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Benchmarking the service quality of airlines in the United States: an exploratory analysis

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Abstract

Purpose – The purpose of this paper is to help airlines gain a better understanding of passengers' service concerns, identify opportunities for continuous service improvement, and then develop service benchmarking standards that can be a yardstick for the airline's competitiveness.

Design/methodology/approach – This paper develops a set of target performance standards that helps airlines monitor their service delivery process, identify relative weaknesses, and take corrective actions for continuous service improvements using exploratory data analysis and competitive gap analysis.

Findings – This study reveals that a service attribute considered most important to the airline customers' impressions of service quality are air safety. This result reflects a growing concern over potential terrorism against airlines in the wake of the September 11 incident. The authors also found that proper baggage handling, competitive airfare, and on-time arrival/departure were next most important service attributes, whereas frequent flier and code-sharing programs were least important. Furthermore, the authors discovered that airline passengers' perceived service quality influenced their choice of airlines. That is to say, airline service quality can be an important gauge of airline market share and revenue.

Research limitations/implications – The current study is limited to the evaluation of comparative service quality of airlines in the USA. Thus, this study cannot be generalized to the airline passengers' perceived service quality in other countries or different cultural settings. Also, this paper focuses on the performance aspect of benchmarking rather than the strategic aspect of benchmarking.

Practical implications – With rising costs of fuel, labor, maintenance, and security, many airlines are at a crossroads where they have to decide between succumbing to restructuring pressures in a form of mergers/acquisitions and reinventing their service offerings. One viable means of reinventing airline service offerings is to learn more about what airline passengers truly value and appreciate in terms of service offerings and then figure out what it takes to win the hearts of customers and then how the airline can differentiate its service offering from those of its competitors. With this in mind, this paper develops viable service improvement strategies for the airline that can enhance its competitiveness in the struggling airline industry.

Originality/value – This paper is one of a few attempts to identify a list of service attributes most important to airline service quality based on the actual survey of airline passengers, and then develop a benchmark standard of airlines in the USA from a customer (passenger) perspective.

Keywords Benchmarking, Service quality

Paper type Research paper

1. Introduction

After losing $16 billion in 2008 and $9.9 billion in 2009, the US airline industry has experienced a rare turnaround in 2010 by registering a profit gain of $15.1 billion in 2010 (Zacks Equity Research, 2011). Despite this short turnaround and a growing optimism, the US airline industry continues to struggle with chronic industry problems

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exacerbated by skyrocketing fuel prices, instable yields, weak traffic volumes, security hassles, weather disruptions, and increased taxation for the last few years. To make it worse, the competition in the global airline industry gets tougher after a series of deregulations and multilateral "open skies" agreements across the world that liberalized commercial aviation services and then opened up international airports and transcontinental routes to full competition. In addition, intense security measures introduced by the Aviation and Transportation Security Act of 2001 might have cost the airline industry billions in lost ticket revenue. Reflecting this difficult industry structure, from 2001 to 2009, US airlines experienced slim profit margins ranging from −18 percent to a peak of 11 percent, with an average of −4.8 percent throughout the nine years, and only 0.4 percent for 2011 (Houriani, 2012). To survive in this fiercely competitive industry with little margin for error, many commercial air carriers seek for ways to improve their cost efficiency and service productivity. One of such ways includes a "no-frills" approach which allows airlines to control their operating expenses to a minimum and transgress into a lower price-point airfare. However, this no-frills approach can backfire, since it may undermine the airline service quality and put some airlines in less competitive positions.

To deal with this dilemma, this paper intends to propose a winning strategy that helps the airline industry enhance customer value or innovate service offerings by better understanding what the airline passengers really want and desire. In particular, considering the close linkage between airline service quality to its profitability, the airline industry should cater its services to the changing needs and preferences of airline passengers by identifying those needs and preferences in a timely manner. As a matter of fact, Bloemer *et al.* (1999) discovered that perceived service quality was a key antecedent for service loyalty which often leads to higher profitability. More specifically, a 2 percent increase in customer retention has the same effect on profits as cutting costs by 10 percent. Likewise, a 5 percent reduction in customer defection rate can increase profits by 25-125 percent (Kotelikov, 2008). As such, this paper also aims to identify most important service attributes essential for sustaining airline service quality. Once these service attributes are revealed, the airline should figure out what service attributes customers consider most important and how well the airline is performing relative to its competitors with respect to each of those salient service attributes. In an effort to help the airline enhance its competitiveness that relies on the customer perception of its overall service quality in comparison to other competitors, this paper conducts a competitive benchmarking study that aims to translate customer service requirements into comparative quality measures. Neely *et al.* (2005) noted that the most beneficial form of benchmarking was competitive benchmarking because it focused on the direct measurement of competitor performance and provided information on what customers really wanted and what competitors were doing to meet customer needs.

Competitive benchmarking in the service sector is known to improve service performance by as much as 60 percent in less than a year (Harrington and Harrington, 1996). Even though the application of competitive benchmarking to the service sector is challenging due to the intangible nature of service quality and the subsequent lack of universal service standards, competitive benchmarking has been successfully applied to various service organizations such as hotels and restaurants (e.g. Morey and Dittman, 1995; Min and Galle, 1996; Min and Min, 1996, 1997, 2011; Phillips and Appiah-Adu, 1998; Min *et al.*, 2002). However, the few prior published literature to date has reported competitive benchmarking studies on airlines. To fill

the void left by prior benchmarking studies, this paper addresses the following research questions:

RQ1. Which elements comprise customer service attributes that influence the airline passenger's perception of service quality?

RQ2. Which service attributes are most important for customer satisfaction?

RQ3. Which airline is perceived to be the industry leader with respect to its service performances?

RQ4. How do we compare the airline's service performance with that of the industry leader using competitive gap analysis?

RQ5. How do we develop a strategic action plan for continuous improvement of the airline service quality?

RQ6. How significantly does airline service quality impact customer loyalty?

2. Relevant literature

Since deregulation of the US airline industry in 1978 which gave carriers greater freedom to operate on any routes and fares whatever the market would bear, a dramatic restructuring of the US airlines industry has occurred. This restructuring led to the reformulation of airlines' business strategies that can better cope with unfettered free competition, elimination of route restrictions, and flexible airfares. The increasingly popular business strategies adopted by the US airline industry include: the focus on low-cost niche markets; discount pricing; the development of hub-and-spoke networks; mergers and acquisitions among competitors; and airline alliances through code sharing. Despite the popularity and benefit potentials of these strategies, these strategies might have backfired due to their emphasis on cost cutting measures without guaranteeing acceptable service quality. Indeed, concerned with deteriorating airline service quality, the US Department of Transportation (DOT) recently introduced the Airline Passenger Bill of Rights including a so-called "Tarmac" rule that could impose a penalty of $27,500 per passenger if a boarded commercial plane sits on the runway for more than four hours. Also, airlines are required to prominently post bag, meal, cancellation, and other formerly hidden fees on their web sites and compensate bumped passengers at least double the price of their tickets, provided the airfare is less than $650 (Burmon, 2011). This Airline Passenger Bill of Rights was further codified by the recent passage of the FAA Modernization and Safety Improvement Act of 2012 which secured a comprehensive set of airline passenger protections and welfare (Hanni, 2012).

Despite these government initiatives, concerns over deteriorating airline service quality still persist as evidenced by frequent flight delays of US airlines for the past two years. For example, the most recent Department of Transportation (2011, 2012) indicated that the average on-time arrival rate was declined from 85.1 percent in 2011 to 76.3 percent in 2012. Although unusual weather patterns such as Hurricane Sandy, airport congestion, and other exogenous variables might have increased flight delays, more attention should be taken to reverse this undesirable trend. As far as academic attention is concerned, there is abundant literature on airline service quality. One of the earliest attempts to study airline service quality includes Truitt and Haynes (1994) who observed that larger aircrafts tended to improve passenger satisfaction and subsequently enhance airline service quality based on the structured interviews of airline passengers using regional carriers in the USA. Following suit, Rhoades *et al.* (1998) examined the patterns of US

airline service quality during 1987 and 1996 based on the secondary data available from the Air Travel Consumer Report. They found that regional carriers performed far worse than major national carriers in terms of on-time performances, service-related complaints, and mishandled baggage. To build a theoretical base for airline service quality, Sultan and Simpson (2000) introduced a SERVQUAL model to examine if consumer expectations and perceptions of airline service quality varied by nationality. They discovered that service quality expectations and perceptions significantly varied by nationality based on the surveys of US and European passengers. Thus, they concluded that culturally based service ratings affected the ability of airlines to accurately monitor customer expectations and perceptions of airline performances. Extending the work of Sultan and Simpson (2000), Tiernan *et al.* (2008a) compared the service quality performances of strategically aligned US and EU member airlines and found that airline alliances did not affect service quality. In another related study, Tiernan *et al.* (2008b) also discovered that both US and EU airline passengers' perceived service dissatisfactions were far worse than actual service failures (e.g. flight delays, lost baggage, and cancelled flights).

Considering the national differences in expectations and perceptions of airline service quality, a series of studies were conducted to specifically examine the perceived airline service quality of a particular country. These include: Zaid (1995) for Malaysia airline passengers; Park *et al.* (2004) for Korean passengers taking international flights; Pakdil and Aydin (2007) for Turkish airline passengers; Wang (2007) for China airline shippers using cargo freight services; Lu and Ling (2008) for both Taiwanese and Chinese passengers traveling between Taiwan and mainland China; Cheng *et al.* (2008) for Taiwanese passengers using domestic airlines; Saha and Theingi (2009) for Thailand passengers using low-cost carriers; An and Noh (2009) for Korean airline passengers taking North American and European flights; Chau and Kao (2009) for both Taiwanese and British passengers using Taipei and London airports; De Jager *et al.* (2012) for South African and Italian passengers using domestic airlines; and for Jiang (2013) for Vietnamese and Australian passengers using long-haul low-cost carriers. A majority of these studies conducted the passenger questionnaire surveys and service audits to identify airline service attributes within the five service dimensions of the SERVQUAL model. These studies also attempted to measure service gaps between customer expectations and perceptions. Whereas these prior studies were based on the SERVQUAL models from a service recipient (i.e. passenger) perspective, Frost and Kumar (2001) and Kim and Lee (2009) defined airline service quality from the perspectives of employees (e.g. stewardess, baggage handlers, cabin cleaners). None of these studies, however, evaluated the comparative service performances of airlines and thus failed to identify the best-in class performer among competing airlines.

In an effort to evaluate the comparative performances of European airlines with respect to operating efficiency, Barros and Peypoch (2009) employed two-stage data envelopment analysis. Their study indicated that economies of scale resulting from a potential increase in passenger bases (e.g. population growth) improved airline operating efficiencies as anticipated. This study, however, did not investigate any linkage between airline service quality and airline operating efficiency. Overall, a vast majority of the existing literature attempted to identify various service attributes affecting airline service quality within the five dimensional frameworks (reliability; assurance; tangible; empathy; responsiveness) of the SERVQUAL model originally introduced by Berry *et al.* (1985) and Zeithaml *et al.* (1990). Also, most of these prior studies were primarily interested in measuring service gaps between customer expectations and perceptions instead of gauging competitive gaps among industry rivals and thus were not designed

to identify the best-in class practice performers. In other words, benchmarking studies are lacking in the airline service literature. Considering the paucity of airline service benchmarking studies, this paper is intended to measure the relative service performances of major US airlines, develop benchmarks, while identifying most important determinants influencing airline service quality in the USA.

3. Service attributes relevant to airline service quality

The benchmarking process begins with the establishment of service standards through identification of service attributes that comprise service standards. Since serving airline passengers better is the ultimate goal of benchmarking, we first identified service attributes that are most important to airline passengers. These service attributes are derived from determinants of airline service quality identified by the prior literature such as Gardner (2004), Gursoy *et al.* (2005), Pakdil and Aydin (2007), Chau and Kao (2009), and Bowen and Headley (2012). Examples of these include: air safety, baggage handling, on-time arrival/departure, employee courtesy, airplane cleanliness, amenity, flight schedules, and the alternate flight arrangements for a missing flight. In addition, this list includes prior service that may influence perceived customer satisfaction and the subsequent service quality, since it can shape up prior expectations of what will and should transpire during the previous service encounter (Boulding *et al.*, 1993). We initially identified more than 20 potential service attributes that might impact airline service quality. To avoid redundancy and the inclusion of attributes which may not reflect recent service trends (e.g. on-line booking, airline kiosk check-in service), we conducted a pre-test of the questionnaire through focus-group interviews with five frequent fliers who traveled at least three times a year via at least three airlines under evaluation. These interviews revealed that direct reservation/booking through the airline became rare with the presence of many on-line travel services (e.g. Orbitz.com, Travelocity) and the frequent use of kiosks for ticketing. Thus, several attributes such as airline reservation/booking and ticketing services were eliminated from the questionnaire list. Also, since the airline's handling of customer complaints seems to be redundant with the airline's follow-up on service failures, it was dropped from the final list of the service attributes. The contribution of selected attributes to overall customer satisfaction (or overall service quality of the airline) was measured by the customer feedback that we solicited through the questionnaire survey.

To maximize responses to the survey, six surveyors (one of the authors plus five hired graduate assistants) approached a group of people who had taken flights in the past and then handed out the questionnaires to the airline passengers through local church gatherings, professional meetings, university classes, and apartment complexes where the surveyors resided. Occasionally, a souvenir item (e.g. pen, notepad) with a nominal value was offered to the reluctant participants to encourage them to fill out the questionnaire. Although survey respondents from this kind of surveys may not represent the geographically diverse sample, they still represent diverse demographic sectors. In all, 67 percent of them are males, whereas 33 percent are females. In all, 76 percent of them are single, while 23 percent are married. These respondents also represent all age groups: under 20 (1 percent); 20-29 years old (81 percent); 30-39 (12 percent); 40-49 (2 percent); 50-59 (4 percent). The rationale for the use of this survey method in lieu of a random mail survey is the unavailability of a complete list of air travelers (e.g. directory) from public sources. Another important reason for the direct personal survey is a possibility of increases in survey responses by face-to-face interactions with potential respondents.

In fact, low-response rates are an ongoing concern in conducting traditional mail surveys (Greer *et al.*, 2000; Larson and Poist, 2004). For mail surveys, response rates in the neighborhood of 10-20 percent are not uncommon (Yu and Cooper, 1983; George and Mallery, 2001). Thus, to avoid the potential non-response bias, we directly approached and asked airline passengers to answer the structured questionnaire. Also, we solicited survey participation from a number of different locations (e.g. churches, professional meeting sites, shopping centers/malls, universities, residential areas) to increase sample size. To elaborate, the customer feedback was obtained from the sample of 171 airline passengers who have taken either domestic or international carriers (Delta, Southwest, Continental, United, American, US Airways, AirTran, Spirit, Frontier, JetBlue, and Hawaiian) based in the USA during the period of January of 2011 through November 2012. These passengers produced a total response rate of 57 percent (171 valid responses out of the 300 distributed questionnaires) which far exceeded the targeted overall response rate of 20 percent for a valid assessment of the survey results (Malhotra and Grover, 1998). The aforementioned airlines were chosen for the study because of their similar characteristics in terms of geographical coverage, sizes, target customer bases, and service amenities. For example, we did not include some regional or feeder carriers such as Allegiant Air, Alaska Airlines, and Island Air which primarily serve vacationers for particular travel destinations (e.g. Orlando in Florida, Hawaii, and Mexico). Although the sample that we chose is not reflective of the entire airline industry, we used this sample to illustrate how airline service standards can be set and how to conduct the benchmarking process. Through a seven-page questionnaire survey, the participants provided us with data related to their demographic profile (e.g. gender, marital status, age), frequency of their flights, travel behaviors, the relative importance of service attributes to overall airline service quality, and the level of customer satisfaction based on their service experiences. Some of the non-demographic questions were selected from service attributes considered to be critical to service quality (Lovelock and Wright, 2002; Min, 2006; Min and Min, 2011).

The Statistical Packages for Social Sciences (2012) for Windows were used to analyze the data collected from these samples. All of the respondents reported having taken flights at least once in their lifetime. In fact, a majority (73.7 percent) of the respondents said that they took the flight at least once a year in the past. More than one-third (39.8 percent) of them spent at least $500 per trip and more than two-thirds (71.9 percent) of them were willing to pay more than $500 per trip. Among these, roughly two-thirds (68.6 percent) of them patronize a particular airline; thus are familiar with airline service quality. About a half (52.6 percent) of them traveled with someone else. Nearly all (95.3 percent) made a reservation prior to their flights. The most popular form of the reservation is on-line booking through travel web sites such as Orbitz.com and Travelocity. Indeed, a majority (76.5 percent) of the respondents booked the flights through on-line media, whereas few (meager 3 percent) of the respondents sought help from travel agents to book the flights. Approximately two-thirds (68.9 percent) of the respondents took the flights for pleasure (vacation) trips. More than half (58.5 percent) of them made only the domestic trips. The most popular foreign destination happened to be Asia (including India), as 19.3 percent of the respondents travelled to Asia.

The results of the survey revealed that there were a total of 18 service attributes that were considered relevant to airline service quality. These salient attributes were identified based on importance ratings provided by the respondents who were being asked to indicate how important a given attribute was to them in gauging the level of their satisfaction with service quality. Myers (1999) suggested that importance ratings were one of the most straightforward but effective ways of measuring customer

satisfaction and determining the relative importance of service attributes to service quality. As summarized in Table I, the attribute considered most important by US passengers in forming a perception of airline service quality is air (aviation) safety. This result is not surprising given the growing awareness of terrorist threats in the wake of September 11 incidents. Among the US passengers, the next four most important attributes were proper baggage handling, competitive airfare, on-time arrival/departure, and alternative flight arrangement for a missing flight. These results differ significantly from those of other airline service quality studies conducted by Gourdin and Kloppenborg (1991) and Young *et al.* (1994) who found that flight connections and in-flight comfort were the most important service dimensions, with airline safety dimension was the least important. The second most important attribute turned out to be baggage handling. Even though 2011 marked the lowest total of mishandled baggage with a rate of 3.39 lost baggage per 1,000 passengers, no other airline but AirTran was below two lost baggage per 1,000 passengers (Department of Transportation, 2011). It is intriguing to note that extra charges assessed on checked baggage were not necessarily translated into better baggage handling (Ring, 2012). In addition, as expected, airfare (price) turned out to be a central influence on airline service quality. This finding is congruent with that of Curry and Riez (1988) indicating that the price paid for rendered service significantly influences the customer's service experience. Similarly, Espino *et al.* (2008) and Prince and Simon (2009) verified functional relationships between competitive price (airfare) and airline service quality through their empirical studies.

Another finding was that six out of the seven most important attributes for US airline passengers seemed to represent "personal service." Personal service refers to service attributes that are difficult, if not impossible, to improve without reference to customers (Chakrapani, 1998). This category of the service attributes includes air safety, baggage

Service attributes	Average degree of importance[a] ($n = 171$)	Ranks
Air safety	1.17 (0.461)	1
Proper baggage handling	1.45 (0.679)	2
Competitive airfare	1.58 (0.640)	3
On-time arrival/departure	1.77 (0.671)	4
Alterative flight arrangement for a missing flight	1.80 (0.890)	5
Smooth connecting flight	1.81 (0.686)	6
Reasonable follow-up on service failure	1.91 (0.867)	7
Airplane cleanliness	2.09 (0.788)	8
Prior service	2.13 (0.844)	9
Availability of non-stop flights	2.22 (0.997)	10
Employee courtesy	2.27 (0.798)	11
Amenity	2.36 (0.953)	12
Flight schedules	2.50 (0.929)	13
Short wait at the ticket counter	2.57 (0.869)	14
Complimentary drinks/snacks	2.60 (0.955)	15
Complimentary pillows/blankets	2.91 (1.025)	16
Frequent flier program	2.96 (1.098)	17
Code sharing	3.10 (1.036)	18

Table I.
Attributes for the airline service quality

Notes: [a]Numbers in parentheses are standard deviations. Scale: 1 = extremely important; 2 = somewhat important; 3 = neither important nor unimportant; 4 = somewhat unimportant; 5 = not at all important

handling, on-time arrival/departure, alternative flight arrangement for a missing flight, smooth connecting flight, reasonable follow-up on service failures, and employee courtesy. Considering that an airline success depends heavily on the service performance of frontline employees (e.g. flight attendants), a significance of personal service to airline service quality makes sense (Carlzon, 1987). On the other hand, functional service refers to service attributes that are akin to attributes of a product (e.g. complimentary drinks/snacks) and/or can be improved without direct reference to customers (Chakrapani, 1998). This category of the service attributes includes competitive airfare (price), airplane cleanliness, flight schedules, and code-sharing practices.

To see if the 18 service attributes could be broken down into sub-categories, we conducted exploratory factor analysis for the collected data. The exploratory factor analysis was preceded by the Bartlett's test of Sphericity. The Bartlett's test (with a χ^2 value of 869.120) showed that some of these service attributes were significantly correlated among themselves. The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy was also employed to measure the strength of the relationship among service attributes. A factor analysis was further justified, since the KMO value of 0.810 was much greater than an acceptable threshold score of 0.50 (Kaiser, 1974; Child, 2006).

Considering the statistical significance of correlation among these service attributes, we conducted principal component analysis to determine the minimum number of common factors needed to explain correlation among the attributes using the eigenvalue-greater-than-one rule. To obtain a more meaningful representation of the factor structure, we used the Varimax rotation with Kaiser normalization. To elaborate, Varimax rotation is an orthogonal rotation of the factor axes to maximize the variance of the squared loadings of a factor (column) on all the variables (rows) in a factor matrix where each factor tends to have either large (close to one) or small (close to zero) loadings of any particular variable (Kaiser, 1958; Fabrigar *et al.*, 1999). In particular, we chose a Varimax rotation because it enables us to easily identify each variable with a single common factor. As summarized in Table II, we extracted five common factors: service assurance; service addition; customer loyalty; uninterrupted service; and service recovery. Three of these five factors seems to be related to three (assurance, tangibles, reliability) of the five SERVQUAL dimensions (Zeithaml *et al.*, 1990). For example, service addition is equivalent to the tangible dimension of the SERVQUAL, while uninterrupted service is comparable to the reliability dimension of the SERVQUAL. On the other hand, customer loyalty and service recovery do not match to any of the SERVQUAL dimension, because they are unique to airline service quality. These factors are found to have an eigenvalue greater than one. That is to say, the result of the factor analysis verified that the 18 service attributes could be classified into five categories of services specified above. Among these five service categories (dimensions), both service assurance and recovery turned out to be most important to airline service quality, whereas service addition, customer loyalty, and uninterrupted service are relatively unimportant. In other words, airline passengers seemed to care more about the airline's ability to deliver its promised services in a competent, consistent, and timely manner, while appreciating its ability to recover from service failures (e.g. flight delays, lost baggage, missed connecting flights). In particular, it is worth noting that airline passengers are less loyal to the same airline although airlines were the first adopters of loyalty programs such as frequent flier programs in the travel industry in the 1980s. Indeed, the recent survey of travelers conducted by Deloitte indicated that only 14 percent of air travelers were loyal to the same airline (Trejos, 2013). This lack of loyalty may be attributed to frequent mergers/acquisitions or bankruptcies in the airline industry which can wipe out or reduce the loyalty benefits after such

Factors Factor label	Factor 1 Service assurance	Factor 2 Service addition	Factor 3 Customer loyalty	Factor 4 Uninterrupted service	Factor 5 Service recovery
Eigenvalue	*2.979*	*2.770*	*1.787*	*1.669*	*1.463*
Percent of variance	*16.548*	*15.386*	*9.927*	*9.271*	*8.128*
Variables					
Air safety	*0.403*	0.022	−0.005	0.226	0.047
On-time arrival/departure	*0.667*	0.100	−0.228	0.263	0.265
Proper baggage handling	*0.663*	0.015	−0.068	−0.032	0.417
Airplane cleanliness	*0.741*	0.270	0.111	0.044	−0.215
Short wait at the ticket counter	*0.716*	0.058	0.299	−0.051	−0.034
Employee courtesy	*0.683*	0.266	0.163	0.141	−0.060
Complimentary drinks/snacks	0.131	*0.719*	0.304	0.141	0.164
Complimentary pillows/blankets	0.213	*0.750*	0.292	−0.031	−0.044
Prior services	0.162	*0.744*	−0.105	0.158	0.160
Amenity	0.036	*0.776*	0.065	0.161	0.028
Frequent flier program	0.066	0.068	*0.763*	0.181	0.152
Code sharing	0.107	0.245	*0.765*	0.126	−0.052
Smooth connecting flights	0.351	0.097	−0.030	*0.681*	0.055
Availability of non-stop flights	0.103	0.182	0.151	*0.681*	−0.162
Flight schedules	−0.076	0.123	0.353	*0.639*	0.157
Competitive airfare	−0.059	0.036	0.041	−0.064	*0.777*
Alternative flight arrangements for missing flights	0.356	0.301	0.286	−0.009	*0.386*
Reasonable follow-up on service failures	0.173	0.405	0.096	0.251	*0.527*

Note: A KMO measure of sampling adequacy = 0.810

Table II.
Factor analysis results of airline service attributes

restructuring or demise. Also, some airlines such as Delta and US Airways make it difficult to accrue or redeem miles and points or to achieve elite status due to strict travel date restrictions and higher mileage requirements.

4. The comparative evaluation of airline service performances

To stay competitive, an airline must establish proper service standards in relation to its customers' needs and expectations. With this in mind, the survey participants were asked to rate on a five-point Likert scale the service performance of the 11 airlines with respect to 18 attributes listed in Table I. These airlines are: Delta, Continental, United, American, US Airways, Southwest, AirTran, Spirit, Frontier, JetBlue, and Hawaiian. With an exception of AirTran, all of these airlines ranked one of the top 13 airlines in North American with respect to their number of passengers, fleet size, and number of destinations. Among these, with an exception of United and US Airways which belong to the same Star Alliance code-sharing program, none of these are aligned with each other for code sharing. A rating of the service performance of the airlines was used to determine a leading airline (benchmark) which best exhibits each service attribute and provides its passengers with the highest overall service quality. As summarized in Table III, Delta is considered the overall service leader followed by Southwest. Thanks to its high level of perceived service quality, Delta has become the most frequently used airline and most reputable airline (see Tables IV and V). As a matter of fact, the overall perceived service quality of the airline is correlated with its popularity and

Airlines	Overall level of customer satisfaction[a]	Ranks	Airline quality rating (AQR)[b]	AQR ranks
Delta	1.92 (0.839)	1	−0.80	5
Southwest	2.11 (0.875)	2	−0.93	6
Continental	2.25 (0.789)	3	−1.41	9
United	2.36 (0.804)	4	−1.45	10
American	2.45 (0.735)	5	−1.24	8
US Airways	2.45 (0.740)	6	−1.13	7
AirTran	2.75 (0.638)	7	−0.48	1
Spirit	2.79 (0.690)	8	Not available	Not available
Frontier	2.83 (0.531)	9	−0.75	4
JetBlue	2.84 (0.551)	10	−0.60	3
Hawaiian	2.86 (0.549)	11	−0.59	2
Industry average	2.51		−1.08	

Notes: The numbers in parentheses are standard deviations. [a]The numbers represent the average score of a five-point scale for the degree of customer satisfaction evaluated by the respondents where: 1 = very satisfied; 2 = somewhat satisfied; 3 = neither satisfied nor dissatisfied; 4 = somewhat dissatisfied; 5 = very dissatisfied. [b]This AQR was calculated based on 2011 performances using the following formula developed by Bowen and Headley (2012):

$$\text{AQR} = \frac{(8.63 \times OT) + (-8.03 \times DB) + (-7.92 \times MB) + (-7.17 \times CC)}{(8.63 + 8.03 + 7.92 + 7.17)}$$

where *OT*, on-time arrival/departure; *DB*, denied boarding; *MB*, mishandled baggage; *CC*, customer complaints

Table III. Comparison of airlines with respect to overall service quality

Airlines	Average frequency of usage[a] ($n = 171$)	Ranks
Delta	2.08 (0.990)	1
Southwest	2.86 (1.089)	2
American	2.87 (1.057)	3
United	2.90 (1.044)	4
Continental	3.01 (1.048)	5
US Airways	3.11 (1.030)	6
Spirit	3.52 (0.893)	7
AirTran	3.60 (0.789)	8
Frontier	3.77 (0.584)	9
JetBlue	3.82 (0.464)	10
Hawaiian	3.86 (0.474)	11

Notes: [a]Numbers in parentheses are standard deviations. Scale: 1 = most frequently used; 2 = occasionally used; 3 = rarely used; 4 = never used

Table IV. The popularity of airlines

word-of-mouth reputation. In other words, the greater the level of passenger satisfaction, the higher the likelihood an airline would retain or attract more passengers. However, it is intriguing to note that the passenger's perceived service quality does not necessarily reflect the airline's actual service performances with respect to its actual on-time arrival/departure record, denied boarding, mishandled baggage, and customer complaints (see Table III). For example, Hawaiian Airlines which has the lowest perceived service

Airlines	Average level of reputation[a] ($n = 171$)	Ranks
Delta	2.33 (1.162)	1
Southwest	2.37 (1.380)	2
Continental	2.60 (1.231)	3
United	2.61 (1.215)	4
American	2.69 (1.243)	5
US Airways	2.88 (1.366)	6
AirTran	3.79 (1.574)	7
JetBlue	3.80 (1.645)	8
Spirit	4.09 (1.617)	9
Frontier	4.33 (1.646)	10
Hawaiian	4.42 (1.649)	11

Table V.
The word-of-mouth reputation of airlines

Notes: [a]Numbers in parentheses are standard deviations. Scale: 1 = excellent; 2 = good; 3 = average; 4 = fair; 5 = poor; 6 = never heard of

quality rating based on our survey is regarded as the second best of all US airlines rated for airline quality rating (AQR) in 2011 (see Table III). In terms of on-time arrival/departure (Hawaiian's 94.7 percent on-time performance as compared to the industry average of 83.4 percent), it was the very best among the US airlines in 2012 (Trejos, 2012). The possible explanation for such discrepancy is that air travelers who never or rarely travelled using the Hawaiian Airlines tended to judge its service quality strictly based on the word-of-mouth reputation or the level of familiarity. Thus, the more obscure the airline is, the lower its service quality rating is.

Regardless, for illustrative purposes, we considered the benchmarking scenario involving six major airlines for their service performances relative to others. In this scenario, we excluded low-fare (discount) airliners such as AirTran, JetBlue, Sprit, and Frontier from the benchmarking analysis, since their service offerings are limited and thus their perceived service performances were significantly lagging behind six major airliners under consideration (see Table III). We also excluded the Hawaiian Airlines which covers mostly regional domestic routes in the West Coast US and Hawaiian islands. Under this scenario, we evaluated the perceived service quality of each airline with respect to 18 different service attributes on a scale of one (highest) to five (lowest). The results of the comparative performances of airlines with respect to each service attribute show that Delta tops the list in terms of overall service quality among surveyed passengers. In particular, Delta is the leader in terms of all service attributes but competitive airfare, employee courtesy, and prior service as recapitulated in Table VI. Southwest turns out to be the service leader among the surveyed passengers with respect to competitive airfare, employee courtesy, and quality of prior service. On the other hand, both American and US Airways are considered the least favorable airlines by the passengers. US Airways is lagging behind other competing airlines in the USA with respect to most of the service attributes (see Table VI). Congruent with our survey findings, Hudson Crossing, a travel and hospitality consulting firm, has recently pointed out the absence of industry-renowned service culture in both American and US Airways (Jones, 2013). These airlines' poor service performances might have contributed to their financial struggles and led to their impending merger. Indeed, American Airlines is fighting its way out of Chapter 11 bankruptcy and US Airways have been in and out of the bankruptcy process twice in the past due in part to deteriorating services and the subsequent loss of revenue (Leocha, 2013).

Key attributes	Benchmark (Delta)	Southwest	Continental	Competitive Gaps[a] United	American	US Airways
Service assurance						
Air safety	1.69	0.34*	0.27*	0.38*	0.33*	0.42*
On-time arrival/departure	2.24	0.04	0.06	0.19*	0.17*	0.19*
Proper baggage handling	2.20	0.03	0.05	0.17*	0.19*	0.20*
Airline cleanliness	1.99	0.21*	0.12*	0.17*	0.22*	0.22*
Short wait at the counter	2.42	0.01	0.09	0.12*	0.10*	0.01
Employee courtesy	2.14	−0.03	0.18*	0.16*	0.07	0.14*
Service addition						
Complimentary drinks	2.44	0.26*	0.18*	0.19*	0.11*	0.22*
Complimentary pillows	2.50	0.23*	0.13*	0.17*	0.16*	0.27*
Prior service	2.64	−0.10*	−0.01	−0.06	−0.03	0.05
Amenity	2.44	0.20*	0.13*	0.21*	0.22*	0.27*
Customer loyalty						
Frequent flier program	2.42	0.28*	0.30*	0.26*	0.25*	0.27*
Code sharing	2.22	0.49*	0.25*	0.31*	0.27*	0.38*
Uninterrupted serv.						
Smooth connecting flight	2.06	0.28*	0.31*	0.34*	0.32*	0.43*
Availability of non-stop	2.30	0.25*	0.26*	0.20*	0.27*	0.32*
Flight schedules	2.16	0.20*	0.22*	0.28*	0.43*	0.65*
Service recovery						
Competitive airfare	2.62	−0.59*	0.11*	0.17*	0.14*	0.12*
Alternative flight	2.37	0.12*	0.02	0.15*	0.11*	0.19*
Reasonable follow-up	2.62	0.06	0.14*	0.11*	0.13*	0.10*

Notes: [a]The positive gap occurs when the service performance of a given restaurant is worse than that of its benchmark (Delta). *Statistically significant at $\alpha = 0.05$

Table VI.
Competitive gap analysis of airlines

These patterns imply that the airline passenger's perceived service quality in lieu of actual service performances can be a key differentiator for the airline's survival and competitiveness.

5. Conclusions and future research directions

Although recent multiple mergers in the airline industry limited competition on some routes and air travel demand began to rebound in 2012, the airline industry is still on the shaky ground due to fast rising fuel cost, safety compliance costs, and the US DOT's broader restrictions on some airline practices such as tarmac delays, flight cancellation windows, and an unfair method of competition. To survive and thrive in the fiercely competitive and high-expense industry, the airline industry needs to achieve service excellence by constantly improving service performances and diversifying their service offerings to the liking of more demanding passengers in a dynamic airline market. Airlines cannot improve service performances unless they understand what the leading competitors do in the market and what level of competitive gaps exists between current performances and best practices. Thus, we proposed competitive benchmarking strategy as an effective way of sustaining service excellence and winning the hearts of existing and prospective customers. This section summarizes several major findings of the current benchmarking study conducted in

the USA, expounds the managerial implications of those findings, and develops practical guidelines for continuous service improvement and service customization.

First, we discovered that the three most important service attributes of the airline were air safety, proper baggage handling, and competitive airfare. Speaking of air safety, it is intriguing to note that air travel is considered one of the safest in terms of fatality per passenger miles. In fact, the National Transportation Safety Board reported that there were fewer than 1.5 accidents per 100,000 revenue flights and hours for commercial flights in the USA during 2000 through 2010 (National Transportation Safety Board, 2012). In 2012, there was roughly one fatal airline crash for every 2.5 million flights. Indeed, 2012 was the safest year for air travel since the dawn of the jet age in 1945, according to the Aviation Safety Network (2013). Since 1997, the average number of airline accidents has shown a steady and persistent decline, thanks to a growing awareness of air safety by airliners and the continuing safety-driven efforts by and international aviation organizations such as International Civil Aviation Organization and International Air Transport Association (*International Business Times*, 2013). Despite the improved air safety, many passengers are still concerned about air safety probably because of perceived risk of air travel and fear of flying. This implies that airliners have not done a good job of promoting their safety records and easing the fear of flying with their commitments to tightened security, better pilot training, and newer/safer aircraft. As shown in Table VI, the surveyed passengers regarded Delta as the safest, while listing US Airways the least safe. But, they did not seem to be aware that Southwest Airlines was the safest airliner, whereas American had the worst safety record among major US airliners. To elaborate, Southwest Airlines registered no fatal accidents in 17.87 million commercial flights and is 568 percent better than the industry average, whereas American Airlines' accident rate is only 234 percent better than the industry average (Whitley, 2013). Thus, we recommend that the airliner should focus more on customer relationship management (CRM) through more frequent dialogs with their existing and prospective passengers about its safety record than simply on "low airfare or promotional discounts" to attract more customers. This CRM effort should include the airline's on-line blogs or the exploitation of social media such as Facebook and MySpace as a way to constantly communicate with its potential customer bases about their accomplishments.

Second, as expected, the overall service leader (i.e. Delta) turned out to be the most frequently used airliner. In fact, we discovered some correlation between the relative service performance of the airline and its popularity as shown in Tables III and IV. Similarly, we found a pattern of the correlation between the overall level of customer satisfaction with the airline and its word-of-mouth reputation (see Table III). That is to say, airline branding can foster positive images of its service quality and subsequently help attract more customers in the future. Thus, this finding reaffirms earlier discoveries by Ou and Abratt (2006) and Balmer (2001) that word-of-mouth reputation or branding could have a long-lasting impact on patronage, competitiveness, and business survival. Also, our survey result indicated that more than half (51.5 percent) of the surveyed passengers, who were disappointed with the service quality of an airline, would not return to the same airline, while only 21.4 percent of the surveyed passengers might give the disappointing airline a second chance. Thus, sustaining the high level of service quality is essential for customer retention. More importantly, it should be reminded that good branding may have a lasting impact on the customer's patronage with a particular airline. Thus, we recommend that the airline should develop a long-term branding strategy to foster its nice public images. Such a strategy may include: less stringent mileage requirements for

frequent flier programs, recognition of frequent fliers by their first names, special discounts, and perks (e.g. free access to in-flight technology and video) for "first-time" fliers (new customers), and quick attention to service failures (e.g. customer complaints). Though unconventional, Southwest Airlines established its service reputation and demonstrated its core-customer value by offering "no-frills" services such as no charge for two checked baggage and seating arrangements based on first-come-first-served principles. This unique branding strategy might have elevated the word-of-mouth reputation of Southwest Airlines as one of the top two.

Third, we found a discrepancy between the passenger's perceived service quality and the actual service performance of airlines. For example, despite the highly favorable AQR ratings of both AirTran and Hawaiian Airlines, their overall service quality perceived by our surveyed passengers is surprisingly low. In particular, even though Hawaiian Airlines had the second best AQR score for 2011 with the best on-time performance (94.7 percent vs industry average of 83.4 percent and Delta with 86.4 percent) and one of the lowest denied boarding rates (0.11 denied boarding per 100,000 passengers), it was perceived to be the worst among US airlines in terms of its overall service quality (Bowen and Headley, 2012; Trejos, 2012). Similarly, although US Airways whose on-time performance (85.5 percent on-time arrival) was almost as good as Delta (86.4 percent), it was perceived to be far worse than Delta in terms of on-time performances according to our survey result. The possible explanation for this discrepancy may be that both AirTran and Hawaiian Airlines with limited routes and exposure to most of the USA get very little recognition from passengers who are not familiar with those airlines. Even major carriers such as US Airways which have less name recognition than Delta and Southwest Airlines seemed to suffer from passenger biases against them. This tendency may have something to do with the risk-averse trend of today's US passengers who do not want to fly with unfamiliar airlines. Considering this finding, we recommend that relatively new, small-scale, or regionally oriented airlines should promote more about their service accomplishments and consider expanding their geographical coverage throughout the USA to negate their competitor's high publicity and greater exposure to potential customers.

Finally, as expected, we observed that low-fare airlines such as AirTran, Spirit, Frontier, and JetBlue tended to perform poorly in terms of their customer satisfaction, word-of-mouth reputation, and popularity as compared to major carriers. This finding indicates that low-cost (cost leadership) strategy in the service sensitive airline industry has its limitation. Thus, unless low-fare airlines find their niche service areas (e.g. point-to-point service between Toledo and Orlando by Allegiant Air) or develop unique service offerings (e.g. satellite-enabled WiFi internet access and live TV onboard by Southwest Airlines), they will not be able to survive in this fiercely competitive industry.

As summarized above, this study incorporated the customers' perception of service quality into the airline benchmarking process and then discuss about its potential impact on airline competitiveness. Although the current study was one of the few exploratory studies to examine the passenger perception of airline service quality and then evaluate the comparative service performances of the airlines in the USA, it can be extended to include larger samples in different countries across the world such as Mexico and China. Also, future studies may examine how the passenger's perception of service quality may differ from the airline management's perception of service quality. Furthermore, a longitudinal study of the airline service quality may be worth pursuing in the future.

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