

Evaluating service quality of international airlines based on customer survey

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Abstract- This paper presents an effective approach for evaluating service quality of international passenger airlines by customer surveys. There have been various approaches to examine the service quality provided by researchers in the past. This research deals with the three unique approaches dealt with by varied researchers on service quality of international airlines through the medium of customer surveys. The approaches are Latent Semantic Analysis (LSA), Fuzzy multi-criteria analysis (MA) and Factor Analysis (Principle component analysis). Fuzzy multi-criteria analysis has been used to reflect the inherent imprecision of the customers' perceptions to the quality catered by airlines where multiple service attributes, crisp survey results are represented and processed as fuzzy sets. The evaluation of this approach outcome provides airlines their competitive advantages focusing on service quality. The purpose of LSA is to explore the common service quality characteristics relating to the airline industry by drawing out the comments provided by the passengers of various airline companies across the globe helping the stakeholders better understand the characteristics of service quality in the airline industry. The third approach of analysis is factor analysis which is quantitative approach by giving a schedule among the respondents for primary data to evaluate the quality of service provided by the international airliners' in which they have traveled, measured through questions designed on a 5 point Likert scale, thus providing airline industry with various approaches to infer of where customer loyalty lies within the boundaries of service quality.

Keywords- Latent Semantic Analysis (LSA), Fuzzy multi-criteria analysis (MA) and Factor Analysis (Principle component analysis, Service Quality, International Airlines.

1. Introduction

The ever changing aviation industry is being refurbished by privatization of airports, growing infrastructure and regulation policies. Submerging the idea that an airline is luxury, an international airline has changed the definition of the industry, opening it to various segments of society. The world passenger traffic is expected to grow by over 5% per year from 2010 through 2029 (Tinseth, 2010). Airline companies are constantly looking for ways to increase their competitiveness in service quality due to the agile business environment resulting from increased competition (Ku and Fan, 2009). An empirical study by (Ostrowski et al., 1993), shows that continuing to provide perceived high quality services would help airlines acquire and retain customer loyalty.

Numerous approaches have been used to evaluate service quality of the airline industry, Ekiz *et al.*, 2006, developed an AIRQUAL scale to measure the quality perceptions of airline customers, (Pakdil and Aydin, 2007), and used weighted SERVQUAL scores to study passengers' expectations and perceptions of airlines' service quality. (Shahin and Zairi, 2009), utilized the Kano model for classifying and prioritizing requirements of airline travelers with three case studies on international airlines. (Shannon *et al.*, 2009), used a quasi-experiment research setting to investigate the components of customer satisfaction in the US airline industry.

This research paper deals with three approaches, firstly latent semantic analysis (LSA), dealt by Muhammad Muazzem Hossain¹, Noufou Ouedraogo and Davar Rezanian in their research work. A Consumer Perspective of Service Quality in the Airline Industry. LSA uses mathematical and statistical techniques to identify key common themes in a collection of text documents called corpus without an *a priori* theoretical model. It allows for computerized extraction of concepts hidden in text data and has great potential for free text analysis. The purpose is to explore the generic service quality characteristics pertaining to the airline industry by mining the comments provided by the passengers of various airline companies across the globe.

Secondly, dealt by Yu-Hern Chang a, Chung-Hsing Yeh b, in their research work, a survey analysis of service quality for international airlines, fuzzy multi-criteria analysis approach is thus developed to rank airlines based on customers' assessments with respect to multiple service quality attributes. This approach allows the decision-makers attitude or preference for the customers' assessments on criteria weights and performance ratings to be incorporated into the evaluation process. The evaluation outcome would help airlines better understand how the customers view their services relative to their competitors, thus motivating airlines to provide appropriate levels of services.

Thirdly, dealt by Vaishali C.Mahajan, Rau .S.S, in their research work, Customer Satisfaction with airlines in India, Factor analysis with principle component method has been done to identify the major determinants of customer perception of service quality provided by the airlines. By mean and standard deviation the perception of respondents on these determinants are analyzed. Customers opinion was measured on a 5 point Likert scale ranging from strongly disagree (1) to strongly agree (5). Target population being passengers frequently travelling by international airlines.

2. Materials and Methods

LSA uses mathematical and statistical techniques to derive the latent semantic structure within a text corpus (Berry, 1992; Deerwester *et al.*, 1990). The text corpus comprises of documents that include text passages, essays, research paper abstracts, or other contexts such as customer comments, interview transcripts, etc. To illustrate the LSA methodology, a small database of seven short documents was created. This study conducts LSA of the corpus that consists of customer comments collected on eleven airline companies, including Air Canada, American Airlines, Air France, British Airways, Singapore Airlines, Air Korea, Indian Airlines, Royal Air Maroc, Qantas, Royal Brunei Airlines, and Asiana Airlines. Customer comments on these airlines were collected from the website which involved customer comments during 2006-2009. The corpus has a total number of 1,069 comments.

To identify the service attributes for evaluating Taiwan's airlines a comprehensive investigation was conducted by referring airline managers, academicians, government officials and travel agents in Taiwan. A number of 15 attributes. These independent attributes constitute the criteria (C1, C2; ...; C15) used in the fuzzy MA model for evaluating service quality performance of Taiwan's airlines.

This study is based on both primary and secondary data. Primary data was collected through questionnaire. The questionnaire was administered on the various parameters of service quality of international airlines in India and was constructed based on intense literature review. Higher positive response on a five point scale is taken to be measure of customer satisfaction. From online distribution to convenient sample of 130, 70 responses were gathered out of which 56 were usable samples. Their opinion was measured on 5 point Likert scale ranging from strongly agree (5) to strongly disagree (1). The study was limited to international low cost airlines in India.

3. Analysis and Results

A customer comment is the integral part of the analysis, and to be very precise with the comments few words from the dictionary obtained from collection of words had to be removed. The document consisted of 7333 words, where, the words had to go through three types of filtering namely, term filtering, which denotes removal of removal of numbers, dates, symbols, unique words, and stop words (such as 'a', 'an', 'for', 'of', 'the', etc.), Term stemming and communality filtering. Therefore eliminating words through the stop words, stemming, communality filtering and unique words the words reduced to 2373 words. LSA method was applied to the dictionary to extract five latent factors affecting the service quality. This method has identified semantic factors that clearly bring out the mind of customers towards airline service quality.

We can find service quality is best shown in the comments and feedback provided by customers about the service catered to them during their flight. The findings of our study suggest that there are five aspects of the airline service quality in the minds of the customers. Passengers always like to be treated the best, the first factor is the friendly behavior of the crew on board that highly impresses the customer and the caring nature that woo the customers.

The most critical part of this factor is that customers want that the crew respond to their needs in a swift manner and give customer needs highest priority which is the most important aspect of service quality. Luggage handling is another aspect that customers have mentioned as very critical which includes the arrival of luggage on time, luggage information on connecting flights, and an appropriate and immediate response to the inquiry of lost luggage. In-flight meals are expected to be of a certain price, good quality, according to preference of vegetarian or non-vegetarian meals, variety, frequency of meals served to them and quantity too. It is very important for the crew to keep in mind the diversity they carry from one destination to another.

In-flight entertainment, particularly for long flight, is the fourth aspect of the airline service quality. This includes the diversity of entertainment choices (e.g., movies, music, games, newspapers, etc.), the ease of use of the entertainment systems, and the availability of help if needed. More than need there is a certain expectation that customers have that need to be fulfilled by the airlines, Service expectation may be difficult to measure but the airline industry needs to concentrate on this critical factor which includes the goodwill, brand image, the price paid by customer and cabin class, as customers expect the true value of what they have paid the airlines.

According to the Fuzzy MA model, valuations of all the customers on quality service given to them by airlines are modeled as fuzzy sets. To assess the performance of airlines in the line of customer's perception of service quality, a fuzzy data was developed with fuzzy MA model. This analysis has brought about the internal and external strengths of the airlines which is very useful for the airlines to compete well with their competitors.

The internal competitiveness result indicates that the reliability of service security related accidents, Airline flight safety and security measures and on time performance of airlines as a whole performs much better than the handling of abnormal conditions handling of customer complaints and under performance liability, handling of flight delays and handling of luggage loss or damage. The overall competitiveness of airlines indicated is consistent with their performance rankings, which give the airlines a better view of improving the service quality and catering the right needs to the customers.

With the help of the third approach namely Factor analysis with principle component method has been done to identify the major determinants of customer perception of service quality provided by the airlines. This study explores that flight facilities and comfort were found to be most preferred by customers. Apart from airfares, service quality is kept as a major factor that retains customers the next time they book a ticket with the airline comparing varied competitors.

Studying the three modes of analysis we find that the inflight services are well observed by customers during their flight as they are keen in getting the right response and getting their needs fulfilled by the airline staff without error. The second thing that all three modes bring about is competitiveness in the airlines by providing strengths of the airlines in its quality of service where the airlines must be

able to extract information on the minds and needs and expectations of the customers which will retain them in the market and in the minds of the customers which will ultimately bring customer loyalty which is much of a treasure to each airline. In totality customer perception is what each airline should capture in order to bring out quality oriented services.

4. Conclusion

Service quality is the form of expectation by the customers which they put forward to the airlines through surveys. The various services provided by airlines is well observed by customers as they experience each service and that make them feel good or bad or satisfactory. Customers do not move away from voicing opinions through various modes they get as choice. It can be social media, surveys or even word of mouth. This research paper concentrated only on the surveys which captured customer comments on the airlines they received services from and placed their opinion on the level of services provided to them. Customers are such that they firstly expect their basic needs to be fulfilled. They expect a secure flight to their destination. They value the money they pay for a ticket and it is up to their perception that the value of the ticket is completely worth it. Ultimately the airlines profit from the inputs given by their passengers such that they compete well in the industry.

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