitesi, Sosyal ve Beşeri Bilimler Araştırmaları Etik Kurulu tarafından 30.09.2022 tarihli ve 2022-787 sayısı kararıyla onaylanmıştır.

HAVAYOLU SEKTÖRÜNDE HİZMET KALİTESİNİN DEĞERLENDİRİLMESİ: TÜRKIYE VE AZERBAYCAN ÖRNEĞİ

ÖZET

Bu çalışma, havayolu hizmet kalitesinde Türk ve Azeri tüketicilerin değerlendirmelerini karşılaştırmalı olarak ele almaktadır. Elde edilen veriler, bilgi entropili bulanık-önem-performans-etki analizi ile değerlendirilmiştir. Yöneticiler için aksiyona dönüşecek sonuçlar, bu yöntemle elde edilmektedir. Mevcut literatür, hizmet kalitesinde yöneticilerin algılarını yeterince değerlendirmemektedir. Bu yöntemle, havayolu işletmecileri kaynak tahsisinde en doğru kararları alabilmektedirler. Çalışma 956 katılımcı ile gerçekleştirilmiştir. Elde edilen sonuçlara göre, kültürel yakınlığa rağmen Türk ve Azeri tüketicilerin hizmet kalitesi algıları farklıdır. Yöneticiler ise bu farkı dikkate alarak hareket etmemektedirler. Vaka çalışması ile yöneticilerin (1) yeterli kaynak ayırdıkları nitelikler (2) daha fazla yönetim odağı gerektiren nitelikler (3) gereğinden fazla kaynak ayırdıkları nitelikler (4) kaynak ayrılması gereken nitelikler belirlenmiştir. Bu çalışmanın en önemli katkısı, Azeri ve Türk tüketicilerin havayolu hizmet kalitesi algılarını karşılaştırması ve hizmet kalitesini yönetici bakış açısıyla ele almasıdır.

Anahtar Kelimeler: Havayolu hizmet kalitesi, Kaynak tahsisi, Bulanık önem performans etki analizi, Azerbaycan, Türkiye

1. Introduction

When it comes to customer satisfaction in the service sector, the first concept that comes to mind is the concept of quality. Therefore, businesses should have a certain standard of service quality and be able to improve themselves. Businesses can stay strong in their market as long as the services they provide are satisfactory. Services such as goods are not tangible. Therefore, a quality assessment is difficult. Therefore, in quality measurement, first, the expectations of the customers are discussed and then it is determined whether these expectations are met. Therefore, expectations and perceptions were compared (Parasuraman et al., 1988). The presence of customers whose expectations are met is an indicator of service quality. This leads to customer satisfaction. Many studies have shown that service quality affects customer satisfaction (Chow et al. 2007; Okumus and Asil 2007).

Consumers assess service quality differently owing to their different cultural characteristics; therefore, service quality assessment becomes more complicated (Pantouvakis, 2013). The airline industry, which brings together many different cultures by its nature, must reach multicultural standards and increase efforts to provide service quality in line with this (Pantouvakis and Renzi, 2016). Airline customers perceive service quality differently, depending on their cultural background (Crotts and Erdmann, 2000). Therefore, to provide multinational service quality, it is necessary to evaluate and compare the evaluations of customers from different nationalities. As a result of this research carried out for this purpose, it is aimed to provide information that will contribute to the achievement of international service quality standards. The aim of this study is to determine priority factors for customers in airline transportation by using importance, performance, and impact analysis, and to develop suggestions that will enable business managers to allocate their resources in the most effective way.

Different methods have been used to measure service quality (Seth et al., 2005). Servqual is the most common of these methods, and is used in many different sectors (Parasuraman et al., 1988). However, changing sociocultural and economic processes may cause the service quality attributes included in the Servqaul model to be insufficient. In this respect, it is important for service quality attributes to be up-to-date and measurable. For this reason, in this study, importance is given to up-to-date attributes that are evaluated in terms of service quality. As a matter of fact, for this purpose, service quality attributes were determined by the evaluations of academicians who are experts in their fields and managers experienced in the sector. Within the scope of the research, Turkish and Azerbaijani consumers evaluated the determined service quality attributes according to their degree of importance and then evaluated these attributes as performance. In the analysis phase, FIPIA with information entropy method was used. Atalay et al. (2019) used this analysis method in air transportation, Ozden and Celik (2021) in the cargo sector.

FIPIA with information entropy method was developed by Atalay et al. (2019). In the process of developing the FIPIA method, it is first necessary to mention the Importance-Performance Analysis (IPA) method. IPA is a method by which consumers evaluate the importance and performance of service quality (Martilla and James, 1977). In this method, importance and performance evaluations are performed by consumers simultaneously (Deng, 2008). Lin and Vlachos (2018) suggested adding the evaluations of the managers in this method. This addition, called impact analysis, provides information that enables managers to see their current status in resource allocation and to allocate resources to the right areas. With the addition of the impact analysis, this method was named IPIA. According to Atalay et al. (2019), on the other hand, reconsidered IPIA analysis by adding fuzzy logic and information entropy. In this method, called FIPIA with information entropy, the fuzzy nature of certain human perceptions is considered by reducing uncertainty and eliminating managers' bias (Atalay et al., 2019). Importance performance analysis provides important information regarding resource allocation (Azzopardi and Nash, 2013). However, this method is two-dimensional and has various shortcomings that reduce its reliability and usefulness (Lin and Vlachos, 2018). IPA may be insufficient in terms of the construct validity of the importance dimension, reliability of the performance dimension, and handling the relationships between the two. FIPIA with information entropy and fuzzy logic is a new hybrid method used to identify priority service quality attributes and optimize resource allocation (Atalay et al., 2019). FIPIA allows the presentation of service quality priorities from the perspectives of both consumers and business managers. This method allows the identification of the most important service quality priorities of consumers and the attributes that will provide the best resource allocation for business managers.

Past research on airline transportation has emphasized the relative importance of attributes developed through the views of passengers rather than expert views in the airline industry (Kim and Park, 2017). However, the views of experts, that is, decision makers in the industry, should be taken into account. Despite the high number of studies conducted on air transportation, many airline companies do not allocate their resources accurately and place costs such as fuel or labor above customer satisfaction (Curtis et al., 2012). Priorities of managers in air transportation and which priorities should allocate resources should be determined. In this study, FIPIA with the information entropy method is used to deal with the Azerbaijan Airlines Company in a multidimensional way in terms of managers and Turkish and Azerbaijani consumers. Therefore, this study is important both in terms of the method used and in terms of being the first to compare the airline service quality assessments of both Turkish and Azeri consumers.

Azerbaijan and Turkey are two countries that consider each other a closest/ friend to them (Mardanov, 2012). Azerbaijan is the Turkic republic with the most intense cultural and commercial relations of Turkey (Bulut, 2021). The two

countries are very close to each other. The relations formed between Azerbaijan and Turkey with the idea of one nation-two state have gained much more strength with the development of strategic and economic cooperation (Aslanli, 2018). Of the Turkic republics, most visits to Turkey were from Azerbaijan (Evcin, 2017; Gulbahar, 2015). Turkey's 2023 Turkey Tourism Strategy includes organizing special promotions and campaigns for the Turkic Republics and increasing market share in these countries (Turkey Tourism Strategy, 2007). It is also seen that the strategic plan of the Ministry of Culture and Tourism includes the aim of developing political, economic, cultural, social and scientific cooperation with the Turkish world (Republic of Turkey Ministry of Culture and Tourism, 2018). As can be seen, the close relations between both countries are of great importance for both their administrators and their citizens. In this context, it is believed that the evaluations of the citizens of Turkey and Azerbaijan regarding the service quality in air transport and the determination of the factors that the decision makers of both countries in this sector allocate their resources to will serve the national goals. In addition, it is thought that this study will make a valuable contribution to the related literature and the developments of airline companies operating in Azerbaijan and Turkey.

The following sections will focus on the concept, characteristics and factors of service quality in air transportation. Next, FIPIA with information entropy method will be transferred and a comparative field study using this method will be presented. Finally, research findings, conclusions, limitations and suggestions for practitioners and researchers will be presented.

2. Literature Review

Services are perishable and intangible, as they have a structure that includes customers as a co-producer (Fitzsimmons and Fitzsimmons, 1994). Therefore, the evaluation of service quality is much more complex than other sectors. Air transport is one of the most intangible services, because it has all the service features of intangibility, inseparability, variability, and perishability (Chang and Yeh, 2002; Hapsari et al., 2017). For this reason, the quality should be evaluated multidimensionally in air transport. As a matter of fact, airline service quality is a driving force in terms of customer satisfaction, loyalty and preference (Singh, 2015) and the value perceived by customers increases as the quality of service increases (Hapsari et al., 2017). Airline service quality provides businesses with a competitive advantage, profitability, increases operational performance and sustainable growth, contributes to the growth of market share in the sector, and increases the efficiency of airline transportation (Ghorabaee et al., 2017). Service quality in airline transportation affects passenger attitudes (An and Noh, 2009; Busbin et al., 2008; Farooq et al., 2018; Hussain et al., 2015; Zins, 2001).

The Servqual model is widely used to evaluate airline service quality (Zeithaml et al., 1990). This model, was developed by Parasuraman et al. (1988) and it can be

used in many different sectors. It consists of tangibility, reliability, responsiveness, assurance and empathy factors (Parasuraman et al., 1988; Zeithaml et al., 1990). Servqual has been used in airline transportation as in many factors (for example, Chau and Kao, 2009; Gupta, 2018; Jeeradist et al., 2016; Liou et al., 2011b; Pakdil and Aydin, 2007). Although it is widely used, it can be seen that this scale is not sufficient to measure current factors such as technological development, digitalization in flight or environmental effects; besides, Covid-19 pandemic that emerged in 2020 caused changes and transformations in airline transportation (Kavus et al., 2022). At the same time, Cronin and Taylor (1992) stated that the expectations factor in Servqual Scale was insufficient. Carman (1990) stated that this scale was not generalizing enough to be applied in all service sectors, and the appropriateness of the difference between expectations and performance has not been sufficiently proven. Brady et al. (2002) stated that service quality can only be measured based on performance.

Grönroos (1990) developed another widely used model for measuring airline service quality. Grönroos (1990) developed a model that focuses on customer perceptions when measuring service quality. According to this model, service quality comprises three dimensions: technical, functional, and image. Technical quality refers to "what" the customer receives, while functional quality refers to "how" the customer receives the service. Functional quality is perceived subjectively from the customer's point of view. The image dimension is formed as a result of the technical and functional attributes of the service. Grönroos (1990) defined service quality as the evaluation result of consumer perceptions. Another model of service quality was developed by Zeithaml et al. (1990). According to this model, service quality is defined as the difference between customer expectations and perceptions. The higher the difference between consumers' expectations and perceptions, the lower is the service quality. If expectations and perceptions are equal, service quality can be achieved.

Increasing service quality and ensuring customer satisfaction are important in all sectors (Fitzsimmons and Fitzsimmons, 1994). Frequent evaluation of quality in the service sector is important for businesses to adapt to changing conditions and ensure customer satisfaction. Consumers' general satisfaction is understood by their perceptions of service quality and quality (Munoz et al., 2020).

When factors used in airline transportation service quality are examined in studies conducted, it can be seen that Hu and Hsiao (2016) and Wu and Cheng (2013) used the factors of interaction quality, physical environment quality and outcome quality factors. The factors in Li et al. (2017)'s study were employees, facilities, flight schedule and information, support service and physical environment. Batouei et al. (2019) emphasized reliability, tangibility, responsiveness, usability, image and empathy. The factors in Hussain et al. (2015)'s study were reliability, responsiveness, assurance, tangibility, safety, security and communication. Liou and Tzeng (2007) used the factors of employee service, safety and reliability, timely

performance, cabin service, program and frequently flying passenger programs. The factors in Liou et al. (2011a)'s study were ticketing service, check-in, booking service, baggage handling, boarding process, cabin service, baggage delivery and responsiveness. Alkhatib and Migdadi (2018) determined the factors of reliability, responsiveness, tangibility, empathy and assurance. Agarwal and Gowda (2021) focused on the factors of passenger satisfaction in environment factors, passenger satisfaction in terms of relationship quality and passenger satisfaction in terms of services provided. Medina-Muñoz et al. (2018) used the factors of ticket price and promotional prices, additional charges, booking channels and payment methods, flight conditions, cabin characteristics, on-board service, airline operation, ground services, staff professionalism and feelings of a passenger about a particular airline. Kim and Park (2017) determined the factors of flight schedule, safety, in-cabin and fast check-in processes, price, flight safety, flight ticket purchase procedures. Carlos Martín et al. (2008) used the factors of price, ticket change fee, flight frequency, comfort (room for feet), food and reliability (compensation in case of delay). Milioti et al. (2015) found the factors of safety and reliability, nonstop flights, flight schedule, number of cities the airline flies, airline image, in-flight fun, friendly and helpful staff, friend/agency advice, fee, frequently flying passenger program. In their study, Rose et al. (2012) focused on the factors of flight time, departure time, ticket price and flight time variability. The factors in Teichert et al. (2008)'s study are price performance, efficiency/punctuality, price, comfort and flexibility.

Managers and consumers' evaluations should be considered in terms of service quality. The priorities of managers indicate areas where resource allocation will be made. When these evaluations of the managers coincide with customer priority and performance evaluations, quality has been achieved. For this reason, there are different studies that consider the point of view of managers in service quality, but they are not sufficient. For example, Narangajavana and Hu (2008) conducted a study on hotel managers at different star levels. As a result of this study, they found that service delivery, hotel employees, guest facilities and surroundings, and prestige factors were not associated with star levels in Thai hotels. Mosadeghrad (2014) conducted a study with healthcare providers, administrators, policy makers, and payers to evaluate service quality in the health sector. According to these results, healthcare managers believe that service quality is limited due to a lack of resources, and patient concerns are not taken into account. Mosadeghrad et al. (2013) stated in their study that frequent change of management is a threat to achieving quality, and a successful service quality management requires supportive and dedicated leadership. This research has shown that employees are not satisfied with the functioning of the organization; senior managers are very effective in quality management, but satisfaction can be achieved by including other employees in the program. Shabbir and Rehman (2015) compared environmental barriers to the service quality of Islamic and traditional banks. In this study conducted with managers, it was observed that the biggest obstacle in service quality was

the human resource environment. Opoku et al. (2009) conducted a study with managers of a large bank in Ghana. The results of this study show that internal marketing affects service quality. According to this research, appropriate marketing techniques promote service quality, which creates customer satisfaction. Amin et al. (2013) emphasized the importance of the role hotel managers play in service quality. According to researchers, hotel managers should attach importance to developing relationships with their customers. Service quality dimensions were found to be related to customer satisfaction. According to Guirao et al. (2016), it is difficult to determine the service quality attributes in public transportation. Therefore, they developed a new technique to directly predict the importance of the quality characteristics. Based on hierarchical processes, this survey method helps managers choose from a long list of service attributes.

From a consumer or managerial point of view, the right attributes must be considered when evaluating service quality. Attributes that accurately represent the service make it easier to reach the most objective result in priority and performance evaluation. In many studies on airline service quality, the factors determining service quality are conceptualized differently, but the attributes are similar. In their extensive study conducted in 2022, Kavus et al. (2022) found that four factors called environment, pandemic, digital technology and information systems should be added to the traditional factors of Servqual Scale. Consequently, they developed a 9-factor scale with 88 characteristics. It can be seen that the study is valuable in terms of being up-to-date and including factors suitable for today's conditions, while the fact that it includes too many attributes is thought to weaken applicability.

The perception of service quality was evaluated in terms of consumers of different nationalities (Choi and Chu, 2000; Huang et al., 1996; Kozak, 2001; Sabiote et al., 2012). When these studies are examined, it can be seen that Sultan and Simpson (2000) reported that American passengers had higher perceptions of airline service quality than European passengers. Gilbert and Wong (2003) conducted a study on four nationalities from Hong Kong international airline passengers, as North America, Western Europe, China and Japan. They found that Japanese consumers had higher expectations, while North Americans and Western Europeans had more expectations from loyalty programs when compared with Chinese and Japanese passengers. Okumus and Asil (2007) found that domestic and foreign passengers had different expectations in Turkey. While domestic passengers attach importance to physical factors, foreign passengers prioritize accurate and reliable service factors. Lu and Ling (2008) found differences between service quality perceptions of Taiwan and mainland China passengers. The Taiwanese thought Taiwan Airline performance was low in terms of flight facilities and services, communication, and responsiveness capacity. Mainland Chinese consumers scored in-flight facilities and services low. In their study, Chau and Kao (2009) found that there were no differences between the service level expectations of Taiwanese (Eastern) and

English (Western) consumers. Kim and Lee (2009) showed that Southern Korean, Japanese, Chinese and American passengers had different complaining behaviors. While Chinese passengers tended to complain, Japanese passengers tended not to. American and Korean passengers had a moderate tendency to complain. In their study conducted on Italians and native English speaker consumers, Pantouvakis and Renzi (2016) found that Italians were significantly less pleased with all factors related to Italian Airlines.

Consequently, the service's value creation or positive perception results in customer satisfaction (Rust and Oliver, 1993). Achieving the desired quality in the target market is possible with a better recognition of the target audience. Therefore, serving in a multinational area, such as airlines, requires considering the quality perceptions of consumers from different nationalities. Simultaneously, it should be ensured that resources are allocated to the right areas, taking into account managers' priorities in this sector. Therefore, this study compares Azerbaijani and Turkish consumers' perceptions of the service quality. To the best of our knowledge, no study has compared the service quality perceptions of the citizens of these two countries. This study is important in that it contains results that will enable multinational airlines to determine their priorities in terms of service quality and allocate resources to the right areas.

3. Research Design and Methodology

3.1. The Aim of The Research

This study aims to evaluate the air transport service quality comparatively in terms of Turkish and Azerbaijani consumers. In addition, within the scope of the study, impact assessments of the decision makers in air transportation will be made, and suggestions will be developed for the best resource allocation.

3.2. The Importance of the Research

It is necessary to consider the service quality evaluations of consumers of different nationalities in air transportation with international attributes. Thus, businesses can develop more accurate strategies by better understanding their target audience and improving service quality. In addition, because the evaluations of the decision-makers in this sector are not taken into account sufficiently considered, problems may arise in resource allocation. Considering the service quality evaluations of managers, the qualifications for which sufficient resources are allocated, which require more management focus, which are allocated more than necessary and which need to be allocated, are determined. As a result, concrete and practical suggestions have been developed for business managers.

3.3. Sampling

The study population consisted of consumers older than 18 years. Using the convenience sampling method, 489 consumers from Turkey and 467 consumers

from Azerbaijan were reached, in accordance with the size of the population. With 0.05 sampling error, and p=0.05, q=0.05, and in the case of a population between 1 million and 100 million, the sample size should be 384 (Yazicioglu and Erdogan, 2004). Therefore, it was decided that the number of participants was sufficient. Convenience sampling is a non-random sampling method, in which the sample to be selected from the population is determined by the researcher's conclusions. This widely used method is easy, economical, and fast.

Since different airline transportation companies have different service quality assessments, Azerbaijan Airlines was selected to ensure consistency and eliminate prejudices. 1875 consumers participated in the study, 956 of whom evaluated Azerbaijan Airlines.

To address the impact of managers' quality evaluations in airline businesses, four managers were asked to assign impact values to predetermined attributes. These managers have professional experiences of between 15-25 years. It was found that managers had the lowest undergraduate degree. One of the managers is senior and three of them are middle level managers.

3.4. Measurement Instruments

The questionnaire used in the research consists of four parts. In the first part, the participants were asked which airline they used the most. In this section, the names of all airline companies flying between Azerbaijan and Turkey are written. The second part includes the importance level of the attributes determined for service quality. In the third part, there are performance evaluations of these attributes. In the fourth part, there are questions about age, gender and educational status. The survey was conducted on a 5-point Likert-type scale. Performance level responses are very poor (1), poor (2), medium (3), good (4), very good (5). Decision makers, one senior manager and three middle managers, were asked about the same qualifications in the survey. Managers scored these attributes from important to insignificant, with (1) being the least and (5) the most. Triangular fuzzy numbers corresponding to these linguistic terms are shown in Table 1.

Table 1. Corresponding Relationship Between Linguistic Terms and Fuzzy Numbers 4

Linguistic terms for importance	Linguistic terms for performance	Triangular fuzzy numbers
Very unimportant	Very Poor	(1, 1, 2)
Unimportant	Poor	(1, 2, 3)
Medium	Medium	(2, 3, 4)
Important	Good	(3, 4, 5)
Very important	Very good	(4, 5, 5)

Since the study included Azeri and Turkish consumers, the scale was translated into Azerbaijanese by an expert. In order to prevent the errors in translation, the translated survey was back translated to Turkish again by two individuals whose native language was Azerbaijanese but who spoke Turkish well. The resulting survey was compared with the Turkish survey. A pilot study of 30 individuals was then conducted to test whether the questions were understood correctly and to test the validity of the scale and the participants flew between Turkey and Azerbaijan at least four times. 16 of these participants were female, while 14 were male, they were between the ages of 28 and 42 and they had undergraduate degree at the least.

The surveys were applied between September 2022 and January 2023. They were applied face-to-face and online. The surveys were on the air for about five months. The compliance of this study with ethical rules was approved by the Social and Human Sciences Research Ethics Committee of Ondokuz Mayıs University, with the decision dated at 30.09.2022 and numbered 2022-787.

3.5. Analysis

In FIPIA, participants first score the service quality attributes according to their importance. Subsequently, the participants evaluated the performance of the same attributes simultaneously. These attributes were determined by focus group studies, as explained in the next section. Then, the same attributes are evaluated by managers in the sector according to their importance. These evaluations of managers provide an impact score. Thus, it is possible to make comparisons by ensuring that participants and managers evaluate the same attributes. Deng (2008) used FIPIA method by stating that fuzzy cluster reflected uncertainties better. It can be seen that this method has been used in various sectors such as education (Wang and Tseng, 2011; Lin, 2017), cargo services (Ozden and Celik, 2021) or transportation (Chen et al., 2016). Information entropy FIPIA consists of four steps. In the first step, the relevant literature is examined and attributes are determined (Churchill, 1979).

In this step, the participants are represented shown in Eq. (1):

$$n\,(i = 1, \ldots, n) \tag{1}$$

At this step, the attributes are represented shown in Eq. (2):

$$(j = 1, \ldots, m) \tag{2}$$

In the second step, performance and significance surveys were applied to consumers. Zadeh (1965) states that fuzzy numbers should be used to cope with the subjectivity of human perceptions and attitudes in the decision-making process. Therefore, linguistic terms should be converted into fuzzy numbers. In this study, triangular fuzzy numbers were used to identify the attributes that participants considered the most important and to increase the reliability of the performance

$$\mu_{\tilde{A}} = \begin{cases} 0, & x < l \\ (x-l)/(m-l), & l \le x \le m \\ (u-x)/(u-m), & m \le x \le u \\ 0 & x \ge u \end{cases} \quad (3)$$

Through triangular fuzzy numbers, views of participants are turned into quantitative values. While represents i*th* respondent for j*th* attribute is a triangular fuzzy number that is presented in Eq. (4) and Eq. (5).

$$\tilde{f}_{ij}^{imp} = \left(l_{ij}, m_{ij}, u_{ij}\right)^{imp} \quad (4)$$

$$\tilde{f}_{ij}^{perf} = \left(l_{ij}, m_{ij}, u_{ij}\right)^{perf} \quad (5)$$

The third step uses the importance measurement values of the participants. For each quality, exploratory factor analysis is performed using values. The explanatory factor analysis is used for calculating the importance score (). The defuzzification is applied for each of values by using Eq. (6).

$$def\tilde{f}_{ij}^{imp} = \frac{l_{ij}+2m_{ij}+u_{ij}}{4} = f_j \quad (6)$$

f_j is obtained for $j = 1, \dots, m$ by using Eq (5).

At this stage, performance scores of the participants are calculated by using Eq. (7) and Eq. (8).

$$\tilde{f}_j^{perf} = \left(\bar{l}_j, \bar{m}_j, \bar{u}_j\right) = \frac{\sum_{i=1}^{n} \tilde{f}_{ij}^{perf}}{n} \; j = 1, \dots, m \quad (7)$$

$$def\tilde{f}_j^{perf} = \frac{\bar{l}_j+2\bar{m}_j+\bar{u}_j}{4} = Perf_j, \; j = 1, \dots, m \quad (8)$$

In the third step, impact scores are calculated to find out the attributes that managers use in resource allocation. Information entropy was used in the evaluation of these 5-Likert surveys. Information entropy is used to eliminate the prejudices of managers and to eliminate the negative factors that prevent from reaching the real result (Abramson, 1963). The function is as follows Eq. (9)

$$P_{kj} = \frac{X_{kj}}{\sum_{k=1}^{t} X_{kj}} \; j = 1, \dots, m \;\; k = 1, \dots, t \quad (9)$$

Then, information entropy () is computed using Eq. (10) and Eq. (11).

$$E_j = -\frac{1}{ln(t)} \sum_{k=1}^{t} \left(P_{kj} \, lnP_{kj}\right) \; j = 1, \dots, m \quad (10)$$

$$Impact_j = \frac{E_j}{\sum_{j=1}^{m} E_j} \; j = 1, \dots, m \quad (11)$$

Finally, an FIPIA diagram is presented in the fourth step. In this diagram, X axis shows the importance score of attributes, while Y axis shows the performance score. The intersection points of the axes in the diagram are determined by the importance and performance median values of the attributes. In summary, in the FIPIA with information entropy method, service quality attributes are determined through focus group studies. Then, when these attributes are found suitable for the evaluations of experienced managers in the sector, the survey stage is started. The questionnaire included both priority and performance evaluation sections for the same attributes. The participants evaluated the service quality attributes in the sector according to their priority order and then simultaneously evaluated the same priorities as performance. The same attributes were then presented to expert managers in the sector. Managers in this sector score these attributes according to their priority order. The obtained data were evaluated using FIPIA with information entropy analysis. As a result of this analysis, the importance scores and performance evaluations that consumers attach to service quality attributes emerge. In addition, the extent to which these evaluations coincide with managers' evaluations was revealed. Thus, it is understood that managers allocate resources to the right areas.

Data were analyzed using IBM SPSS V23. Exploratory factor analysis was used to determine the structures of the scales. The principal component analysis method was used for factor extraction, and the varimax method was used for the rotation process in the exploratory factor analysis. The Cronbach's alpha coefficient was used to assess the reliability of the scale. Comparison of importance and performance scores was made with t-test.

4. Results

The first step of the FIPIA with information entropy model is to determine the attributes of airline transportation. For this reason, airline transportation literature was reviewed and five managers working in airline were asked to evaluate the attributes obtained. Four of these managers who were between the ages of 35 and 57, who had an undergraduate or graduate degree and who had a working experience between 7 and 22 years were female, while one was male. Three of these managers were directors, while two were vice directors. The managers stated the attributes they wanted to add or remove and they grouped these attributes. The attributes determined were evaluated in focus group studies. Focus group participants were 1 moderator and 1 assistant moderator, three managers with more than 12 years of experience in airline transportation, three customers who had frequent flights between Azerbaijan and Turkey, an expert in airline service quality and an expert in methodology. In focus group studies, it is ideal to have 6-12 participants (Morgan, 1997). Having a moderator and an assistant moderator is also essential for an ideal focus group study (Krueger and Casey, 2000). Three focus group sessions were carried out until a consensus was reached. The attributes agreed upon were presented to managers again and the attributes were finalized.

Demographic information of the participants is shown in Table 2.

Table 2. Descriptive Statistics

	Frequency (n)	Percentage (%)
Gender		
Male	441	46.1
Female	515	53.9
Age		
18- 28	162	16.9
29-39	249	26.0
40-50	264	27.6
51-61	152	15.9
≥62	129	13.5
Educational status		
Primary	51	5.3
High school	161	16.8
University	467	48.8
Graduate	172	18.0
Doctorate	105	11.0
Nationality		
Azerbaijan	467	48.8
Turkey	489	51.2

Eq. (7) is used in the fuzzy mean calculations of each factor in order to obtain performance values. The defuzzification is applied using Eq. (8). The results regarding the performance values of Azerbaijan and Turkey are presented in Table 3 and Table 4, respectively.

Table 3. TFN for Performance for Azerbaijan

	Q1	Q2	Q3	…	Q2(3, 4, 5)	Q25	Q26
1	(3, 4, 5)	(3, 4, 5)	(3, 4, 5)	…	(3, 4, 5)	(2, 3, 4)	(3, 4, 5)
2	(3, 4, 5)	(3, 4, 5)	(3, 4, 5)	…	(3, 4, 5)	(4, 5, 5)	(4, 5, 5)
3	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)	…	(3, 4, 5)	(4, 5, 5)	(3, 4, 5)
4	(3, 4, 5)	(3, 4, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
5	(3, 4, 5)	(4, 5, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)
6	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)	…	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)
7	(3, 4, 5)	(3, 4, 5)	(3, 4, 5)	…	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
8	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)
9	(3, 4, 5)	(3, 4, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
10	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(3, 4, 5)	(3, 4, 5)	(3, 4, 5)
11	(3, 4, 5)	(3, 4, 5)	(4, 5, 5)	…	(3, 4, 5)	(4, 5, 5)	(4, 5, 5)
12	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)

13	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
14	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)
15	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(2, 3, 4)	(3, 4, 5)	(2, 3, 4)
16	(3, 4, 5)	(3, 4, 5)	(3, 4, 5)	…	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)
17	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)
18	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)	…	(3, 4, 5)	(4, 5, 5)	(4, 5, 5)
19	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(3, 4, 5)	(3, 4, 5)	(3, 4, 5)
20	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)	…	(3, 4, 5)	(4, 5, 5)	(4, 5, 5)
…	…	…	…	…	…	…	…
	(3.756, 4.756, 4.953)	(3.511, 4.511, 4.974)	(3.583, 4.583, 4.944)		(3.485, 4.485, 4.919)	(3.436, 4.436, 4.897)	(3.436, 4.436, 4.904)
	4.556	4.377	4.424		4.343	4.301	4.303

Table 4. TFN for Performance for Turkey

	Q1	**Q2**	**Q3**	**…**	**Q2(3, 4, 5)**	**Q25**	**Q26**
…	…	…	…	…	…	…	…
937	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
938	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)		(3, 4, 5)	(3, 4, 5)	(3, 4, 5)
939	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
940	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
941	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)		(3, 4, 5)	(3, 4, 5)	(4, 5, 5)
942	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
943	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
944	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
945	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
946	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
947	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
948	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)		(4, 5, 5)	(3, 4, 5)	(3, 4, 5)
949	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
950	(4, 5, 5)	(3, 4, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
951	(3, 4, 5)	(3, 4, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
952	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
953	(4, 5, 5)	(4, 5, 5)	(3, 4, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
954	(3, 4, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
955	(4, 5, 5)	(4, 5, 5)	(4, 5, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
956	(3, 4, 5)	(4, 5, 5)	(3, 4, 5)		(4, 5, 5)	(4, 5, 5)	(4, 5, 5)
	(3.855, 4.855, 4.994)	(3.754, 4.754, 4.996)	(3.793, 4.793, 4.994)		(3.879, 4.879, 4.996)	(3.842, 4.842, 4.992)	(3.869, 4.869, 4.992)
	4.639	4.565	4.593		4.658	4.630	4.650

By applying defuzzification, importance values are calculated for each factor. At this stage, defuzzification is applied for all answers by Eq. (6). The results are presented in Table 5 and Table 6.

Table 5. TFN for Importance and Defuzzfied Value for Azerbaijan

	Q1	Deff.	Q2	Deff.	Q(2, 3, 4)	Deff.	…	Q24	Deff.	Q2(4, 5, 5)	Deff.	Q26	Deff.
1	(1, 2, 3)	2	(1, 2, 3)	2	(1, 2, 3)	2	…	(1, 2, 3)	2	(1, 2, 3)	2	(2, 3, 4)	3
2	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
3	(4, 5, 5)	4.75	(2, 3, 4)	3	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
4	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
5	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
6	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
7	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(2, 3, 4)	3	(2, 3, 4)	3	(2, 3, 4)	3
8	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
9	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
10	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.5
11	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
12	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
13	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
14	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
15	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4,75	…	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
16	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(2, 3, 4)	3	…	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
17	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
18	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
19	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
20	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
…	…	…	…	…	…	…	…	…	…	…	…	…	…

Table 6. TFN for Importance and Defuzzfied Value for Turkey

	Q1	Deff.	Q2	Deff.	Q(2, 3, 4)	Deff.	…	Q24	Deff.	Q2(4, 5, 5)	Deff.	Q26	Deff.
…	…	…	…	…	…	…	…	…	…	…	…	…	…
937	(1, 2, 3)	2	(1, 2, 3)	2	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
938	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(2, 3, 4)	3
939	(2, 3, 4)	3	(2, 3, 4)	3	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
940	(1, 2, 3)	2	(1, 2, 3)	2	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
941	(2, 3, 4)	3	(1, 2, 3)	2	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
942	(2, 3, 4)	3	(2, 3, 4)	3	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
943	(2, 3, 4)	3	(1, 2, 3)	2	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
944	(2, 3, 4)	3	(1, 1, 2)	4.75	(4, 5, 5)	4.75	…	(2, 3, 4)	3	(4, 5, 5)	4.75	(4, 5, 5)	4.75
945	(2, 3, 4)	3	(1, 2, 3)	2	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
946	(2, 3, 4)	3	(2, 3, 4)	3	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
947	(1, 2, 3)	2	(4, 5, 5)	4.75	(2, 3, 4)	3	…	(2, 3, 4)	3	(4, 5, 5)	4.75	(2, 3, 4)	3
948	(1, 2, 3)	2	(1, 1, 2)	4.75	(1, 2, 3)	2	…	(1, 2, 3)	2	(2, 3, 4)	3	(2, 3, 4)	3
949	(1, 2, 3)	2	(1, 2, 3)	2	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
950	(1, 2, 3)	2	(2, 3, 4)	3	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
951	(1, 2, 3)	2	(1, 2, 3)	2	(2, 3, 4)	3	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
952	(2, 3, 4)	3	(1, 2, 3)	2	(1, 1, 2)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
953	(2, 3, 4)	3	(1, 1, 2)	4.75	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
954	(1, 2, 3)	2	(1, 1, 2)	4.75	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
955	(2, 3, 4)	3	(2, 3, 4)	3	(1, 2, 3)	2	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75
956	(4, 5, 5)	4,75	(4, 5, 5)	4.75	(4, 5, 5)	4.75	…	(4, 5, 5)	4.75	(4, 5, 5)	4.75	(4, 5, 5)	4.75

In exploratory factor analysis, principal components analysis method was used for factor extraction, while varimax method was used for rotation process. KMO value of the scale was found as 0.85, while Bartlett test Chi-square value was found as 10486.12 ($p<.001$). These values show that the data set is suitable for factor analysis. As a result of the analysis, a 6-factor structure consisting of empathy, responsiveness, assurance, reliability, pandemic and tangibility was revealed. Cronbach's alpha coefficient for the overall scale was found as .751 and the scale was found to be very reliable. Exploratory factor analysis and reliability results are as shown in Table 7.

Table 7. Results of EFA (n=956).

Attributes	Factors	Cronbach's alpha	Extraction
Meeting passenger special needs	Empathy	0.935	0.857
Financial empathy (rational ticket prices, overweight baggage price)			0.860
Transportation between the city and the airport			0.834
The kindness and responsiveness of the crew			0.802
Web site and mobile applications	Responsiveness	0.795	0.620
The chance to choose seat			0.564
The speed with which requests and complaints are handled			0.539
Booking services			0.523
Digital interaction			0.405
Extended travel services (accommodation, etc.)			0.422
Convenience of the flight schedule	Assurance	0.756	0.574
Modernity and cleanliness of the aircraft			0.553
Feeling safe during the flight			0.517
Aircraft technology			0.549
Appearance of the crew			0.486
Check-in and check-out services	Reliability	0.741	0.388
Timely service/performance			0.603
Consistent ground and flight service			0.617
Professional training of flight attendants			0.540
Fast and accurate baggage delivery			0.523
Disinfecting the aircraft and the airport	Pandemic	0.817	0.727
Social distance			0.727
Contactless transactions			0.692
In-flight amenities (reading texts, light, air conditioning, digital tools)	Tangibility	0.559	0.661
Quality of food service			0.557
Seat comfort (seat space, etc.)			0.452

The results of characterizing the service quality attributes of the managers in the sector according to the degree of importance are shown in Tables 8 and 9.

Table 8. Scores For Azerbaijan

	Importance	Performance	Impact
1	0.4983	4.556	0.0385
2	0.6076	4.377	0.0385

3	0.4243	4.424	0.0385
4	0.8508	4.474	0.0385
5	0.8275	4.494	0.0384
6	0.7540	4.362	0.0385
7	0.6160	4.406	0.0385
8	0.7758	4.428	0.0385
9	0.6825	4.395	0.0385
10	0.7167	4.394	0.0385
11	0.6852	4.419	0.0385
12	0.5344	4.393	0.0385
13	0.5730	4.390	0.0385
14	0.7709	4.473	0.0385
15	0.8162	4.499	0.0385
16	0.7050	4.471	0.0384
17	0.7937	4.487	0.0385
18	0.7277	4.527	0.0385
19	0.7000	4.506	0.0384
20	0.5747	4.490	0.0383
21	0.7097	4.471	0.0384
22	0.6950	4.499	0.0385
23	0.7481	4.499	0.0384
24	0.8170	4.343	0.0385
25	0.7724	4.301	0.0384
26	0.7060	4.303	0.0385

Table 9. Scores for Turkey

	Importance	**Performance**	**Impact**
1	0.7370	4.6393	0.0385
2	0.7913	4.5645	0.0385
3	0.6541	4.5932	0.0385
4	0.8172	4.6522	0.0385
5	0.8202	4.5932	0.0384
6	0.6945	4.5666	0.0385
7	0.6852	4.5938	0.0385
8	0.7136	4.6009	0.0385
9	0.6638	4.5932	0.0385
10	0.6813	4.5815	0.0385
11	0.9419	4.6440	0.0385
12	0.8862	4.5574	0.0385
13	0.8591	4.5553	0.0385

14	0.9444	3.1716	0.0385
15	0.9216	3.1619	0.0385
16	0.9432	3.1322	0.0384
17	0.7204	3.2449	0.0385
18	0.6979	4.7059	0.0385
19	0.6782	4.7116	0.0384
20	0.5812	4.6778	0.0383
21	0.6427	4.6501	0.0384
22	0.6108	4.6778	0.0385
23	0.5420	4.6614	0.0384
24	0.7933	4.6583	0.0385
25	0.8003	4.6296	0.0384
26	0.8537	4.6496	0.0385

Equation (10) calculates the effect values for each factor. At this stage, information entropy is used. In this step, it was ensured that four managers in the airline transportation business gave an impact score to each factor. They used 1-to-5-point scale for evaluating the impact scores of factors. Equations (9)-(11) were used for calculating the information entropy. It is presented in the second column of Table 8.

Finally, the FIPIA diagrams were illustrated with the X-axis symbolizing performance and the Y-axis symbolizing importance scores and it is presented in Figure 1 and Figure 2.

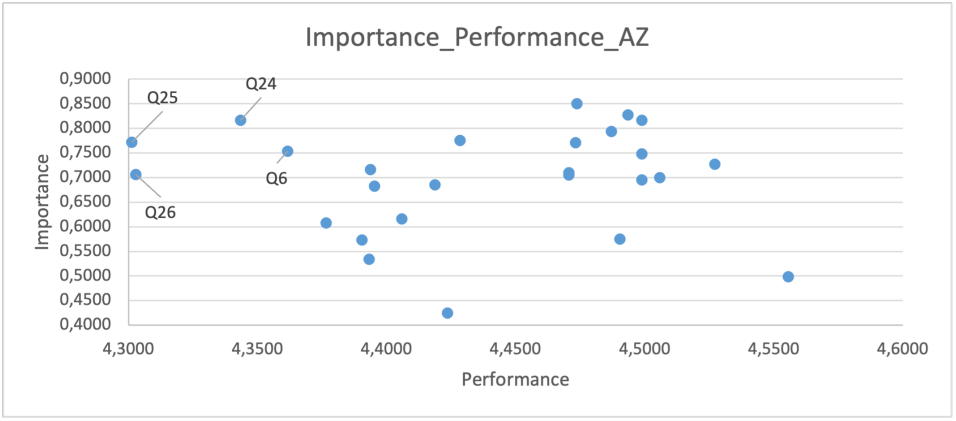

Figure 1. Graphics of Performance and Importance for Azerbaijan

Four service attributes were identified as concentrated for Azerbaijan. These service attributes are dimensions of assurance and pandemic. According to data included in Table 8 and Figure 1, Q6 (The modernity and cleanliness of the aircraft), Q24 (Disinfecting the aircraft and the airport), Q25 (Social distancing), and Q26 (Contactless Transactions) are determined as the concentrated service attributes for Azerbaijan.

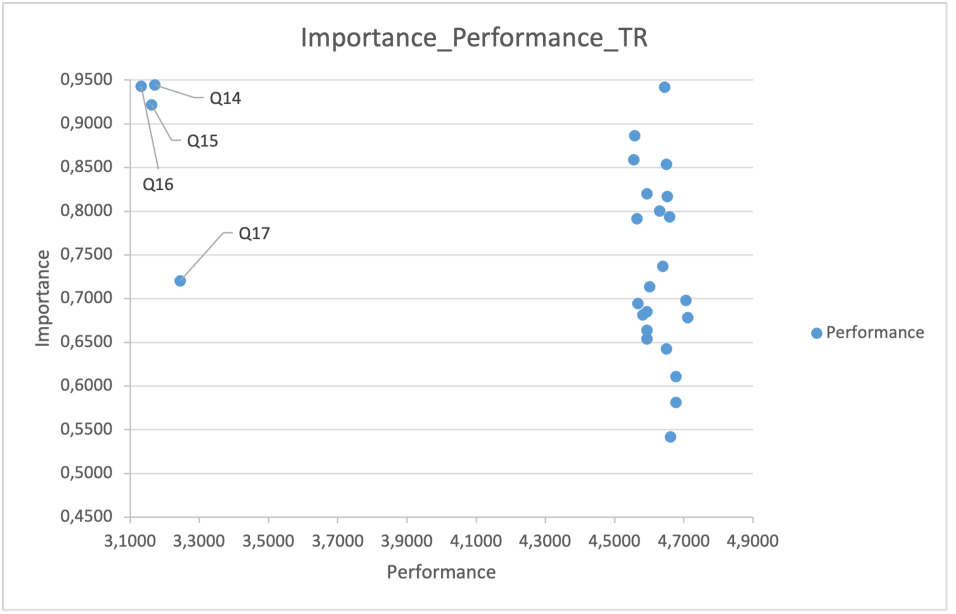

Figure 2. Graphics of Performance and Importance for Turkey

Four service attributes were identified as concentrated for Turkey. These service attributes are dimensions of empathy. According to data included in Table 9 and Figure 2, Q14 (the kindness and responsiveness of the crew), Q15 (financial empathy (rational ticket prices, overweight baggage price, etc.), Q16 (transportation between city and airport), and Q17 (meeting passenger special needs) are determined as the concentrated service attributes.

Figure 4 and Figure 5 are FIPIA diagrams. These diagrams show the performance and impact values of the attributes with low and high importance values. Q and numbers represent attributes and statement numbers on the scale.

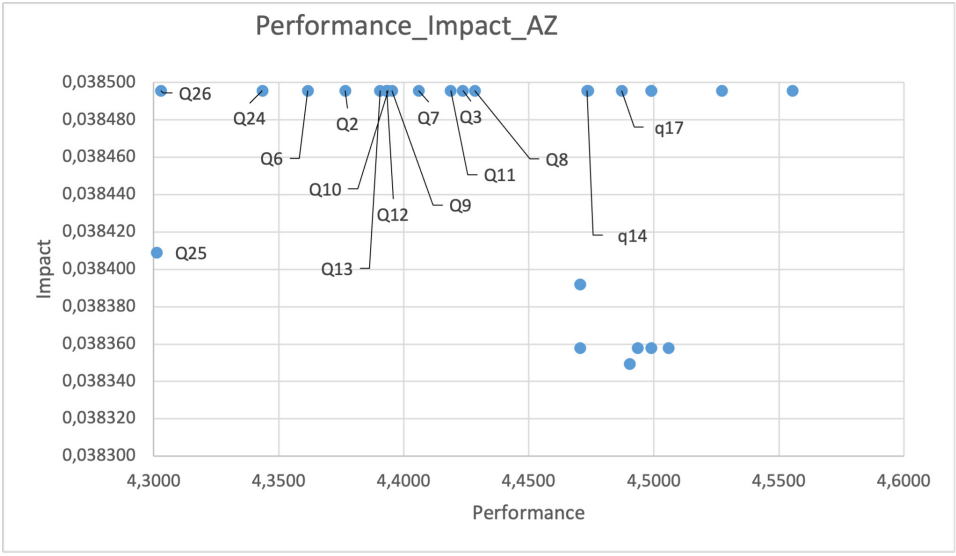

Figure 3. Graphics of Performance and Impact for Azerbaijan

According to data included in Table 8 and Figure 3, Q2 (Seating comfort (seat space, etc.), Q3(Appearance of the crew), Q24 (Disinfecting the aircraft and the airport), Q25 (Social distancing), and Q26 (Contactless Transactions), are also determined as relatively high impact and relatively low performance for Azerbaijan. According to the results obtained, businesses should focus on these five service quality attributes (Figure 3).

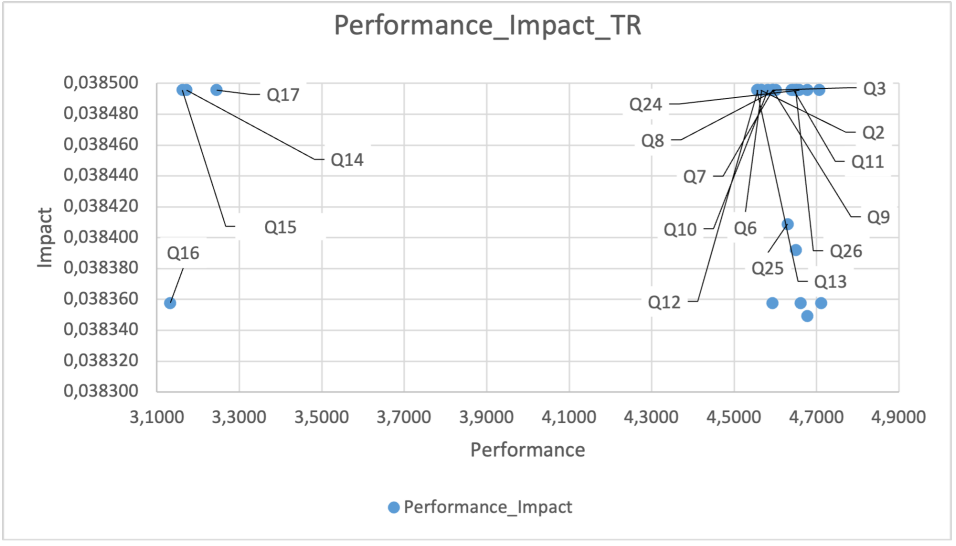

Figure 4. Graphics of Performance and Impact for Turkey

According to data included in Table 9 and Figure 4, Q14 (the kindness and responsiveness of the crew), Q15 (financial empathy (rational ticket prices, overweight baggage price, etc.), Q16 (Transportation between the city and the airport) and Q17 (meeting passenger special needs) are also determined as relatively high impact and relatively low performance. According to the results, businesses should focus on these four service quality attributes (Figure 4).

By looking at the difference between the importance and performance values for Azerbaijani and Turkish consumers, the general satisfaction levels were determined (Table 10).

Table 10. Comparison of importance and performance items

	Azerbaijan		Test ist.	p	Turkey		Test ist.	p
	Importance	Performance			Importance	Performance		
1	5 (3 - 5)	4 (2 - 5)	-11.637	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.035	**<0.001**
2	5 (2 - 5)	4 (1 - 5)	-11.012	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.168	**<0.001**
3	5 (2 - 5)	4 (1 - 5)	-7.510	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.080	**<0.001**
4	5 (1 - 5)	2 (1 - 5)	-17.134	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.375	**<0.001**
5	5 (1 - 5)	2 (1 - 5)	-17.097	**<0.001**	5 (2 - 5)	1 (1 - 5)	-19.243	**<0.001**
6	5 (2 - 5)	4 (1 - 5)	-6.831	**<0.001**	5 (3 - 5)	2 (1 - 5)	-18.855	**<0.001**
7	5 (2 - 5)	4 (1 - 5)	-6.530	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.113	**<0.001**
8	5 (3 - 5)	4 (1 - 5)	-7.867	**<0.001**	5 (2 - 5)	2 (1 - 5)	-19.392	**<0.001**
9	5 (2 - 5)	4 (1 - 5)	-7.169	**<0.001**	5 (2 - 5)	2 (1 - 5)	-19.304	**<0.001**
10	5 (2 - 5)	4 (1 - 5)	-8.167	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.274	**<0.001**
11	5 (3 - 5)	4 (1 - 5)	-6.616	**<0.001**	5 (3 - 5)	5 (1 - 5)	-8.949	**<0.001**
12	5 (3 - 5)	4 (2 - 5)	-5.641	**<0.001**	5 (2 - 5)	5 (1 - 5)	-6.015	**<0.001**
13	5 (2 - 5)	4 (1 - 5)	-7.156	**<0.001**	5 (2 - 5)	5 (1 - 5)	-6.129	**<0.001**
14	5 (2 - 5)	2 (1 - 5)	-17.548	**<0.001**	3 (1 - 5)	5 (3 - 5)	-18.389	**<0.001**
15	5 (3 - 5)	2 (1 - 5)	-18.359	**<0.001**	3 (1 - 5)	5 (2 - 5)	-18.200	**<0.001**
16	5 (2 - 5)	2 (1 - 5)	-17.864	**<0.001**	3 (2 - 5)	5 (3 - 5)	-18.324	**<0.001**
17	5 (3 - 5)	2 (1 - 5)	-18.146	**<0.001**	3 (2 - 5)	5 (3 - 5)	-18.134	**<0.001**
18	5 (1 - 5)	2 (1 - 5)	-18.481	**<0.001**	5 (3 - 5)	2 (1 - 5)	-18.967	**<0.001**
19	5 (3 - 5)	2 (1 - 5)	-18.502	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.368	**<0.001**
20	5 (2 - 5)	2 (1 - 5)	-18.204	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.104	**<0.001**
21	5 (3 - 5)	2 (1 - 5)	-18.417	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.368	**<0.001**
22	5 (2 - 5)	2 (1 - 5)	-18.400	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.304	**<0.001**
23	5 (2 - 5)	2 (1 - 5)	-18.298	**<0.001**	5 (3 - 5)	2 (1 - 5)	-19.170	**<0.001**
24	5 (2 - 5)	5 (1 - 5)	-1.586	0.113	5 (3 - 5)	5 (2 - 5)	-6.916	**<0.001**
25	5 (2 - 5)	5 (1 - 5)	-0.561	0.575	5 (3 - 5)	5 (2 - 5)	-7.091	**<0.001**
26	5 (2 - 5)	5 (1 - 5)	-4,957	**<0.001**	5 (3 - 5)	5 (2 - 5)	-7.085	**<0.001**

*Wilcoxon testi, ortanca (minimum – maksimum)

There is a statistically significant difference between the performance and importance scores of Azerbaijani and Turkish consumers. It has been observed that the performance scores of Azerbaijani consumers are higher than that of Turkish consumers. In this case, it shows that the general satisfaction level of Azeri consumers is higher than that of Turkish consumers.

5. Conclusion

The air transport industry is growing. Therefore, service quality is a priority for businesses. The most important indicator is the abundance of studies conducted on the evaluation of service quality in this sector. Frequent and updated assessments of service quality make it easier for businesses to revise themselves and to canalize their resources to the right areas. In fact, service quality does not improve when it is not measured regularly (Reichheld and Sasser, 1990). This situation may prevent effective source allocation. Studies that consider administrators' perceptions in the evaluation of service quality are limited. For example, Miranda et al. (2010) evaluated the importance of performance analysis in terms of consumers and managers, and determined that they had different priorities. Slack (1994), on the other hand, showed that managers know very little about their customers and competitors. Lemieux et al. (2013), on the other hand, found that the perception of administrators is generally low in their studies, in which they investigated the perceptions of the administrators about the performance of the institution. In addition, Shafii et al. (2016) in the health sector, Weber et al. (2020) in tourism, Gray et al. (2011) in managers' evaluations of SMEs, Kim et al. (2013) in the construction industry, and Dawes and Patterson (2020) conducted studies on industrial enterprises.

In this study, FIPIA with information entropy method, which provides a multidimensional perspective in the evaluation of service quality, was used. This multidimensional perspective is important both in terms of enabling managers to evaluate their service quality qualifications and to address the evaluations of citizens of two different countries. Therefore, this study is important because it deals with the perception of service quality comparatively and considers the perception of managers. Airline service quality has been discussed in different cultures in related literature (Bruning et al., 2009; Chen and Chao, 2015; Lim and Tkaczynski, 2017; Park et al., 2009), although the number of these studies is not sufficient. Cultural differences have been found in studies that used importance-performance and impact analyses. FIPIA with information entropy ensures that the subjective judgments of consumers are eliminated and manager evaluations are included. It can be seen that FIPIA with the information entropy method is used in airline service quality in the related literature (Atalay et al., 2019); however, no comparative analysis has been conducted. This method was used for the first time in Azerbaijan Airlines.

The first contribution of this study is that FIPIA with the information entropy method was used for the first time to compare Turkish and Azerbaijani consumers. Another contribution of this study is that it shows that there are obvious differences

in the service quality assessment of different cultures, although these cultures have similar characteristics. At the same time, this study is the first to evaluate Azerbaijan Airlines' service quality both with the method used and by including current factors.

The service quality evaluation of consumers of different nationalities makes it possible to provide services that meet international standards. Turkish and Azeri consumers are part of two close cultures, so much so that the citizens of both countries can understand each other in their native language. Different performance evaluations of the two cultures, so close to each other, are remarkable. Despite cultural closeness, Azerbaijan is a country that came out of the Soviet regime and experienced various deprivations. It can be said that Turkey is a more developed country than Azerbaijan. Related literature shows that airline service quality perceptions of consumers differ according to cultures (Kim and Lee, 2009; Lu and Ling, 2008; Pantouvakis and Renzi, 2016; Park and Jung, 2011; Sultan and Simpson, 2000;).

According to the results, Azeri consumers scored low performance in one quality of each of the tangibility (seat comfort), assurance (appearance of crew), and pandemic factors, while Turkish consumers scored low performance on the empathy factor. Relevant literature shows that there should be improvements in the attributes of tangibility (Atalay et al., 2019; Carlos Martín et al., 2008; Chen and Chao, 2015; Han, 2013; Kim and Park, 2017; Wen and Lai, 2010; Vink and van Mastrigt, 2011), appearance of the crew, kindness, and empathy (Abdullah et al., 2007; Batouei et al., 2019; Curtis et al., 2012; Lim and Tkaczynski, 2017; Topal et al., 2019; Wen and Lai, 2010), and pandemic (Kavus et al., 2022) factors. It can be seen that there are limited number of studies on pandemic factor in literature. It is obvious that it is essential to be prepared for extraordinary situations, such as the pandemic.

Finally, when the general satisfaction levels of Turkish and Azerbaijani consumers are examined, it is seen that Azeri consumers give higher points to business performance than Turkish consumers. As mentioned before, it can be thought that Azeri consumers may have lower expectations due to the economic problems they have experienced in the past, or that Turkish consumers may have higher expectations due to their socio-economic status. However, businesses must be able to satisfy their customers of all nationalities in order to reach international standards. Therefore, these differences should be taken into account.

Managerial implications

When the research results are evaluated in terms of managers; It is seen that resources should be allocated for service quality attributes for the pandemic factor for Azerbaijani consumers. Disinfecting aircraft and airports and regularly sharing these studies with consumers can be effective. In addition, it is important to create environments where social distance can be maintained and to offer the opportunity to carry out transactions by taking this quality into account. Finally, due to both the pandemic and the necessity of the digital age, contactless transactions need to be expanded.

The attributes that are in balance and that need to be conserved are as follows: meeting passenger special needs, rational ticket prices, overweight baggage price, transportation between the city and the airport. The convenience of the flight schedule, feeling safe during the flight, and aircraft technology attributes are given sufficient importance by the managers and they need to focus on other factors. It can be said that some of the resources allocated to the following services can be directed to the pandemic factor: Digital interaction, the speed with which requests and complaints are handled and check-in and check-out services.

The quality of service attributes that managers should focus on for the Turkish consumer are financial empathy, transportation between city and airport, courtesy and responsiveness of the team. Turkish consumers want an empathetic approach to them in air transportation. Therefore, managers should allocate resources to this area. Despite this situation, Turkish consumers state that aircraft cleaning, contactless transactions and social distancing are maintained. Therefore, the resources allocated to these attributes are in balance and should be protected. Managers should focus on other priorities, as consumers do not attach equal importance to the following attributes to which resources are allocated: Web site and mobile applications, the chance to choose a seat, the speed with which requests and complaints are handled, digital interaction, and extended travel services. Consumers do not attach as much importance to the following quality of service attributes as the empathy factor: Modernity and cleanliness of the aircraft, appearance of the crew, timely service/performance and consistent ground and flight service. Therefore, managers should focus on high-priority and low-performing attributes.

Limitations and further research

The first limitation is that the study was conducted via Azerbaijan Airline. Future studies should consider service quality in different airlines and evaluate manager perspective. Thus, it will be possible to represent a larger group in terms of marketing for airline business managers. Since Turkey is a member of the Star Alliance global airlines association, it is thought that it would be beneficial to evaluate different airline business managers.

It is thought that studies should focus on intercultural differences in airline industry. In particular, it can be ensured for citizens of countries who use the same airline company frequently to evaluate service quality. Consumers can have special demands from the companies of countries they fly frequently and find themselves culturally close. Therefore, international airline companies should take into consideration the demands of cultures they fly to. Another limitation of this study is the fact that it was conducted with 956 participants. Future studies can be conducted with higher number of participants and by considering different demographic characteristics. Considering the perspectives of staff in the evaluation of service quality can provide more effective results.

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