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Competitive service quality benchmarking in airline industry using AHP

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Abstract

Purpose – The purpose of this paper is to measure competitive service quality (SQ) performances of domestic full service airlines in India by providing a framework based on analytic hierarchy process (AHP), in order to benchmark their SQ thus, enhancing competitiveness and gaining competitive advantage.
Design/methodology/approach – The present study has used the AHP methodology to benchmark the SQ of airlines in India. Subsequently, competitive SQ gap analysis is performed to evaluate and compare strength and weakness of focal firm (Airline "B") against its competitors.
Findings – In this research work, total of 23 SQ attributes and five dimensions have been identified based on extensive literature review, focus group brainstorming and experts opinion from the Indian airline industry. The study reveals that air travelers rate assurance as the most important criteria and safety as the most important sub criteria followed by on time performance, performing the services right, the first time and remedial process for delayed or missing baggage. Furthermore, based on AHP methodology, the result shows that Airline "A" has emerged as a market leader and is considered as a benchmark airline.
Practical implications – This framework will help airline management and policy makers to identify area of service improvements and identify SQ gaps with respect to the benchmark airline. This will help in formulating suitable competitive strategies for SQ improvements, thus gaining competitive advantage.
Originality/value – In this research work, AHP-based SQ framework have been applied in Indian domestic aviation industry for competitive SQ benchmarking which is a novel contribution, thus widening the existing knowledge base in aviation SQ literature.

Keywords Benchmarking, Service quality, Airlines, Analytical hierarchy process, Gap analysis
Paper type Research paper

Introduction

In today's world of fierce competition, service organizations strive to stay ahead in the market by offering quality services and airline industry is no exception to this. Aviation industry in India has undergone rapid transformation with the liberalization of Indian aviation sector. With increasing cost, tight profit margins and increasing competition, airlines' success depends heavily on its ability to retain customers and win new customers (Min, 2010). To stay ahead in the business, superior service quality (SQ) is an important determinant and acts as an order winner. SQ is more important determinant than price in differentiating a service organization from its competitors and in encouraging customer loyalty (Kandampully and Suhartanto, 2000; Chow and Luk, 2005). Researchers have shown that superior SQ is an essential strategy for winning and retaining customer's thus increasing market share and profitability (Zeithaml, 2000; Chow and Luk, 2005).

SQ is considered to be the most important critical success factor of any service industry (Berry *et al.*, 1994; Kannan, 2010; Singh and Sushil, 2013). As per American Management Association survey of North American, Western European and Japanese managers, it was found that 78 percent of the surveyed managers believe that service

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improvements are the key to competitive success (Min and Min, 1996). It is difficult to define and measure SQ due to its intangible and elusive nature (Min and Min, 1996; Kannan, 2010; Min, 2010; Chow and Luk, 2005; Parasuraman *et al.*, 1985). However some authors have attempted to define it. Parasuraman *et al.* (1988) defined SQ as a global judgment or attitude relating to what the customer actually receives from services and the manner in which the services is delivered. Kannan (2010) defined SQ as the excellence to which a firm delivers services to its customers in comparison to its competitors.

Benchmarking was initiated in 1979 by Xerox to examine its manufacturing costs and defects (Min and Min, 1996). However, the application of benchmarking should not be limited to product quality measurement and improvement in the manufacturing sector only. Benchmarking is applicable to wide array of industries including the service industry like airlines and has two distinct approaches: competitive benchmarking and process benchmarking (Min and Min, 1996). As per the American Productivity and Quality Center (1993), competitive benchmarking measures organizational performance against that of competitive organizations and, consequently tends to concentrate on the relative performance of competitors. Airlines in India need to be committed to SQ excellence because SQ excellence leads to customer satisfaction which eventually leads to improved load factor and increased market share, thus increasing revenues, profitability and shareholder's value (Singh and Sushil, 2013). This paper attempts to develop reliable service standards for continuous service improvement by conducting competitive SQ benchmarking. Competitive benchmarking focusses on direct measurement of competitor performance and provides information on what customers really wanted and what competitors were doing to meet customer needs, thus provides target for excellence (Min, 2010; Min and Min, 1996; Kannan, 2010). Even though the application of competitive benchmarking to the service sector is challenging due to intangible and elusive nature of SQ, competitive benchmarking have been successfully applied in hotel industry (Min and Min, 1996), fast food restaurants (Chow and Luk, 2005; Min and Min, 2011), supermarkets (Min, 2010) and ocean container carriers (Kannan, 2010). The literature review suggests that no competitive SQ benchmarking study has been undertaken till date on airline industry in Indian context. The present research work is aimed to fill this gap. With a view to this, the main objectives of this research are as follows:

(1) to provide a framework based on analytic hierarchy process (AHP) to airline industry in Indian context with a view to assist airlines in benchmarking their SQ;

(2) to determine the service characteristics that air travelers considers important when selecting an airline and how these characteristics are prioritized according to their importance;

(3) to determine relative preference of full service airlines in India, with respect to each SQ characteristics considered in the decision making process;

(4) to identify the benchmark airline in terms of SQ performance and overall ranking of airlines; and

(5) to analyze and discuss the managerial implications of this research.

With intense competition in the market, airlines need to improve their SQ in order to gain competitive advantage and to remain competitive. Thus, it is essential for airlines to evaluate and compare its strength and weakness against its competitors when

developing strategies for its service improvements (Chow and Luk, 2005). The present research work provides an analytic hierarchy process-SQ quality (AHP-SQ) framework for competitive service quality benchmarking in Indian domestic airline industry that will assist managers in evaluating their service performance relative to their competitors by using AHP and competitive gap analysis. AHP act as a tool for evaluating competitive SQ performances and measures service performance relative to competitors, thus providing target for becoming excellent and achieve business and competitive objectives. The AHP procedure provides a ranking order of firms with respect to SQ dimensions, as well providing relative standings of each service provider with respect to its competitors.

The remainder of the paper is organized as follows: the next section deals with review of literature and brief overview of Indian airline industry followed by the AHP methodology. This is then followed by identification of SQ attributes and applying AHP-SQ framework for competitive SQ benchmarking in the airline industry in Indian context. Finally the results are interpreted and discussed in findings and discussion section. This is then followed with managerial implications and conclusions, which is then followed with limitations and scope for further future research work.

Literature review

SQ cannot be objectively measured as can technical quality in manufacturing because the concept of SQ is inherently intangible in nature (Chow and Luk, 2005; Patterson and Johnson, 1993). It is elusive and abstract construct because of three features unique to services: intangibility, inseparability and heterogeneity (Patterson and Johnson, 1993). SQ cannot be improved without measuring it (Min and Min, 1996). If the SQ is to be improved it must be reliably assessed and measured. However, measuring improvements in SQ is even more challenging (Parasuraman *et al.*, 1985). One of the most important efforts to measure SQ is the SERVQUAL instrument given by Parasuraman *et al.* (1988). They developed a SQ model based on gap analysis. SQ can be measured by identifying the gaps between customer's expectations of the service to be rendered and their perceptions of the actual performance of the service (Parasuraman *et al.*, 1988). SERVQUAL is based on the five dimensions of SQ namely: tangibility, reliability, responsiveness, assurance and empathy (Parasuraman *et al.*, 1988). Various SQ models for measuring SQ are available in literature, some of them are: technical and functional quality model (Grönroos, 1984), SERVQUAL Gap model (Parasuraman *et al.*, 1985, 1988), SERVPERF model (Cronin and Taylor, 1992), attribute model (Haywood-Farmer, 1988), synthesized model of SQ (Brogowicz *et al.*, 1990), attribute and overall affect model (Dabholkar, 1996), antecedents and mediator model (Dabholkar *et al.*, 2000) and internal SQ model (Frost and Kumar, 2000). All these model helps in measuring the internal SQ without considering the strategies of its competitors.

In order to evaluate firm's comparative service performance and to constantly strengthen its market position, there is a need to measure service performance in relation to its competitors. Few studies have been done to measure competitive SQ. Parasuraman *et al.* (1991) used non comparative evaluation model by adapting the SERVQUAL instrument to measure SQ in relation to competitors. The main difficulty with this approach is that it requires the collection of several sets of data to do a competitive analysis (Chow and Luk, 2005). Several researchers have applied comparative evaluation model which advocated the use of AHP technique for competitive SQ benchmarking. Although, AHP has been mostly used in multi criterion decision making problems and in choice problems, its versatility, practicality and its ease of use have allowed it to be widely applied in several areas.

Min and Min (1996) extended the idea of competitive benchmarking to a service industry by applying AHP methodology to the Korean hotel industry. They preferred AHP over SERVQUAL for competitive SQ benchmarking of Korean hotels because SERVQUAL measures the internal SQ of service firms and was not designed to measure the relative superiority/inferiority of a service firms and its service performance, while AHP measures the comparative SQ of competing service firms. Further, they commented that for a business, comparative position is more significant than any absolute measure and the results of AHP are more applicable than the more general results from SERVQUAL application, thus provides a direct comparison with competitors and establishes a link with managers' concern by providing targets for improvement. Using AHP technique they carried out competitive benchmarking for six Korean luxury hotels with two criterions and 14 service attributes and performed competitive gap analysis for service improvement action plans. They further concluded that their methodology has applicability beyond the hotel industry to various other service industries such as health care, banks, restaurants, etc.

Chow and Luk (2005) in his research work applied AHP technique to measure competitive SQ of fast food restaurants referred to as "AHP-SQ". The authors used five dimensions of SQ i.e. reliability, assurance, tangibles, empathy and responsiveness as decision criterion, while three fast food restaurants were chosen as decision alternatives. They preferred AHP as a comparative service improvement technique for two reasons. First, the AHP technique allows pair wise comparisons to be made among the alternatives with respect to the SQ decision criterions, thus provides a more meaningful analysis for developing competitive set of service attributes that will satisfy customers and assist the service provider in outperforming its competitors. Second, AHP requires the collection of only one set of data as opposed to several sets with the adapted SERVQUAL instrument as proposed by Parasuraman *et al.* (1991).

Min (2010) applied AHP for evaluating the comparative performance of supermarkets in Southeastern USA. Through his research work, he highlighted the fact that the most effective way of achieving service excellence is competitive benchmarking through AHP framework. Using AHP, he carried out competitive benchmarking involving seven supermarkets with two decision criterions and 11 service attributes. Though, sensitivity analysis was carried out to find out which service attributes are major differentiators for enhancing supermarket's competitiveness, competitive gap analysis was not carried out in his study. Kannan (2010) applied AHP for benchmarking the SQ of ocean container carriers in India. The author carried out competitive benchmarking using AHP with seven service criterions and four ocean container carriers. The author further carried out competitive gap analysis to establish which service attributes require improvements and identified specific areas of comparative advantages and disadvantages. Min and Min (2011) developed a set of benchmarks that helps fast food restaurants monitor their service delivery process, identify relative weaknesses against their competitors and take corrective actions for continuous service improvements using AHP and competitive gap analysis.

Many studies have been conducted in the area of airline SQ and customer satisfaction also. These include research work on low-cost airline carriers in Thailand (Saha and Theingi, 2009), study on airline industry for Australian international passengers (Park *et al.*, 2006), study on airline industry in Korea (Park *et al.*, 2004), study on airline industry in Taiwan (Chen, 2008), study on airline SQ (Gilbert and Wong, 2003). Saha and Theingi (2009) examined the relationship between the constructs of airline SQ, satisfaction and behavioral intentions in passengers of three

low-cost carriers (LCC) offering airline services in Thailand. Their study finds that the order of importance of the SQ dimensions is flight schedules, flight attendants, tangibles and ground staff. These SQ dimensions were found to be very important in explaining passengers' future behavioral intentions. Previous studies by Park *et al.* (2004, 2006) and Chen (2008) examined the relationship between airline SQ and other marketing variables like perceived image and passenger satisfaction. They found that the airline SQ had a significant impact on passenger's future behavioral intentions. Gilbert and Wong (2003) developed a 26 attribute model incorporating responsiveness, reliability, assurance, facilities, flight patterns, customization and employees dimensions to measure and compare the differences in passenger's expectations of the desired airline's SQ. Their finding shows that assurance was rated as the most important service dimension in airlines. Chang and Yeh (2002) identified 15 attributes to measure the SQ of airlines in the context of Taiwan and found that the most important factor was flight safety. Chen and Chang (2005) evaluated airline SQ from a process perspective by examining the gap between passengers' service expectation and the actual services received. Importance-performance analysis was also used to construct service attribute evaluation maps to identify areas of improvement. Their finding shows that assurance and responsiveness dimensions were rated as the most important service dimension in airlines. Liou and Tzeng (2007) developed a non-additive model for evaluating and improving the SQ of airlines and compare its result with the conventional additive method. They found out that safety and reliability emerged as the critical factors of SQ in airlines. Though, there are literatures available on benchmarking in aviation sector (Hooper and Greenall, 2005; Austin, 2005; Fry *et al.* 2005), they do not address competitive SQ benchmarking in airlines. Fry *et al.* (2005) explored the use of best practice benchmarking in civil aviation. Benchmarking was identified as the most used performance improvement technique for both airlines and airports. Austin (2005) analyzed the adoption of economic value added income as a benchmark for setting pricing and other policies of a monopolistic state-owned enterprise in the absence of normal benchmarking mechanisms. The author used case study of Airways Corporation of New Zealand Limited to showcase the success of this New Zealand-based enterprise in benchmarking its policies. Hooper and Greenall (2005) present the findings of an investigation into environmental reporting practice in the airline sector. Their findings present an insight into an understanding of some of the pros and cons of comparisons between airline environmental performance data. There have been several limitations in the previous studies. It has been evident from the previous literature that all these studies help in measuring the internal SQ without considering the strategies of its competitors and also, do not address competitive SQ benchmarking in airlines.

This present research paper conducts a competitive benchmarking study in order to help airlines enhance its competitiveness and to gain competitive advantage. Though, in the past, AHP has been applied in many industries and in various contexts but it has not been applied in airline industry for benchmarking. To apply competitive SQ benchmarking using AHP framework on airline industry in Indian context is a novel contribution, thus widening the existing knowledge base in aviation SQ literature.

Brief overview of Indian airline industry

The liberalization of Indian aviation sector in India has precipitated the boom for domestic and international passengers. The aviation industry in India has undergone a rapid transformation after the open sky policy came into existence, which opened the

doors for private players. Previously, the Indian aviation sector was dominated by a national carrier, now with the opening of Indian skies, many players have forayed into the Indian aviation market. From being primarily a government-owned industry, the Indian aviation industry is now dominated by privately owned full service carriers (FSC) and LCC. Private airlines accounted for a 81.8 percent share of the domestic aviation market in June 2012 (*Times of India*, 2012). India recorded a demand growth of 19.7 percent in August 2011, and was described as the top performer among domestic markets, as per figures released by the International Air Transport Association (*Times of India*, 2011). This empirical study examines competitive SQ benchmarking in the context of FSC operating in the domestic passengers market in India. There were nine airlines operating in Indian subcontinent during the study. Out of these there were three FSC and rest of them were LCC. Now one of the FSC has suspended its operations and it was in operations at the time survey study was done. These LCC, operating on point to point basis offers no frills services at lower price that eliminates many of the value added services such as free meals and in-flight entertainment that are offered by FSC (Saha and Theingi, 2009). While FSC, operating on hub and spoke basis charge premium for their service offerings. LCC reliability, on time performance, consistency and cabin crew service standards, are comparable with or sometime even better than FSCs. Although, a wide variety of factors such as increase in fuel prices, fierce price cutting competition, FSC have presented a bleak picture in Indian market despite the growth in domestic passengers. The present study examines the comparative SQ performances of FSC in India in order to pursue a customer focussed strategy with a view to improve the SQ of FSC. In order to maintain anonymity, the present study has used the name of airlines as "A", "B" and "C" for these three FSC.

AHP

AHP was developed by Saaty (1980, 1990, 2008). AHP involves decomposing complex unstructured multi-criteria decision problem into a hierarchy consisting of various levels in terms of an overall objective (Saaty, 1980). Each level consists of few manageable elements, which can be further decomposed into specific elements of the problem, the decision criteria's and the decision alternatives (Saaty, 1980). AHP is based on three set principles: decomposition, comparative pair wise judgment and synthesis of priorities (Dey *et al.*, 2006). Owing to its versatility and practical approach, AHP has been applied to variety of problems. Some application areas and their contributors are shown in Table I. AHP involves a series of several methodological steps which are as follows.

Table I. AHP application areas and their contributors

S. no.	Application areas	Contributors
1.	Supplier selection	Kannan (2009), Ferhan and Bayraktar (2003) and Koul and Verma (2011)
2.	Project selection	Kamal (2001) and Dey (2004)
3.	Quality management	Water and Vries (2006)
4.	IT outsourcing	Udo (2000)
5.	Resource allocation	Cheng and Li (2001)
6.	Benchmarking	Kannan (2010), Min and Min (1996), Chow and Luk (2005), Gilleard and Lung (2004), Dey (2002) and Min and Min (2011)
7.	Marketing	Wind and Saaty (1980)
8.	Lean manufacturing	Vinodh *et al.* (2012)

Step 1. Define the decision problem and structuring the decision problem into hierarchy: it involves the decomposition of the problem into its constituent parts. The hierarchy consists of the goal, which is at the top level in the hierarchy, criteria and sub criteria form the intermediate level, while the decision alternatives are at the lowest level.

Step 2. Pair wise comparisons: for each level every elements are compared with each other with respect to the importance in making the decision. There would be in all ${}^{n}C_{2}$ $\{= n\,(n-1)/2\}$ paired comparisons. The Saaty's nine-point scale (Saaty, 1980) is used to incorporate subjectivity, experience and knowledge in an intuitive and natural way (Dey *et al.*, 2006). Pair wise comparison matrix is obtained after incorporating the decision maker judgments. For example, if the decision maker prefers element i over j with a certain score from the Saaty's scale then this score is entered as a_{ij} in i, j position and its reciprocal is entered as $1/a_{ij}$ in j, i position. The diagonal entries are entered 1 s because when a criterion is compared with itself there is no priority of inferiority (Kannan, 2010).

Step 3. Estimating the relative weights (priority vector) of elements for each level in the hierarchy: this is done by dividing the elements of each column by the sum of that column; then, obtaining the eigenvector by adding the elements in each resulting row and dividing this sum by the number of elements in the row (Cheng and Li, 2001). This will give the priority vector for the comparison matrix giving the relative weights of each element.

Step 4. Consistency test for the entire hierarchy: if element i is more preferred than j, element j is more preferred than k, and then element i must be more preferred than k. For each pair wise comparison matrix, consistency test is performed to check for any inconsistent judgment by calculating the consistency ratio (CR). If CR$\leqslant$0.10 (acceptable value) then weight results are valid, otherwise, the quality of judgmental data should be improved and revised (Wind and Saaty, 1980). Consistency is the degree to which the perceived relationship between elements in the pair wise comparison is maintained (Ta and Har, 2000). To compute CR, weighted sum vector (eigenvector A) is first obtained by matrix multiplication of priority vector and pair wise comparison matrix. Each element of the weighted sum vector is divided by the corresponding priority to obtain eigenvector B. The maximum eigenvalue ($\lambda_{\max}$) is obtained by averaging numbers in vector B. Consistency index (CI) for a matrix of size n is calculated by the formula (Saaty, 1980):

$$\mathrm{CI} = (\lambda_{\max} - n)/(n-1)$$

Finally CR is obtained by dividing CI by random index (RI) for the same matrix size n. CR = CI/RI (Saaty, 1980), where RI represents CI of randomly generated pair wise comparison matrix (Saaty, 1980).

Step 5. Synthesization: overall (global) priority P_i for the decision alternative is obtained by combining decision alternatives scores with the criterion weights (Vinodh *et al.*, 2012). This is obtained by weighted summation score:

$$P_i = \sum_{j=1}^{n} W_j \times L_{ij} \forall i$$

where P_i is the overall (global) priority for alternative i; W_j the weight of criterion j; L_{ij} the local priority; n the total number of decision criterions.

Methodology

Methodology for exploring service attributes

The SQ attributes used in this study were developed on the basis of published literature, focus group discussion with aviation SQ experts from industry and some preliminary interviews with passengers. An initial meeting was conducted with the airline management. In this meeting six experts from aviation industry were identified. These experts had more than ten years of experience in the aviation SQ area. After two weeks, a brainstorming session was organized to identify SQ attributes. First, a list of attributes was identified based on extensive review of literature on airline SQ. Before conducting the brainstorming session, interviews were conducted with domestic passengers chosen conveniently at the Indira Gandhi International (IGI) airport New Delhi, to explore and to incorporate voice of customers in service design characteristics. These interviews were unstructured direct interviews, which used no formally structured questionnaires. Out of these interviews some attributes were explored and the list was further expanded and modified by incorporating those attributes. SQ attributes based on passengers' interviews were incorporated in the SQ dimensions. However, the main approach came from SERVQUAL battery (Parasuraman *et al.*, 1988). Although SERVQUAL has been widely used to measure SQ across industries, no two providers of service are alike. Therefore the focus group concluded that an adaptation of SERVQUAL is needed and it should serve as a framework for SQ attributes. The instrument was viewed as a basic skeleton that required modification to fit the specific airline situation and supplement context-specific items. SERVQUAL is based on the five dimensions of SQ namely: tangibility, reliability, responsiveness, assurance and empathy (Parasuraman *et al.*, 1988). The focus group agreed on dimensions definition based on how they have been used in the past. The five dimensions along with the working definitions that fit the airline industry were defined and are as follows.

Tangibility. The appearance of physical facilities, equipment, personnel and communication material. This dimension also include check in and boarding services, baggage handling services, waiting time, modern aircrafts, clean facilities, variety and choices of in-flight entertainment and in-flight meals.

Reliability. The ability to perform the promised services dependably and accurately. This dimension also include on time departures/arrivals, consistent and efficient service processes.

Responsiveness. The willingness to help customers and to provide prompt services. It also includes keeping passengers informed about the time of service, prompt response to complaints and requests.

Assurance. The knowledge and courtesy of employees as well as their ability to convey trust and confidence. It also includes safety aspects, safe planes and facilities and employee capabilities.

Empathy. The provision of caring, individualized attention to passengers. It also includes convenient flight schedules, and understanding the specific need of passengers.

Finally, the focus group came out with a list of 23 attributes. These attributes were then clustered into five dimensions of SQ based on the working definitions and "trial and error" clustering approach (Saaty, 1990). Table II shows the list of five dimensions of SQ along with the items modified to fit the airline industry context. Face validity appears evident from the final list of SQ attributes and the conceptual definitions match

S. no.	Criteria	Sub criteria
A	Tangibility	
1.		(TAN1) Neat well dressed and visually appealing staff
2.		(TAN2) Hassle free check in and boarding (waiting time and queue)
3.		(TAN3) Efficient baggage handling mechanism (reasonable waiting time for baggages)
4.		(TAN4) Modern aircrafts and clean facilities
5.		(TAN5) Variety and choices of in-flight entertainment facilities
6.		(TAN6) Variety and choices of in-flight meals
B	Reliability	
7.		(REL1) The flights are on time (on time performance)
8.		(REL2) Performing the services right, the first time
9.		(REL3) Efficiency of check in process
10.		(REL4) Remedial process for delayed or missing baggages
C	Responsiveness	
11.		(RES1) Prompt services to passengers
12.		(RES2) Always willing to help passengers
13.		(RES3) Keeping passengers informed about the time of service
14.		(RES4) Prompt response to passengers' requests or complaints
15.		(RES5) Employee behavior and attitude instill confidence
D	Assurance	
16.		(ASS1) Safe planes and facilities during journey (safer airline)
17.		(ASS2) Consistently courteous staff
18.		(ASS3) Knowledge to answer passengers' queries
19.		(ASS4) Individual attention to passengers
E	Empathy	
20.		(EMP1) Employees gives personal attention to passengers
21.		(EMP2) Passengers' best interest at heart
22.		(EMP3) Understand the specific needs of passengers
23.		(EMP4) Convenient flight schedules

Table II.
List of dimensions (criteria) and attributes (sub criteria) that decide the service quality of airlines

well with the attribute wordings. A simple pretest was performed in which three independent experts from the aviation industry matched attributes with the SQ dimensions. No expert had difficulty in matching attributes to service dimensions providing further evidence of face validity.

Questionnaire design and sample collection

In accordance with the conceptual framework of AHP (described in the next section), the questionnaire was structured into three sections: first section for pair wise comparisons of service dimensions (main criterions), second section for pair wise comparisons of attributes (sub criterions) and third section for pair wise comparison of decision alternatives (airlines) with respect to each sub criteria. The first section contained ${}^{5}C_{2}\,(=10)$ paired comparison for passenger evaluation of the importance of service dimensions. To minimize judgmental bias, respondents were provided with the definitions of each service dimensions along with the questionnaire. The second section contained a total of 43 paired comparisons for passenger evaluation of the importance of service attributes. For example, for sub criteria corresponding to tangibility, there were six attributes (items), hence 15 pair wise comparisons were obtained from respondents. In the third section, respondents were asked to compare each airline in terms of satisfaction level with respect to each sub criteria. This section contained a

total of 69 paired comparisons. Respondents were asked to rate each pair wise comparison in the order of importance as per the Saaty's nine-point scale.

A total of 400 questionnaires were administered to passengers during May 2012 to August 2012 at IGI airport, New Delhi. Passengers were offered a small financial incentive and a possibility to enter into a lucky draw contest to encourage them to fill up the questionnaire (since most of them were reluctant). The respondents were also screened to ensure that they had at least traveled once in all the three full service airlines during the last six months. A total of 171 complete usable responses were obtained giving a response rate of around 43 percent.

Framework for competitive SQ benchmarking in airline industry

The present research work adopted the AHP methodology to benchmark and to measure comparative SQ performance of full service domestic airlines in India. There were three competing full service airlines in India: "A", "B", "C". In order to compare service performances of each airline under study AHP methodology is applied which is used for SQ benchmarking and as comparative service improvement model. Out of the three airlines, Airline "B" (focal firm) is to benchmark its SQ against other competitors. The framework involves various steps which are as follows.

Step 1. Structuring the AHP hierarchy

The first and foremost step is to choose SQ attributes that act as decision criteria (Table II) and are important for decision making (goal). Once these decision criteria and decision alternatives are identified, these are arranged in hierarchy structure descending from an overall goal to decision criteria, sub criteria and decision alternatives in successive levels (Saaty, 1990). There is no specific rule and procedure for structuring the hierarchy and it largely depends on the complexity of the decision problem and convenience of the decision maker (Kannan, 2010). But the elements at the same level should be of the same magnitude and must relate to some or all elements in the next higher level (Vargas, 1990; Kannan, 2010). Figure 1 shows the AHP hierarchy for the benchmarking problem.

In the present research work Table II shows five SQ dimensions (main criteria) and its attributes (sub criteria) that decide the SQ of airlines. With five main criteria, 23 sub criteria and three decision alternatives, an AHP hierarchy is structured and is shown in Figure 1. The hierarchy has four levels. The first level is the objective of the problem i.e. identification of benchmark airline. The second level consists of the main criteria: tangibility, reliability, responsiveness, assurance and empathy. The third level consists of 23 sub criteria and the fourth level consists of three decision alternatives namely: Airline "A", Airline "B" and Airline "C".

Step 2. Pair wise comparison of each criteria and sub criteria and estimating priority vector

After structuring the AHP hierarchy, pair wise comparison of criterions and sub criterions were carried out using Saaty's nine-point scale. Air travelers were asked to compare pair of service dimensions (both main and sub criterions). In the present study since there are five main criterions involved hence, a 5×5 pair wise comparison matrix is formed as shown in the Table III. For each sub criteria n $(n-1)/2$ pair wise comparison were done.

For example, for level three sub criteria corresponding to tangibility, there are six items, hence 15 pair wise comparisons were obtained from respondents. Similarly for

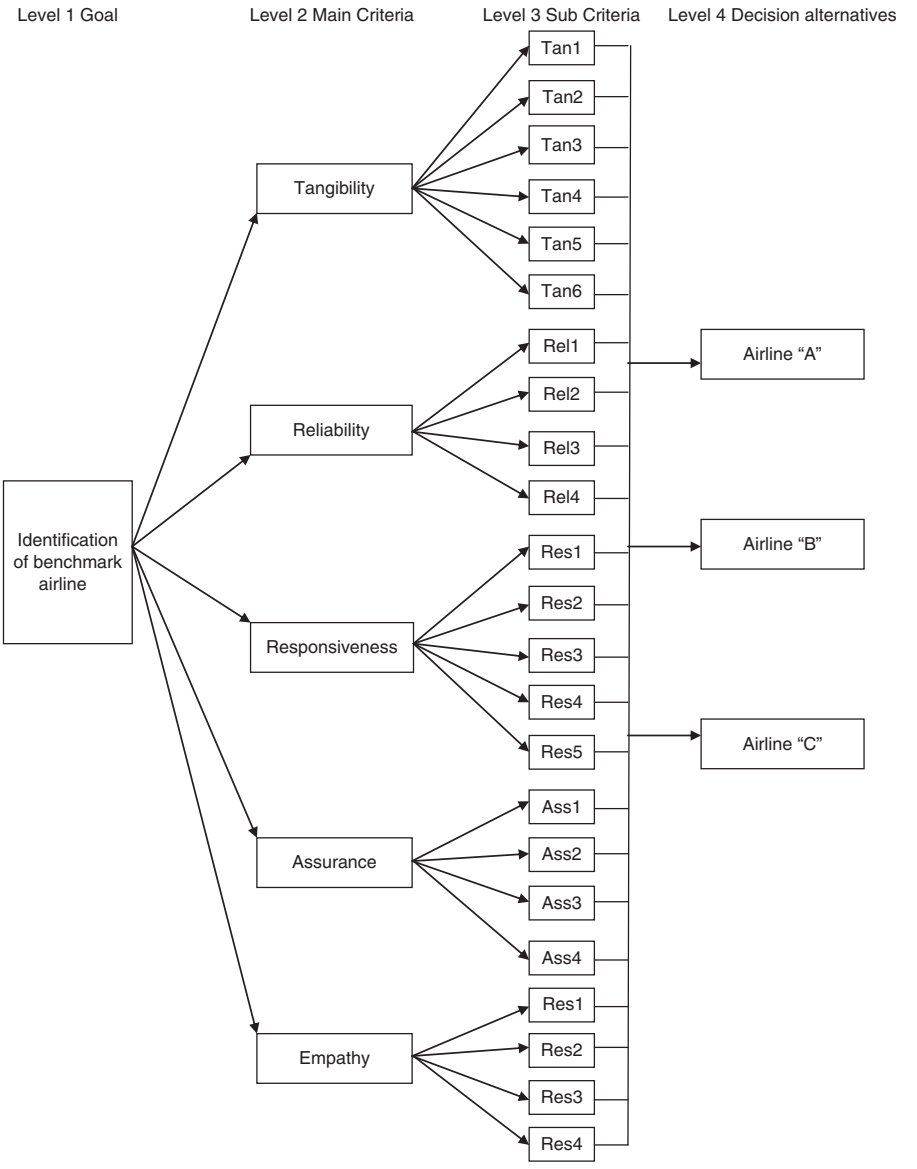

Figure 1.
AHP hierarchy for the benchmarking problem

each sub criteria level, 6×6 matrix, 4×4 matrix, 5×5 matrix, 4×4 matrix and 4×4 matrix were formed. Similarly respondents were asked to compare each airline in terms of satisfaction level with respect to each sub criteria. In order to incorporate individual judgments into a single representative judgment, geometric mean of their individual score were computed (Ta and Har, 2000; Lin and Hsu, 2003; Saaty, 2008). These geometric means were then used as input in the pair wise comparison matrix of level 2 and in five pair wise comparison matrices of level 3. For each pair wise comparison matrix CR is computed by the method discussed in the previous section. For main criteria CR of 0.058

indicates that the pair wise comparison judgments are consistent with each other and hence further analysis can be carried out. For all sub criterions, CR values are less than 0.10, hence judgments are considered to be consistent. The aggregate pair wise comparison weight matrices along with CR values are shown in Tables III-IV.

In order to calculate the priority vector (relative weights), normalized weights for each row are averaged across each row to give the relative priority of each criterion (Kannan, 2010). Tables III-IV also show the relative weights of each criteria and sub criteria and are shown in priority vector column. These relative priority weights are used for ranking main criteria and sub criteria service dimensions, in the order of importance to air travelers. From Table III, it is clear that, assurance rank as the most important SQ

Criterion	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Priority vector
Tangibility	1.00	0.17	0.21	0.25	0.49	0.06
Reliability	5.72	1.00	3.50	0.88	2.64	0.32
Responsiveness	4.67	0.29	1.00	0.25	2.07	0.15
Assurance	3.97	1.14	4.06	1.00	5.00	0.38
Empathy	2.06	0.38	0.48	0.20	1.00	0.09

Notes: $\lambda_{max} = 5.259$; CI = 0.065; CR = 0.058

Table III. Aggregate pair wise comparison weights of main criteria of level 2 and its priority vector

Tangibility	TAN1	TAN2	TAN3	TAN4	TAN5	TAN6	Priority vector
TAN1	1.00	0.29	0.43	0.25	0.45	0.23	0.06
TAN2	3.39	1.00	1.83	1.19	1.62	1.19	0.23
TAN3	2.31	0.55	1.00	1.51	1.36	1.15	0.18
TAN4	3.96	0.84	0.66	1.00	0.84	0.62	0.16
TAN5	2.20	0.62	0.74	1.19	1.00	0.35	0.13
TAN6	4.44	0.84	0.87	1.61	2.82	1.00	0.24
Reliability	REL1	REL2	REL3	REL4	Priority vector		
REL1	1.00	3.85	3.25	1.45	0.45		
REL2	0.26	1.00	1.73	1.24	0.20		
REL3	0.31	0.58	1.00	1.07	0.15		
REL4	0.69	0.81	0.93	1.00	0.20		
Responsiveness	RES1	RES2	RES3	RES4	RES5	Priority vector	
RES1	1.00	1.95	2.24	1.36	1.36	0.29	
RES2	0.51	1.00	1.29	1.03	2.77	0.22	
RES3	0.45	0.78	1.00	0.62	1.54	0.15	
RES4	0.74	0.97	1.61	1.00	1.21	0.20	
RES5	0.74	0.36	0.65	0.83	1.00	0.14	
Assurance	ASS1	ASS2	ASS3	ASS4	Priority vector		
ASS1	1.00	6.31	6.71	6.99	0.68		
ASS2	0.16	1.00	0.62	0.97	0.09		
ASS3	0.15	1.62	1.00	1.90	0.14		
ASS4	0.14	1.03	0.53	1.00	0.09		
Empathy	EMP1	EMP2	EMP3	EMP4	Priority vector		
EMP1	1.00	0.93	0.52	0.22	0.12		
EMP2	1.08	1.00	0.59	0.47	0.16		
EMP3	1.92	1.68	1.00	0.36	0.22		
EMP4	4.49	2.13	2.79	1.00	0.49		

Notes: $\lambda_{max} = 6.176$, CI = 0.035, CR = 0.028; $\lambda_{max} = 4.181$, CI = 0.060, CR = 0.067; $\lambda_{max} = 5.177$, CI = 0.044, CR = 0.039; $\lambda_{max} = 4.045$, CI = 0.015, CR = 0.017; $\lambda_{max} = 4.069$, CI = 0.023, CR = 0.026

Table IV. Aggregate pair wise comparison weights of sub criteria of level 3 and its priority vector

dimension criteria with a weight of 38 percent followed by reliability with a weight of 32 percent, responsiveness with a weight of 15 percent, empathy with a weight of 9 percent and tangibility with a weight of 6 percent. These ranking indicate the amount of relative importance, air travelers assign to main SQ dimension (level 2) while evaluating the service performance of the competitor airlines. Similarly relative weights for each sub criteria levels were also estimated, which are shown in Table IV. For sub criteria corresponding to reliability, On time performance (Rel1) rank as the most important sub criteria with a weight of 45 percent, and is given the highest priority in assessing the reliability service dimension criteria followed by performing the services right, the first time (Rel2) and remedial procedure for delayed or missing baggages (Rel4) with a weight of 20 percent each. This is then followed by the efficiency of the check in process (Rel3) with a weight of 15 percent. These rankings are presented as priority vectors in Table III-IV. They indicate the amount of relative importance Indian air travelers assign to various criterions while evaluating the performance of airlines.

Step 3. Pair wise comparison of each decision alternatives and estimating local priority vector

After estimating relative priority for each criteria and sub criteria, the next step is to find the local priority score for each airline under study with respect to each sub criteria. Table V shows the aggregate pair wise comparison weight matrices for airlines with respect to each sub criteria. Since there are three airlines and 23 sub criteria, hence there will be 23, 3×3 matrices. For each matrix relative weights are estimated in the same way as described in the previous section. This gives the local priority vector (satisfaction score) corresponding to each sub criteria. These local priority scores indicate the relative preference of each airline with respect to each sub criteria. For example, Airline "A" is the most preferred airline in terms of sub criteria on time performance (Rel1) with a weight of 47 percent, followed by Airline "C" with a weight of 36 percent, which is then followed by Airline "B" with a weight of 17 percent (Table V). The CR for each matrix is also estimated, which are found to be less than 0.10. Hence the judgments are considered to be consistent.

Step 4. Synthesization

The results obtained in steps 2 and 3 were then synthesized. First of all, the final weights of each sub criteria were estimated by multiplying the relative weight of the main criteria with the sub criteria. The overall satisfaction score (global priority score) of airlines were estimated by multiplying the final weight of each sub criteria with the local priority score corresponding to each sub criteria and adding across each column and are shown in Table VI. The airline having the highest overall satisfaction score is regarded as the "market leader" (Chow and Luk, 2005) in terms of SQ performance and hence emerges as the "benchmark". From Table VI it is clear Airline "A" has emerged as a market leader (benchmark) with an overall satisfaction score of 40 percent. The result shows that Airline "A" is rated as the best overall performer in terms of SQ dimensions, followed with Airline "C", with an overall satisfaction score of 31 percent, and Airline "B" with an overall satisfaction score of 29 percent.

Step 4. Competitive SQ gaps analysis

The competitive SQ gap of each service attributes was derived from the discrepancy between the service performance (satisfaction scores) of the focal firm (Airline "B") and

	A	B	C	PV	CR		A	B	C	PV	CR
			TAN1						TAN2		
A	1.00	2.57	0.37	0.28	0.057	A	1.00	1.36	1.32	0.40	0.005
B	0.39	1.00	0.31	0.14		B	0.73	1.00	0.76	0.27	
C	2.7	3.18	1.00	0.58		C	0.76	1.32	1.00	0.33	
			TAN3						TAN4		
A	1.00	1.65	1.49	0.44	0.001	A	1.00	1.84	1.08	0.41	0.027
B	0.60	1.00	0.79	0.25		B	0.54	1.00	1.00	0.27	
C	0.67	1.26	1.00	0.31		C	0.92	1.00	1.00	0.32	
			TAN5						TAN6		
A	1.00	0.95	0.42	0.24	0.000	A	1.00	0.39	0.50	0.18	0.016
B	1.06	1.00	1.11	0.34		B	2.55	1.00	1.91	0.51	
C	2.39	0.90	1.00	0.42		C	2.01	0.52	1.00	0.31	
			REL1						REL2		
A	1.00	2.81	1.28	0.47	0.000	A	1.00	2.29	1.29	0.46	0.006
B	0.36	1.00	0.48	0.17		B	0.44	1.00	0.70	0.21	
C	0.78	2.07	1.00	0.36		C	0.77	1.43	1.00	0.33	
			REL3						REL4		
A	1.00	1.65	1.11	0.40	0.000	A	1.00	2.93	1.43	0.49	0.000
B	0.61	1.00	0.65	0.24		B	0.34	1.00	0.52	0.17	
C	0.90	1.54	1.00	0.36		C	0.70	1.93	1.00	0.34	
			RES1						RES2		
A	1.00	2.80	0.64	0.36	0.013	A	1.00	2.99	0.82	0.41	0.017
B	0.36	1.00	0.33	0.15		B	0.34	1.00	0.42	0.16	
C	1.57	3.00	1.00	0.49		C	1.21	2.37	1.00	0.43	
			RES3						RES4		
A	1.00	2.16	0.87	0.39	0.001	A	1.00	3.12	2.32	0.57	0.011
B	0.46	1.00	0.44	0.18		B	0.32	1.00	0.53	0.16	
C	1.15	2.29	1.00	0.43		C	0.43	1.90	1.00	0.27	
			RES5						ASS1		
A	1.00	3.14	1.29	0.47	0.000	A	1.00	0.54	1.45	0.29	0.007
B	0.32	1.00	0.38	0.15		B	1.86	1.00	2.01	0.49	
C	0.77	2.66	1.00	0.38		C	0.69	0.50	1.00	0.22	
			ASS2						ASS3		
A	1.00	1.99	1.57	0.45	0.041	A	1.00	1.33	0.86	0.35	0.046
B	0.50	1.00	0.41	0.19		B	0.75	1.00	1.27	0.33	
C	0.64	2.45	1.00	0.36		C	1.17	0.79	1.00	0.32	
			ASS4						EMP1		
A	1.00	2.78	1.39	0.47	0.015	A	1.00	3.04	1.36	0.48	0.000
B	0.36	1.00	0.34	0.15		B	0.33	1.00	0.44	0.16	
C	0.72	2.98	1.00	0.38		C	0.73	2.29	1.00	0.36	
			EMP2						EMP3		
A	1.00	1.39	1.07	0.38	0.002	A	1.00	1.26	1.30	0.39	0.001
B	0.72	1.00	0.91	0.29		B	0.79	1.00	0.92	0.30	
C	0.94	1.10	1.00	0.33		C	0.77	1.09	1.00	0.31	
			EMP4								
A	1.00	0.71	2.33	0.35	0.002						
B	1.41	1.00	3.90	0.51							
C	0.43	0.26	1.00	0.14							

Notes: A, Airline "A"; B, Airline "B"; C, Airline "C"; PV, priority vector; CR, consistency ratio

Table V.
Aggregate pair wise comparison weights for alternatives of level 4

Level 2 (main criteria)		Level 3 (sub criteria)		Final weights	Airline "A"	Airline "B"	Airline "C"	SQ gap	SQ gap ranking	Overall SQ gap ranking
Tangibility	0.06	TAN1	0.06	0.003	0.28	0.14	0.58	−0.14	2	9
		TAN2	0.23	0.013	0.40	0.27	0.33	−0.13	3	10
		TAN3	0.18	0.010	0.44	0.25	0.31	−0.19	1	7
		TAN4	0.16	0.009	0.41	0.27	0.32	−0.14	2	9
		TAN5	0.13	0.007	0.24	0.34	0.42	0.10	✓	✓
		TAN6	0.24	0.013	0.18	0.51	0.31	0.33	✓	✓
Reliability	0.32	REL1	0.45	0.149	0.47	0.17	0.36	−0.30	2	3
		REL2	0.20	0.064	0.46	0.21	0.33	−0.25	3	5
		REL3	0.15	0.048	0.40	0.24	0.36	−0.16	4	8
		REL4	0.20	0.063	0.49	0.17	0.34	−0.32	1	2
Responsiveness	0.15	RES1	0.29	0.044	0.36	0.15	0.49	−0.21	4	6
		RES2	0.22	0.033	0.41	0.16	0.43	−0.25	3	5
		RES3	0.15	0.023	0.39	0.18	0.43	−0.21	4	6
		RES4	0.20	0.030	0.57	0.16	0.27	−0.41	1	1
		RES5	0.14	0.020	0.47	0.15	0.38	−0.32	2	2
Assurance	0.38	ASS1	0.68	0.257	0.29	0.49	0.22	0.20	✓	✓
		ASS2	0.09	0.035	0.45	0.19	0.36	−0.26	2	4
		ASS3	0.14	0.052	0.35	0.33	0.32	−0.02	3	12
		ASS4	0.09	0.033	0.47	0.15	0.38	−0.32	1	2
Empathy	0.09	EMP1	0.12	0.011	0.48	0.16	0.36	−0.32	1	2
		EMP2	0.16	0.015	0.38	0.29	0.33	−0.09	2	11
		EMP3	0.23	0.021	0.39	0.30	0.31	−0.09	2	11
		EMP4	0.49	0.045	0.35	0.51	0.14	0.16	✓	✓
Overall satisfaction score (global priority)					0.40	0.29	0.31			

Table VI.
Global priorities of airlines and SQ gap scores

that of the best overall performer airline referred to as "market leader" or "benchmark" in respect of each sub criteria (Chow and Luk, 2005; Min and Min, 1996; Kannan, 2010). A SQ failure may occur when there is a discrepancy between the focal firm's performance and the market leader's performance with respect to each service attributes (Min and Min, 1996; Kannan, 2010). Once the market leader (Airline "A") is identified, competitive SQ gap analysis for focal firm (Airline "B") was carried out in order to measure the extent of gaps present in the service performance with respect to the market leader. The competitive SQ gap is calculated as follows (Chow and Luk, 2005; Min and Min, 1996; Kannan, 2010):

$$SQ\ Gap_i = S_{iF} - S_{iM} \forall i$$

where $SQ\ Gap_i$, is the competitive SQ gap for sub criteria i; i the service sub criteria; S_{iF} the service performance (satisfaction scores) for sub criteria i of the focal airline; S_{iM} the service performance (satisfaction scores) for sub criteria i of the market leader.

A positive value of $SQ\ Gap_i$ indicates that focal firm outperformed the market leader on the sub criteria i. A negative gap indicates that the focal firm underperformed relative to the market leader. A zero gap indicates that focal firm performed well on the sub criteria i compared with the market leader (Chow and Luk, 2005; Min and Min, 1996; Kannan, 2010). SQ gap for focal airline (Airline "B") is shown in Table VI.

Findings and discussion

The research findings are summarized in Table VI. It shows priority ranking of the main criteria service dimension (level 2), priority ranking of sub criteria (level 3) and ranking of decision alternatives (airlines) with respect to each sub criteria. In order to understand the prioritization of the SQ attributes that passengers deem important, the respondents' judgments on main criteria, sub criteria and the relative preference of three airlines with respect to each sub criteria were examined.

Interpretation of level 2 priorities (main criteria service dimensions) and level 3 priorities (sub criteria service dimensions)

The results show that air travelers assign "assurance" as the highest priority in assessing the SQ in airline industry with a weight of 38 percent which is also shown in Figure 2. Assurance service dimension also involve making air travelers feel safe during their journey (safety aspects). Hence it is important for an airline to provide safety and safe journey. Air travelers have ranked safety, knowledge and courtesy as the most important service dimension. The results show that out of the four sub criteria (level 3), air travelers have assigned safe planes and facilities (safety) during journey (ASS1) as the most important service sub criteria with a weight of 68 percent followed by knowledge to answer passengers' queries (ASS3) with 14 percent, consistently courteous staff (ASS2) and individual attention to passengers (ASS4) with 9 percent each. Hence airlines must lay stress on providing air travelers with safe journey. These results are also consistent with the previous work of Gilbert and Wong (2003), which indicated that passengers rated assurance as the most important service dimension.

Air travelers have ranked "reliability" service dimension as the second most important SQ dimension with a weight of 32 percent which is also shown in Figure 2. From this it is clear that airline should lay stress on reliability service dimension by improving on time performance (punctuality) and by efficient check in process and efficient baggage handling process. The results show that out of the four sub criteria (level 3), air travelers have assigned on time performance (REL1) as the most important service sub criteria with a weight of 45 percent followed by performing the services right, the first time (REL2) and remedial procedure for missing and delayed baggages (REL4) with 20 percent each and efficiency of check in process (REL3) with a weight of 15 percent. Hence airlines must lay stress on punctuality (on time performance) which is having highest priority and must improve their operations (processes) that not only

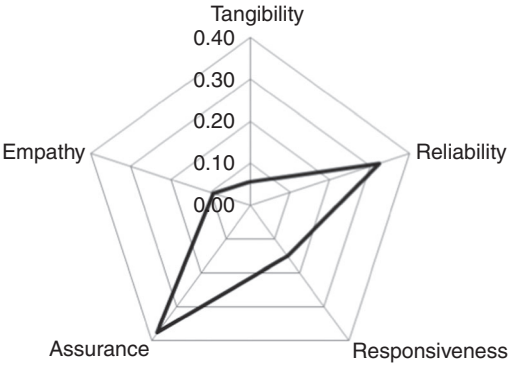

Figure 2.
Radar diagram showing priority rating level of the main criterion by passengers

improves on time performance but also make suitable arrangements so that baggages are delivered within reasonable time.

Responsiveness was rated third most important aspect of SQ dimension in airline industry with a weight of 15 percent which is also shown in Figure 2.It is apparent that air travelers want prompt service, willingness of employees to help passengers and prompt response to passengers request and complaints. The results show that out of the five sub criteria (level 3), air travelers have assigned prompt service to passengers (RES1) as the most important service sub criteria with a weight of 29 percent followed by willingness to help passengers (RES2) with 22 percent, prompt response to passenger request or complaint (RES4) with 20 percent, keeping passengers informed about the time of service (RES3) with 15 percent and employee behavior and attitude instill confidence (RES5) with 14 percent. Hence airlines must lay stress on prompt service to passengers.

Empathy was rated fourth in terms of SQ dimension in airline industry with a weight of 9 percent which is also shown in Figure 2. Out of the four sub criteria (level3), air travelers have assigned convenient flight schedule (EMP4) as the most important service sub criteria with a weight of 40 percent followed by understanding specific need of passengers (EMP3) with 23 percent, passenger's best interest at heart (EMP2) with 16 percent and personal attention to passenger (EMP1) with 12 percent. Hence airlines must lay stress on incorporating convenient flight schedule in their network.

Tangibility was rated the last in terms of SQ dimensions in airline industry with a weight of 6 percent which is also shown in Figure 2. Out of the six sub criteria (level3), air travelers have assigned variety and choices of in-flight meals (TAN6) with highest rating weight of 24 percent, hassle free check in and boarding (TAN2) with 23 percent, efficient baggage handling (TAN3) with 18 percent, modern aircraft and clean facilities (TAN4) with 16 percent, variety and choices of in-flight entertainment facilities (TAN5) with 13 percent and lastly neat well dressed and visually appealing staff (TAN1) with 6 percent. Hence airlines must lay stress on improving the quality of in-flight meals and improve check in and boarding facilities.

Furthermore, from the final weights of sub criteria, it is evident that air travelers rated (safety) safe planes and facilities (ASS1) as the most important sub criteria with a weight of 25.7 percent followed by on time performance (REL1) with a weight of 14.9 percent, performing the services right, the first time (REL2) with 6.4 percent and remedial process for delayed or missing baggage (REL4) with 6.3 percent.

Interpretation of level 4 priorities (decision alternatives) and overall satisfaction score

Table VI and Figure 3 shows the service performance of three airlines with respect to each of 23 service dimensions sub criteria. The result show that out of the 23 sub criteria Airline "A" has outperformed the other two airlines in 15 SQ sub criteria, while Airline "C" has outperformed other two airline in five sub criteria and Airline "B" has outperformed other two in only three sub criteria. The results provide the specific service dimension sub criteria on which each airline is the most or least preferred in term of satisfaction rating. Airline "A" has outperformed both the airlines in "assurance", "reliability" and "empathy" service dimension criteria, which are rated highly by air travelers in terms of SQ except for one assurance sub criteria "safe planes and facilities" and one for empathy sub criteria "convenient flight schedule", in which Airline "B" has outperformed both the airlines. Airline "C" has outperformed both the airline in three sub criteria out of total five sub criteria of "responsiveness" while for the rest two sub criteria of "responsiveness" Airline "A" has outperformed the other two.

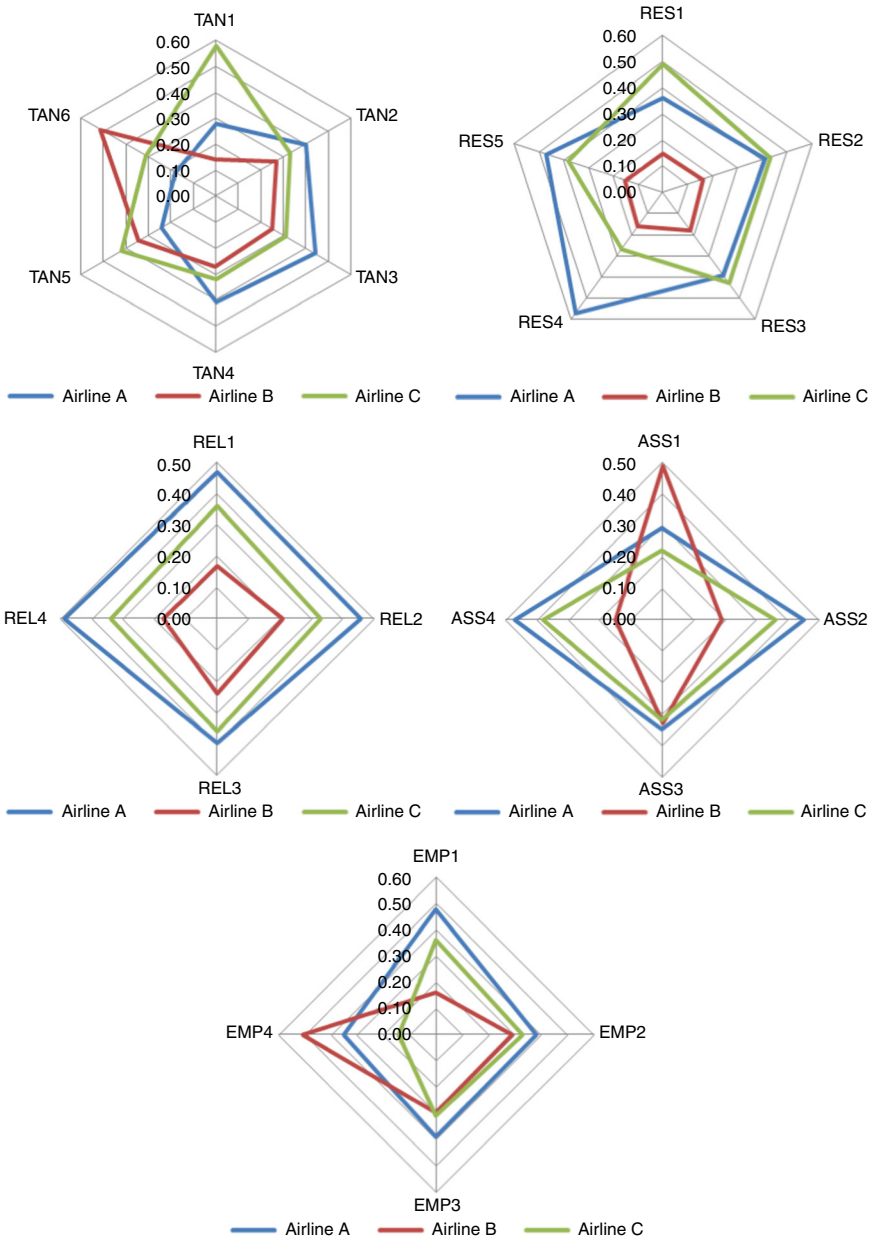

Figure 3.
Radar diagram showing performance level of each airline w.r.t. each service dimensions sub criterion

For "tangibility" sub criteria Airline "A" has outperformed the other two in three sub criteria while Airline "C" has outperformed the other two in two sub criteria and Airline "B" has outperformed the other two in only one sub criteria "variety and choice of in-flight meals. This information provides valuable insight for the top management in terms of making appropriate competitive strategies in order to improve, modify or

upgrade their existing SQ standards with regard to their competitors in order to capture market share and increase passengers' satisfaction. This can help the top management in deciding on the priority and focus on those attributes which leads us to the ultimate objective of passengers' satisfaction.

The result show that Airline "A" has emerged as a market leader with an overall satisfaction score of 40 percent and is considered as a benchmark. Airline "A" is rated as the best overall performer in terms of SQ dimensions, followed with Airline "C", with an overall satisfaction score of 31 percent, and Airline "B" with an overall satisfaction score of 29 percent.

Interpretation of competitive SQ gaps

In order to develop service improvement strategy for the focal airline (Airline "B"), there is a need to interpret competitive SQ gap to identify areas of service improvement. Table VI shows the service performances of focal airline in comparison with its competitors. The results show that Airline "A" was rated as best overall performer and is treated as a benchmark for comparative service performance. For each service sub criteria, each airline was ranked with a satisfaction score. In order to assess Airline "B" position with respect to its competitors, the SQ gap for Airline "B" was estimated for each SQ sub criteria. Four out of the total 23 SQ sub criteria had positive SQ gap value while rest 19 had negative SQ gap values. This implies that Airline "B" underperform in 19 SQ sub criteria when compared to the market leader, Airline "A". In order to compete in the market, Airline "B" need to develop strategies based on these SQ gaps. The largest SQ gap implies that a large discrepancy exist in the services of Airline "A" and Airline "B". Hence Airline "B" should mobilize their resources to fill these SQ gaps in the order of largest to smallest SQ gap in each SQ criteria and sub criteria.

SQ gap ranking within each main SQ criteria and overall SQ gap ranking for each SQ sub criteria has been estimated (Table VI), which provide useful managerial insights. In terms of "tangibility" criteria, Airline "B" has to emphasize on improving SQ of baggage handling (TAN3), while for "reliability" criteria Airline "B" has to prioritize on improving remedial procedures for delayed or missing baggage's (REL4). In terms of "responsiveness" criteria, Airline "B" has to emphasize on improving prompt response to passengers request or complaints (RES4), while for "assurance" criteria, Airline "B" has to improve on SQ aspect of giving individual attention to passengers (ASS4). In terms of "empathy" criteria, Airline "B" has to lay more stress on improving SQ aspect of giving personal attention to passengers (EMP1). All of the above SQ gaps are ranked 1 in SQ gap ranking. Similarly, other gaps can also be interpreted. Finally, overall SQ gap is also shown in Table VI, which gives an idea about the service sub criterions that need to be given top priority irrespective of the main criterions. Air travelers have rated Airline "B" highly on only 4 sub criterions which are "variety and choice of in-flight entertainment" (TAN5), "variety and choice of in-flight meals" (TAN6), "safe planes and facilities during journey" (ASS1), and "convenient flight schedules" (EMP4) sub criteria relative to the market leader, Airline "A" and hence marked as ✔ in Table VI.

Managerial implications

The outcome of the research work provides several managerial and practical implications. First, this research provides a framework (AHP-SQ framework) for carrying out competitive benchmarking of SQ in full service domestic airline industry

in Indian context. This framework will help airline management to identify areas of SQ improvements, compare their strengths and weakness with their competitors and to identify SQ gaps with respect to the benchmark airline. This will help top management in formulating competitive strategies for improvement of their SQ performance thus gaining competitive advantage.

Second, this research enables airline to understand various service criteria that determine SQ in airline industry in Indian context. The framework developed in this research highlights the priority weights of each criteria and sub criteria as assigned by air travelers. This would help management to decide which service dimension criteria to be given top priority and which ones to be given the least priority while devising their competitive strategy. Giving too much emphasis on wrong criteria and de-emphasis on important criteria may lead to passenger's dissatisfaction and subsequent loss in revenue and market share (Kannan, 2010).

Third, this AHP-SQ framework provides competitive SQ gap analysis that helps management to identify SQ gaps between the focal airline and the benchmarked airline. SQ gap analysis helps in identifying strength and weakness as compared to its competitors, thus helps management to form suitable competitive strategies in order to remain competitive and to improve service performance.

Fourth, AHP SQ framework in airline industry helps in identifying airline's competitive position and its overall performance compare with its competitors. This framework helps in identifying airline's SQ dimensions that can be improved to enhance productivity and competitiveness. In today's world of fierce competition, changing market dynamics and resource constraints, this framework helps in identifying which SQ dimensions and attributes to be given top priority. Thus, this framework presents a holistic picture in airline SQ literature.

Final implication is the generalizability of the framework. The proposed methodology has addressed the competitive SQ benchmarking of full service airlines in India. This framework can be adopted by any service industry such as banks, hotels, health care, etc. for its competitive benchmarking in order to identify intercompany differences in SQ and to formulate suitable customer centric strategies for their competitive advantage.

Conclusion

This research presents a framework for benchmarking the SQ of full service domestic airline industry in Indian context. It starts with the identification of SQ attributes of Indian domestic airline industry. After identification of attributes and decision alternatives (airlines), AHP hierarchy was structured keeping in view the overall goal of identifying benchmark airline, which was kept at the top level in the hierarchy. After that, relative priority weights of each main criteria, sub criteria and local priority weights of decision alternatives with respect to each sub criteria were determined by pair wise comparisons. Finally these weights were synthesized to give the global priority score (overall satisfaction score) for each airline. The airline having the highest global priority was set as benchmark airline (Airline "A") while focal airline (Airline "B") was compared with the benchmarked airline in terms of service performance. It was then followed by competitive SQ gap analysis that helped to identify areas of service improvement and to identify strengths and weakness as compared to its competitors. The AHP-SQ framework described in the present research thus assist top management to devise airline competitive strategy for improvement in their SQ performance.

Limitations and scope for future research work

Although, the present research contributes to the existing aviation SQ literature, it has some limitations. In the present research work only those air travelers were taken into consideration that had experience of all the three airlines under study which is a necessity in AHP-SQ framework methodology. The present research work did not investigate the switching behavior pattern of air travelers and the effect of other marketing variables such as brand image, customer loyalty, perceived value, etc. on SQ dimensions, which can be the scope of future research. The present research is only limited to domestic full service airlines in India, while further research work can be conducted to study international and low-cost airlines in India or in any other context. The framework discussed in this research work helps to identify SQ gaps between the focal airline and the benchmark airline, however the present approach does not address "how" to fill this gap and what future action needs to be taken in order to address these deficiencies. Another limitation of this present research is that the AHP framework adopted modified SERVQUAL SQ dimensions. Future research work could consider incorporating other dimensions in extending the framework proposed here or adopting other service dimensions as well. In addition, the proposed AHP-SQ framework methodology has application beyond airline industry and can be applied in other service sector industry.

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