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A STUDY OF CHINA'S MAJOR DOMESTIC AIRLINES' SERVICE QUALITY AT SHANGHAI'S HONGQIAO AND PUDONG INTERNATIONAL AIRPORTS

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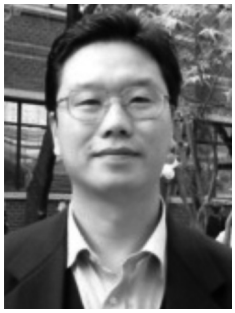

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Abstract. In a highly competitive market, service quality can be the core competitive advantage for airline's profitability and sustained development. This paper has investigated the differences in the passengers' expectations and perceptions of the service quality of China's four major domestic airlines: Air China, China Southern Airlines, China Eastern Airlines, and Hainan Airlines in China's domestic market. The results will assist airline management to improve service quality by reducing the difference. Surveys were conducted with domestic passengers at Shanghai Hongqiao Airport and Shanghai Pudong Airport in China. The results show that there are significant differences of service quality between passengers' expectations and perceptions among major Chinese airlines. Passengers consistently rate 'good safety records' as the first priority of seven SERVQUAL[1] dimensions, but low price remains the most

[1] SERVQUAL is a multi-dimensional research instrument, designed to capture consumer expectations and perceptions of a service.

important factor that passengers consider when choosing a Chinese airline. The conclusions reached in this work suggest that Chinese airlines should consider improving service quality rather than providing cheaper air tickets in order to gain competitive advantage.

Keywords: China, customer perception, customer expectation: customer satisfaction, full service network carriers, service quality.

1. Introduction

Research related to service quality and customer satisfaction in the airline industry has continued to grow in interest, because the delivery of high service quality is considered essential for the competitiveness of an airline as well as ensures its survival in the highly competitive world airline industry (Park *et al.* 2004). Consequently, service quality is highly important for the world's airlines and can provide a source of competitive advantage.

China's airline Industry began around 1950 following the establishment of the People's Republic of China (PRC) in 1949 (Jiang *et al.* 2003). China's air travel market has experienced tremendous growth over the past 30 years (Fu *et al.* 2012). In 2003, there were around 88 million domestic passengers. In 2013, China's airlines carried 354 million domestic passengers. More than 90 percent of passengers are carried by four largest airlines in China's domestic market, namely, Air China, China Southern Airlines, China Eastern Airlines, and Hainan Airlines. The International Air Transport Association (2014) have predicted that China will overtake the United States as the world's largest passenger market (defined by traffic to, from and within) by 2030. In 2034, flights to, from and within China will account for around 1.3 billion passengers, 856 million more than the 2014 levels with an average annual growth rate of 5.5 per cent (IATA … 2014). Despite the importance of China's air travel market there has been limited research undertaken in the area of service quality of China's major domestic airlines. Therefore, is a great need to conduct research about the customers' expectations and perceptions of Chinese airlines' domestic service quality.

The aims of this paper are: (1) to investigate the gap between passengers' perceptions (perceived service quality) and their expectations (expected service quality) for China's four major domestic airlines; (2) to examine whether significant differences exist in the service quality between these four airlines; (3) to provide information to passengers when choosing an airline with regards to service quality; (4) to provide information to airline managers in order to reduce the gaps of service quality; and (5) to investigate the importance of price and its role for passengers when selecting an airline for their domestic travel in China.

The remainder of the paper is organized as follows: the extant literature on airline service quality is reviewed in Section 2; the research methodology used in the study is outlined in Section 3, the results of the study are presented in Section 4; Section 5 summarises the results and conclusions of the study.

2. Literature review

2.1. Airline service quality measurement – SERVQUAL

Service quality has been a topic of interest for researchers for many years. Many studies have been undertaken to measure different dimensions of the service quality of airlines. Gourdin (1988) categorized airline service quality into three aspects: price, safety, and timeliness. Ostrowski *et al.* (1993) examined timeliness, food and beverage quality, and the comfort of airline seats, whereas Truitt and Haynes (1994) focused on the passenger check-in process, timeliness, cleanliness of seats, food and beverage quality as well as customer complaints for handling. Zeithaml (1988) investigated perceived service quality, which is defined as the customer's assessment of the overall excellence or superiority of the service. Parasuraman *et al.* (1985) considered that a customer's assessment of overall service quality depended on the gap between expectations and perceptions of actual performance levels. In other words, service quality is the ability of a service to meet a customer's expectations of that service. It represents the properties of the service valued by the customer. According to Parasuraman *et al.* (1985), SERVQUAL is measured by five dimensions (RATER): reliability, assurance, tangibility, empathy, and responsiveness. Gilbert and Wong (2003) revised and adapted the RATER model to assess passenger expectations in Hong Kong. Similarly, Adli *et al.* (2005) investigated four criteria of service quality, namely: tangibility, reliability, responsiveness, and assurance.

Quality is one of the most important factors that influences a customer's buying decision (Anderson, Zeithaml 1984). Increased emphasis has been placed on the continued development of knowledge related to service organizations, particularly the role service quality plays in creating satisfied and loyal customers (Ostrowski *et al.* 1993). Quality also has the strategic benefit of contributing to the market-share and return on investment (Philips *et al.* 1983). High quality customer service can be the differentiating factor between a business and its competitor.

Previous airline service studies have concentrated on modelling the effect of perceived service quality at the aggregate construct level. However, examining the effects of service attributes individually has the potential

to be invaluable to airline managers (Patterson, Spreng 1997). Specifically, we note that the effects of individual dimensions of airline service quality have not been fully investigated, and prior work on assessing airline service quality has primarily concentrated on SERVQUAL's five dimensions (Aydin, Yildirimb 2012; Okeudo, Chikwendu 2013; Manani *et al.* 2013; Nejati *et al.* 2009; Park *et al.* 2005).

2.2. Airline industry-based measurement

Although SERVQUAL has been widely used to measure service quality across industries, no two providers of service are exactly alike (Gilbert, Wong 2003). The adaptation of the SERVQUAL model is necessary and it served as part of the framework for this study. Even though SERVQUAL presents the general quality attributes for service industries, it does not include specific attributes to reflect the specific operational environment of the airline industry that is being investigated.

Therefore, in this study, the researchers have proposed a 26-item questionnaire that included airline industry-based dimensions for travellers: pre-travel services, in-flight services, and post-arrival services (Cunningham, Young 2002; Kiatcharoenpol, Laosirihongthong 2006; Jiang 2013).

3. Research methodology

3.1. Questionnaire design

To undertake this research, a list of services that make up the typical service offered in the airline industry was first drawn up (Oyewole 2001). Questionnaires were designed in light of the previous literature (Kiatcharoenpol, Laosirihongthong 2006; Jiang 2013). The questionnaire was divided into four sections, the first of which contained questions regarding respondents' socio-demographic characteristics, including age, gender, education, nationality and income. Since consumers' needs, preferences, and personalization, are often associated with demographic factors (Kotler 2000), demographic characteristics related to in-flight service (Cheosakul 2004) and preference factors are considered. The second section asked for passengers' flight information including purpose of travel, travel frequency, cabin class travelled in, air ticket booking channel, airline that they were travelling with, and the most important factor considered when choosing an airline. The third section, composed of 26 questions, was divided into the three main traveller processes: pre-travel services, in-flight services, and post-arrival services (Kiatcharoenpol, Laosirihongthong 2006; Jiang 2013). Respondents were asked to indicate their "expectation" and "perception" separately according to their experience of the last flight, and they were asked to evaluate each attribute using an five-point Likert scale, ranging from "1 = strongly dissatisfied" to "5 = strongly satisfied". The final section of the questionnaire asked passengers to prioritize the seven SERVQUAL dimensions 'in order of importance'. This section was adapted from Gilbert and Wong (2003).

3.2. Sample and data collection

The target population for this study consisted of domestic passengers who had travelled from either Shanghai Hongqiao Airport or Shanghai Pudong International Airport to other airports in China using the four largest Chinese domestic airlines – Air China, China Southern Airlines, China Eastern Airlines, and Hainan Airlines. That is, convenience cluster sampling was utilised for the data collection, as the principle researcher travels regularly to visit family in Shanghai. The data was gathered directly from passengers, and a survey was conducted from September 1 to September 30, 2012. Participants in this study included 1, 000 domestic passengers at Shanghai Hongqiao Airport and Pudong International Airport. A sample size of over 600 is considered sufficiently large for further analysis (Chen, Chang 2005). The survey was timed to coincide with the opening hours of the two airports. It was conducted between Monday and Sunday from morning flights to night flights to minimise any biases of the results. The questionnaires had two versions: English and Chinese. 1,000 questionnaires were randomly distributed to passengers waiting at the boarding gates and departure and arrival lounges at the airports, and 777 questionnaires were verified as useful.

3.3. Statistical analysis method

The IBM SPSS 22 statistical program was used for the study's data analysis. Descriptive statistics were used to describe the mean, variance and the categories and characteristics of data. Exploratory factor analysis (EFA) was performed to address the issues of dimensionality, convergence, and discriminant validity (Gerbing, Anderson 1988). Multivariate Analysis of Variance (MANOVA) and Analysis of Variance (ANOVA) were used to gain an understanding of the differences of the service quality between the four airlines examined in this study.

4. Results

4.1. Sample characteristics

Table 1 presents a summary of the demographic and basic travel information of the respondents. The collected sample had fairly equal distributions of gender (50.8 per cent male, 49.2 per cent female). Most of the travellers held bachelor degrees (46.5 per cent), followed by a diploma (23.7 per cent) and post graduate degrees (15.7 per cent). The majority of the passengers were mainland Chinese (65.6 per cent) and these were followed by Chinese citizens residing in Hong Kong, Taiwan and Macao (17 per cent). Business travellers

accounted for 41.7 per cent of the sample. 67.6 per cent of the passengers were travelling in economy class. Around 31 per cent travellers worked for private companies. The largest income group ranged from RMB 5,001 to 10,000 per month. The largest group of passengers travelled less than twice a month (43.6 per cent).

4.2. Exploratory factor analysis

To assess the dimensionality of the service item scale, Exploratory Factor Analysis (EFA) was performed on the 26 items using the Principal Factor/Component (PF) method, and this was subsequently followed by the Varimax rotation. Table 2 shows the results of the factor analysis test for the 26 variables. The Kaiser-Meyer-Olkin (KMO) value, which is a measure of sampling adequacy, was found to be 0.958 for perception and 0.976 for expectation, suggesting that the factor analysis had proceeded correctly and that the sample was adequate. The results of the Bartlett's Test of Sphericity were also significant (the p-value is less than 0.001), which indicated that the factor analysis processes were correct and suitable for testing multidimensionality, all Eigenvalues were greater than 1.

All of the loaded factors had a value of more than 0.50 for both perception and expectation, which, therefore, met the requirement of a factor loading of 0.30 to be significant for a sample size of 350 or greater (Hair *et al.* 1998). Three factors which together accounted for 67.72 percent of the variance for perception and 74.26 percent for expectation were extracted, with all

Table 1. Demographic characteristics of the study's respondents

	Frequency	Percentage		Frequency	Percentage
Gender			Education		
Male	395	50.8%	High school or lower	110	14.2%
Female	382	49.2%	Diploma	184	23.7%
Age group			Bachelor Degree	361	46.5%
19 –	59	7.6%	Postgraduate Degree or higher	122	15.7%
20–29	234	30.1%	Occupation		
30–39	253	32.6%	Government and public sector employee	66	8.5%
40–49	147	18.9%	Private Sector employee	240	30.9%
50–59	55	7.1%	Private business owner	122	15.7%
60 +	29	3.7%	Student	67	8.6%
Ethnic			Retiree	37	4.8%
Chinese (Mainland)	510	65.6%	Others	245	31.5%
Chinese[1] (HK,TW, and Mac)	132	17.0%	Income Per Month (RMB)		
Asia (except Mainland, HK, TW, and Mac)	43	5.5%	Less than 3,000	106	13.6%
European	35	4.5%	3,001–5,001	181	23.3%
North American	18	2.3%	5,001–10,000	229	29.5%
South American	14	1.8%	10,001–20,000	138	17.8%
Oceania	10	1.3%	Over 20,000	123	15.8%
Others	15	1.9%	Purpose of travel		
Number of flights per month			Business	324	41.7%
Less than 2	339	43.6%	Visiting friends or relatives	118	15.2%
2–4	301	38.7%	Tourism or holiday	193	24.8%
5–7	86	11.1%	Study	52	6.7%
Over 8	51	6.6%	Others	90	11.6%
Cabin class level			Airline respondents last fly with		
First Class	92	11.8%	Air China	187	24.1%
Business Class	160	20.6%	China Eastern Airlines	319	41.1%
Economy Class	525	67.6%	China Southern Airlines	119	15.3%
			Hainan Airlines	152	19.6%

Legend: HK = Hong Kong, TW = Taiwan, and Mac = Macau.

eigenvalues greater than 1. The factors were labelled as Pre-flight service (Factor 1), In-flight service (Factor 2), and Post-flight service (Factor 3). The Cronbach's Alpha reliability test was used on the dimensions of perception and expectation to determine the reliability of the data.

As previously noted, in this study, Cronbach's Alpha values were used to determine both the passengers' exceptions and perceptions about the quality of China's four major domestic airline services. The results in Table 3 indicate that the Cronbach's Alpha values are all above 0.87, which shows acceptable reliability. Nunnally

Table 2. Exploratory factor analysis results

		Items	Perception					Expectation				
			Factor 1	Factor 2	Factor 3	Eigen value	Variance explained	Factor 1	Factor 2	Factor 3	Eigen value	Variance explained
I Pre-flight	Q1	Convenience of booking	0.71			12.19	0.50	0.84			17.20	0.71
	Q2	Promptness of booking	0.72				0.52	0.86				0.75
	Q3	Courtesy of booking employee	0.73				0.53	0.85				0.72
	Q4	Convenient check-in	0.80				0.63	0.87				0.77
	Q5	Efficient check-in	0.81				0.65	0.87				0.75
	Q6	Courtesy of check-in employee	0.79				0.62	0.88				0.78
	Q7	Check-in information is clear	0.77				0.60	0.88				0.77
	Q8	Convenience of baggage handling	0.79				0.63	0.88				0.78
	Q9	Courtesy of baggage handling employee	0.78				0.61	0.88				0.78
	Q10	Clarity of boarding announcement	0.73				0.53	0.89				0.79
	Q11	Promptness of ID check	0.75				0.56	0.87				0.76
	Q12	Courtesy of boarding employee	0.76				0.58	0.90				0.80
	Q13	Airport lounges are comfortable	0.75				0.57	0.88				0.78
II In-flight	Q14	Cabin safety demonstration		0.68		2.15	0.46		0.88		1.25	0.78
	Q15	Variety of newspapers and magazines		0.76			0.58		0.89			0.79
	Q16	Courtesy of flight attendants		0.77			0.59		0.89			0.80
	Q17	Flight attendant willing to help		0.80			0.64		0.92			0.84
	Q18	Clean and comfortable aircraft interior		0.81			0.66		0.92			0.85
	Q19	In-flight entertainment facilities and programs are excellent		0.82			0.67		0.93			0.86
	Q20	Seat space and legroom are good		0.81			0.66		0.91			0.83
	Q21	Captain's announcement is clear and informative		0.78			0.60		0.91			0.83
	Q22	Food and beverage are fresh and delicious		0.78			0.61		0.91			0.83
III Post-flight	Q23	Convenient baggage claim			0.84	1.22	0.70			0.94	1.08	0.88
	Q24	Courtesy of baggage claim employee			0.85		0.72			0.95		0.91
	Q25	Ground service is excellent			0.85		0.73			0.94		0.89
	Q26	Airport service is excellent			0.87		0.75			0.93		0.87

and Ira (1994) suggested that a minimum of 0.70 would be an acceptable level.

Table 3. Reliability of measures

Dimension of Service Quality (Expectation)	Cronbach's Alpha	Dimension of Service Quality (Perception)	Cronbach's Alpha
Pre-flight service	0.961	Pre-flight service	0.927
In-flight service	0.959	In-flight service	0.908
Post-flight service	0.937	Post-flight service	0.873

4.3. MANOVA and ANOVA analysis between airlines in terms of perception and expectation scores

The one-way MANOVA test was used to examine whether there are differences between the four airlines in terms of perception and expectation scores. The MANOVA tests indicate that all airlines differed significantly on all three factors: Factor 1 ("pre-flight service", $F(3, 773) = 3.942$, $p < 0.05$), Factor 2 ("in-flight service", $F(3, 773) = 1.939$, $p < 0.05$) and Factor 3 ("after arrival service", $F(2, 773) = 2.308$, $p < 0.05$). The one way ANOVA tests were conducted after the MANOVA tests revealed in Table 4 that there are significant differences between the selected airlines (the p-values of all factors are less than 0.001).

4.4. Mean and GAP analysis (difference between perceptions and expectations)

Table 5 shows the mean and the difference (gap) between perceptions and expectations (P-E). The table shows that the expectations of the four airlines' customers are higher than their perceptions.

Table 4. ANOVA test results

	Air China			China Eastern Airlines			China Southern Airlines			Hainan Airlines		
	F	P-value	Significant difference	F	P-value	Significant difference	F	P-value	Significant difference	F	P-value	Significant difference
Q1	41.516	0.001	Yes	97.454	0.001	Yes	33.063	0.001	Yes	39.086	0.001	Yes
Q2	42.715	0.001	Yes	63.006	0.001	Yes	33.845	0.001	Yes	40.556	0.001	Yes
Q3	20.972	0.001	Yes	50.652	0.001	Yes	33.412	0.001	Yes	28.703	0.001	Yes
Q4	29.285	0.001	Yes	44.483	0.001	Yes	20.947	0.001	Yes	30.979	0.001	Yes
Q5	25.584	0.001	Yes	45.254	0.001	Yes	26.651	0.001	Yes	29.878	0.001	Yes
Q6	30.28	0.001	Yes	44.314	0.001	Yes	27.374	0.001	Yes	21.365	0.001	Yes
Q7	32.215	0.001	Yes	62.226	0.001	Yes	28.237	0.001	Yes	19.89	0.001	Yes
Q8	22.05	0.001	Yes	44.045	0.001	Yes	25.058	0.001	Yes	21.651	0.001	Yes
Q9	29.494	0.001	Yes	69.748	0.001	Yes	16.823	0.001	Yes	30.183	0.001	Yes
Q10	21.862	0.001	Yes	58.117	0.001	Yes	19.243	0.001	Yes	29.218	0.001	Yes
Q11	37.307	0.001	Yes	52.126	0.001	Yes	19.575	0.001	Yes	27.349	0.001	Yes
Q12	43.277	0.001	Yes	65.196	0.001	Yes	27.421	0.001	Yes	20.217	0.001	Yes
Q13	37.049	0.001	Yes	73.258	0.001	Yes	34.347	0.001	Yes	20.187	0.001	Yes
Q14	32.007	0.001	Yes	69.244	0.001	Yes	28.34	0.001	Yes	43.117	0.001	Yes
Q15	51.095	0.001	Yes	67.467	0.001	Yes	33.735	0.001	Yes	53.237	0.001	Yes
Q16	45.87	0.001	Yes	100.056	0.001	Yes	36.424	0.001	Yes	37.363	0.001	Yes
Q17	54.653	0.001	Yes	105.757	0.001	Yes	34.685	0.001	Yes	44.725	0.001	Yes
Q18	56.184	0.001	Yes	112.232	0.001	Yes	37.195	0.001	Yes	51.138	0.001	Yes
Q19	53.627	0.001	Yes	117.139	0.001	Yes	43.733	0.001	Yes	60.059	0.001	Yes
Q20	63.617	0.001	Yes	116.171	0.001	Yes	51.266	0.001	Yes	45.827	0.001	Yes
Q21	53.225	0.001	Yes	97.077	0.001	Yes	39.086	0.001	Yes	37.966	0.001	Yes
Q22	49.069	0.001	Yes	112.688	0.001	Yes	36.109	0.001	Yes	41.628	0.001	Yes
Q23	36.642	0.001	Yes	76.549	0.001	Yes	35.516	0.001	Yes	36.413	0.001	Yes
Q24	33.474	0.001	Yes	66.791	0.001	Yes	37.115	0.001	Yes	39.89	0.001	Yes
Q25	39.194	0.001	Yes	74.223	0.001	Yes	37.209	0.001	Yes	41.017	0.001	Yes
Q26	25.336	0.001	Yes	65.897	0.001	Yes	37.811	0.001	Yes	46.59	0.001	Yes

Table 5. Mean and GAP analysis: difference between respondents' perception and expectation

		Air China			China Eastern Airlines			China Southern Airlines			Hainan Airlines		
		Expectation	Perception	P-E	Expectation	Perception	P-E	Expectation	Perception	P-E	Expectation	Perception	P-E
		Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Q1	Convenience of booking	4.41(1)	3.93(1)	−0.48	4.51(1)	4.03(7)	−0.48	4.44(1)	3.92(1)	−0.52	4.38(2)	3.89(4)	−0.49
Q2	Promptness of booking	4.35(2)	3.82(3)	−0.53	4.45(6)	4.05(5)	−0.40	4.39(2)	3.87(4)	−0.52	4.36(4)	3.84(8)	−0.52
Q3	Courtesy of booking employee	4.26(7)	3.86(2)	−0.40	4.43(8)	4.06(4)	−0.37	4.38(3)	3.82(7)	−0.56	4.35(5)	3.90(3)	−0.45
Q4	Convenient check–in	4.26(7)	3.82(3)	−0.44	4.5(2)	4.14(1)	−0.36	4.32(8)	3.87(4)	−0.45	4.36(4)	3.89(4)	−0.47
Q5	Efficient check–in	4.19(12)	3.73(10)	−0.46	4.46(5)	4.09(3)	−0.37	4.32(8)	3.8(8)	−0.52	4.33(7)	3.87(6)	−0.46
Q6	Courtesy of check–in employee	4.25(8)	3.79(5)	−0.46	4.49(3)	4.12(2)	−0.37	4.31(9)	3.79(9)	−0.52	4.28(11)	3.88(5)	−0.40
Q7	Check–in information is clear	4.19(12)	3.7(11)	−0.49	4.46(5)	4.00(9)	−0.46	4.33(7)	3.8(8)	−0.53	4.31(9)	3.90(3)	−0.41
Q8	Convenience of baggage handling	4.2(11)	3.79(5)	−0.41	4.39(11)	4.03(7)	−0.36	4.35(5)	3.86(5)	−0.49	4.32(8)	3.91(2)	−0.41
Q9	Courtesy of baggage handling employee	4.24(9)	3.78(6)	−0.46	4.44(7)	3.97(9)	−0.47	4.28(12)	3.88(3)	−0.40	4.36(4)	3.89(4)	−0.47
Q10	Clarity of boarding announcement	4.30(3)	3.91(1)	−0.39	4.47(4)	4.04(6)	−0.43	4.34(6)	3.92(1)	−0.42	4.36(4)	3.87(6)	−0.49
Q11	Promptness of ID check	4.29(4)	3.76(8)	−0.53	4.41(9)	4.01(8)	−0.40	4.32(8)	3.87(4)	−0.45	4.31(9)	3.85(7)	−0.46
Q12	Courtesy of boarding employee	4.26(7)	3.7(11)	−0.56	4.44(7)	3.98(8)	−0.46	4.37(4)	3.85(6)	−0.52	4.33(7)	3.93(1)	−0.40
Q13	Airport lounges are comfortable	4.22(10)	3.68(12)	−0.54	4.4(10)	3.91(12)	−0.49	4.35(5)	3.78(10)	−0.57	4.31(9)	3.89(4)	−0.42
	Average	4.26	3.79	−0.47	4.45	4.03	−0.42	4.35	3.85	−0.50	4.34	3.89	−0.45
Q14	Cabin safety demonstration	4.26(7)	3.8(4)	−0.46	4.47(4)	4.03(7)	−0.44	4.39(2)	3.89(2)	−0.50	4.42(1)	3.88(5)	−0.54
Q15	Variety of newspapers and magazines	4.27(6)	3.67(13)	−0.60	4.34(14)	3.85(14)	−0.49	4.22(15)	3.6(16)	−0.62	4.30(10)	3.68(15)	−0.62
Q16	Courtesy of flight attendants	4.25(8)	3.68(12)	−0.57	4.47(4)	3.93(10)	−0.54	4.3(10)	3.71(14)	−0.59	4.42(1)	3.91(2)	−0.51
Q17	Flight attendant willing to help	4.26(7)	3.62(16)	−0.64	4.45(6)	3.87(13)	−0.58	4.31(9)	3.71(14)	−0.60	4.42(1)	3.84(8)	−0.58
Q18	Clean and comfortable aircraft interior	4.29(4)	3.66(14)	−0.63	4.45(6)	3.87(13)	−0.58	4.29(11)	3.69(15)	−0.60	4.38(2)	3.72(13)	−0.66
Q19	In–flight entertainment facilities and programs are excellent	4.25(8)	3.57(17)	−0.68	4.32(15)	3.67(18)	−0.65	4.26(13)	3.56(18)	−0.70	4.35(5)	3.63(18)	−0.72
Q20	Seat space and legroom are good	4.32(3)	3.63(15)	−0.69	4.38(12)	3.72(16)	−0.66	4.33(7)	3.58(17)	−0.75	4.30(10)	3.66(17)	−0.64
Q21	Captain's announcement is clear and informative	4.27(6)	3.66(14)	−0.61	4.38(12)	3.8(15)	−0.58	4.33(7)	3.71(14)	−0.62	4.37(3)	3.79(11)	−0.58
Q22	Food and Beverage are fresh and delicious	4.22(10)	3.56(18)	−0.66	4.36(13)	3.71(17)	−0.65	4.25(14)	3.6(16)	−0.65	4.34(6)	3.67(16)	−0.67
	Average	4.27	3.65	−0.62	4.40	3.83	−0.57	4.30	3.67	−0.63	4.37	3.75	−0.61
Q23	Convenient baggage claim	4.26(7)	3.77(7)	−0.49	4.44(7)	3.98(8)	−0.46	4.34(6)	3.76(11)	−0.58	4.33(7)	3.82(9)	−0.51
Q24	Courtesy of baggage claim employee	4.20(11)	3.73(10)	−0.47	4.38(12)	3.92(11)	−0.46	4.31(9)	3.75(12)	−0.56	4.34(6)	3.78(12)	−0.56
Q25	Ground service is excellent	4.28(5)	3.75(9)	−0.53	4.4(10)	3.92(11)	−0.48	4.33(7)	3.76(11)	−0.57	4.36(4)	3.80(10)	−0.56
Q26	Airport service is excellent	4.20(11)	3.76(8)	−0.44	4.39(11)	3.93(10)	−0.46	4.34(6)	3.73(13)	−0.61	4.36(4)	3.76(14)	−0.60
	Average	4.24	3.75	−0.48	4.40	3.94	−0.47	4.33	3.75	−0.58	4.35	3.79	−0.56

4.4.1. Chinese airlines pre-flight services

China Eastern Airlines achieved the highest value for expectations (4.45), followed by China Southern Airlines (4.35), Hainan Airlines (4.34), and Air China (4.26). Expectations of the top three service attributes for China Eastern are "Convenience of booking" (Q1), "Convenient check-in" (Q4), and "Courtesy of check-in employee" (Q6).

China Eastern Airlines also achieved the highest value for perceptions (4.03), followed by Hainan Airlines (3.89), China Southern Airlines (3.85), and Air China (3.79). Perceptions of the top three service attributes for China Eastern Airlines are "Convenient check-in" (Q4), "Courtesy of check-in employee" (Q6), and "Efficient check-in" (Q3).

The higher the score showing that perception is below expectation, the lower the perceived quality (Parasuraman *et al.* 1991). The ranking of the absolute value of GAP for Pre-flight services is as follows: China Southern Airlines (0.498), Air China (0.473), Hainan Airlines (0.450), and China Eastern Airlines (0.417). That means that China Southern Airlines passengers' perception is much lower than expectation, in other words, passengers' satisfaction is the lowest for China Southern Airlines.

Post hoc tests were conducted after ANOVA. For expectations, a Games-Howell Post Hoc indicates that China Eastern Airlines has achieved higher marks than Air China for Pre-Flight services ($p = 0.009$), and there are no other significant differences. For perceptions, a Games-Howell Post Hoc indicates that Air China got lower grades than China Eastern Airlines, China Southern Airlines, and Hainan Airlines ($p = 0.002$), and there are no other significant differences.

4.4.2. Chinese airlines in-flight services

Passengers rated China Eastern Airlines higher than the other three airlines for In-flight services from an expectation perspective. For example, they rated the "Cabin safety demonstration" (mean = 4.74) and "Courtesy of flight attendants" (mean = 4.74) highly. On the other hand, they rated other factors relatively low. For example, the travellers rated "In-flight entertainment facilities and programs are good" (mean = 4.32) and "Food and beverage are good" (mean = 4.36) lower. Interestingly, the results for both expectations and perceptions were very similar.

The ranking of the absolute value of GAP for In-Flight services is as follows: China Southern Airlines (0.63), Air China (0.62), Hainan Airlines (0.61), and China Eastern Airlines (0.57). It suggests that passengers are happier about China Eastern Airlines than the other three airlines.

Post hoc tests were conducted after ANOVA. For expectations, a Games-Howell Post Hoc indicates that Air China got lower grades than China Eastern Airlines, China Southern Airlines, and Hainan Airlines for In-flight services ($p = 0.001$), and there are no other significant differences. For perceptions, a Games-Howell Post Hoc indicates that China Eastern Airlines achieved higher grades than Air China, China Southern Airlines, and Hainan Airlines ($p = 0.011$), and there are no other significant differences.

4.4.3. Chinese airlines post-flight service

The results of the passenger's perception of Post-flight services were similar to the Pre-flight results. China Eastern Airlines achieved a higher ranking for both expectation and perception, and Air China received the lowest ranking. Passengers, for example, rated "Convenient baggage claim" (mean = 4.44) and "Ground service is good" (mean = 4.4) for China Eastern Airlines from expectation's perspective highly, but they rated "Cour tesy of baggage claim employee" (mean = 4.38) lower.

Post hoc tests were conducted after ANOVA. For expectations, a Games-Howell Post Hoc indicates that Air China got lower grades than China Eastern Airlines, China Southern Airlines, and Hainan Airlines, for Post-flight services ($p = 0.006$), and there are no other significant differences. For perceptions, a Games-Howell Post Hoc indicates that China Eastern Airlines achieved higher grades than Air China and China Southern Airlines ($p = 0.007$), and there are no other significant differences.

4.5. Relative importance of SERVQUAL dimensions

As previously noted, this study followed the recommendations of Gilbert and Wong (2003) by including the airline service quality dimensions in the study's questionnaire. Thus, in addition to assessing the SERVQUAL dimensions and questions, the effects of the derived dimensions of airline service quality were also examined in the context of the survey on China's four major domestic airlines (Gilbert, Wong 2003).

SERVQUAL is measured by five dimensions (RATER): reliability, assurance, tangibility, empathy, and responsiveness (Sultan, Simpson 2000). Gilbert and Wong (2003) revised and expanded the RATER model to seven dimensions (reliability, assurance, facilities, employees, flight patterns, customization, and responsive) to reflect the attributes of the airline industry. The definitions of the seven dimensions are:

- assurance – safety records;
- flight patterns – flight schedules, flight frequencies, flight network;
- reliability – on time departure/arrival, consistent service;
- responsiveness – efficient service, prompt handling of requests/complaints;
- employees – employees' appearance and attitude;

Table 6. Importance of the SERVQUAL dimensions (service features) results

		Air China							Total
		1	2	3	4	5	6	7	
Assurance	Count	140	21	7	4	3	3	9	187
	% of total	74.9%	11.2%	3.7%	2.1%	1.6%	1.6%	4.8%	100.0%
Flight patterns	Count	26	66	37	15	12	17	14	187
	% of total	13.9%	35.3%	19.8%	8.0%	6.4%	9.1%	7.5%	100.0%
Reliability	Count	31	46	52	22	18	10	8	187
	% of total	16.6%	24.6%	27.8%	11.8%	9.6%	5.3%	4.3%	100.0%
Responsiveness	Count	19	33	35	49	24	13	14	187
	% of total	10.2%	17.6%	18.7%	26.2%	12.8%	7.0%	7.5%	100.0%
Employees	Count	11	9	19	23	50	38	37	187
	% of total	5.9%	4.8%	10.2%	12.3%	26.7%	20.3%	19.8%	100.0%
Facilities	Count	15	9	21	33	23	60	26	187
	% of total	8.0%	4.8%	11.2%	17.6%	12.3%	32.1%	13.9%	100.0%
Customisation	Count	13	14	6	20	35	19	80	187
	% of total	7.0%	7.5%	3.2%	10.7%	18.7%	10.2%	42.8%	100.0%
		China Eastern Airlines							Total
		1	2	3	4	5	6	7	
Assurance	Count	257	27	8	10	9	0	8	319
	% of total	80.6%	8.5%	2.5%	3.1%	2.8%	0.0%	2.5%	100.0%
Flight patterns	Count	39	106	71	40	36	10	17	319
	% of total	12.2%	33.2%	22.3%	12.5%	11.3%	3.1%	5.3%	100.0%
Reliability	Count	40	96	91	46	24	14	8	319
	% of total	12.5%	30.1%	28.5%	14.4%	7.5%	4.4%	2.5%	100.0%
Responsiveness	Count	21	37	63	103	59	21	15	319
	% of total	6.6%	11.6%	19.7%	32.3%	18.5%	6.6%	4.7%	100.0%
Employees	Count	12	22	31	47	92	50	65	319
	% of total	3.8%	6.9%	9.7%	14.7%	28.8%	15.7%	20.4%	100.0%
Facilities	Count	9	23	18	45	58	104	62	319
	% of total	2.8%	7.2%	5.6%	14.1%	18.2%	32.6%	19.4%	100.0%
Customisation	Count	16	17	23	15	31	90	127	319
	% of total	5.0%	5.3%	7.2%	4.7%	9.7%	28.2%	39.8%	100.0%
		China Southern Airlines							Total
		1	2	3	4	5	6	7	
Assurance	Count	87	17	4	3	3	2	3	119
	% of total	73.1%	14.3%	3.4%	2.5%	2.5%	1.7%	2.5%	100.0%
Flight patterns	Count	21	42	17	11	11	8	9	119
	% of total	17.6%	35.3%	14.3%	9.2%	9.2%	6.7%	7.6%	100.0%
Reliability	Count	27	26	40	17	4	2	3	119
	% of total	22.7%	21.8%	33.6%	14.3%	3.4%	1.7%	2.5%	100.0%
Responsiveness	Count	17	17	22	38	17	6	2	119
	% of total	14.3%	14.3%	18.5%	31.9%	14.3%	5.0%	1.7%	100.0%
Employees	Count	8	6	11	20	40	21	13	119
	% of total	6.7%	5.0%	9.2%	16.8%	33.6%	17.6%	10.9%	100.0%
Facilities	Count	11	6	7	9	17	49	20	119
	% of total	9.2%	5.0%	5.9%	7.6%	14.3%	41.2%	16.8%	100.0%
Customisation	Count	10	2	10	10	12	16	59	119
	% of total	8.4%	1.7%	8.4%	8.4%	10.1%	13.4%	49.6%	100.0%

End of the Table 6

		Hainan Airlines							Total
		1	2	3	4	5	6	7	
Assurance	Count	123	12	6	2	3	2	4	152
	% of total	80.9%	7.9%	3.9%	1.3%	2.0%	1.3%	2.6%	100.0%
Flight patterns	Count	15	63	27	19	8	10	10	152
	% of total	9.9%	41.4%	17.8%	12.5%	5.3%	6.6%	6.6%	100.0%
Reliability	Count	23	32	53	21	14	6	3	152
	% of total	15.1%	21.1%	34.9%	13.8%	9.2%	3.9%	2.0%	100.0%
Responsiveness	Count	6	24	26	48	32	11	5	152
	% of total	3.9%	15.8%	17.1%	31.6%	21.1%	7.2%	3.3%	100.0%
Employees	Count	5	8	15	25	40	29	30	152
	% of total	3.3%	5.3%	9.9%	16.4%	26.3%	19.1%	19.7%	100.0%
Facilities	Count	9	17	19	15	24	44	24	152
	% of total	5.9%	11.2%	12.5%	9.9%	15.8%	28.9%	15.8%	100.0%
Customisation	Count	8	5	11	15	19	33	61	152
	% of total	5.3%	3.3%	7.2%	9.9%	12.5%	21.7%	40.1%	100.0%

– facilities – check in/baggage handling service, in flight facilities, waiting lounge;
– customisation – Individual attention, anticipation of your travel needs.

In the study's questionnaire, passengers were asked to prioritize 7 dimensions of airline service quality in order of importance from 1 to 7. Table 6 indicates that the majority of participants chose "Assurance" as their first priority for all four airlines, followed by "Reliability" and then "Flight pattern", whereas passengers rated "Employee" as the least important priority.

4.6. Reasons for customer choice of an airline

Air fare is not included as part of the SERVQUAL questions and dimensions. This is because air fares (price) are not a part of service quality. However, price is one of the most important factors for passengers when choosing an airline. In order to investigate how price affected passengers' chose of their airline, a separate question was designed in addition to the 26 items and the seven SERVQUAL dimensions.

The Figure 1 below illustrates the results of the question: "reasons for choosing an airline". As seen in the Figure 1, 28 per cent of passengers select an airline because it offers "Discount (cheaper) tickets", 24 percent of passengers select an airline due to "Flight schedule and frequency", 16 percent of passengers focuss on "High service quality", and only 9 percent of passengers choose an airline because of "Safety". The figure also shows that cheaper air tickets and flight schedule are the two main reasons for Chinese domestic passengers in selecting an airline, overtaking both service quality and safety.

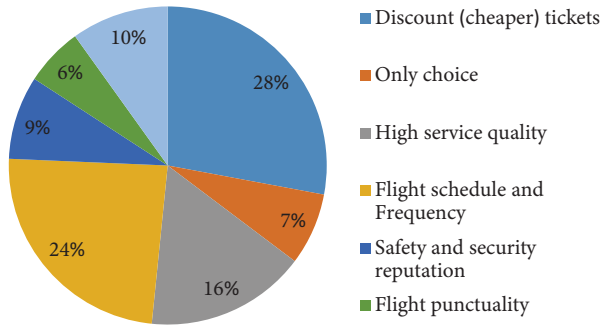

Fig. 1. Respondents reasons for selecting an airline for domestic travel in China

5. Conclusions

The aim of this study was to examine the service quality provided by Air China, China Eastern Airlines, China Southern Airlines, and Hainan Airlines, in China's domestic market. A survey was designed based on the SERVQUAL model and an industry framework that was designed to provide greater insights into passengers' perceptions of China's four major domestic airlines. One thousand passengers who travelled with these airlines from Honqian and Pudong International Airports constituted the research participants. The findings of this research are fourfold. Firstly, the perceptions of service quality are lower than the expectations for all four airlines, which means that a GAP exists for these airlines. Secondly, significant differences in service quality exist between the four airlines in China's domestic market. China Eastern Airlines achieved the highest service quality, while Air China achieved the lowest service quality. Thirdly, passengers consistently consider that

"good safety records" has the highest priority of the seven SERVQUAL questions and dimensions. Finally, the most important factors passengers consider when choosing an airline are "cheaper airfare" and "flight schedule and frequency", overtaking both "high service quality" and "safety".

When comparing cabin class with the passengers' perception of service quality ranking, First Class passengers from China Eastern Airlines have the highest level of satisfaction (mean = 3.94), followed by Air China (mean = 3.92), Hainan Airlines (mean = 3.89), and, lastly, China Southern Airlines (mean = 3.82). Business Class passengers travelling with Air China (mean = 3.92) have the highest ranking, followed by China Southern Airlines (mean = 3.91), China Eastern airlines (mean = 3.90), and Hainan Airlines (mean = 3.72). Economy Class passengers from China Eastern Airlines (mean = 3.94) have the highest ranking followed by Hainan Airlines (mean = 3.84), China Southern Airlines (mean = 3.71), and finally Air China (mean = 3.64). It indicates that China Eastern Airlines has the best reputation for First Class services as viewed by passengers, while China Southern Airlines has the lowest First Class service satisfaction; for Business Class services, Air China receives the best score, and Hainan Airlines receives the lowest score; for Economy Class services, China Eastern Airlines has the best services, while Air China receives the lowest score.

A further analysis was undertaken by analysing three factors (pre-flight services, in-flight services and post-flight services). All airlines rated well for "Pre-flight services", followed by "Post-flight services", but did not rate very well for "In-flight services". This shows that all airlines should improve their in-flight services in order to achieve a higher customer perception of their service quality.

Passengers consistently rated "assurance (good safety records)" as the first priority of the seven SERVQUAL dimensions. The results support research undertaken by Gilbert and Wong (2003), Natalisa and Subroto (2003), and Clemes *et al.* (2008), who suggested that "safety" has been very important since the 911 US attack. It does not support findings from Gourdin and Kloppenborg (1991), and Young *et al.* (1994), who found that "flight connections" and "in-flight comfort" were the two most important dimensions, whereas the "operations" and "safety" dimensions constituted the least important factors. This research shows that lower price is the most important factor for passengers choosing an airline in China's domestic market. The results support previous research regarding how price affects passengers' choice (Atalik 2007; Jiang 2013; Jiang *et al.* 2003).

The results indicated that the satisfaction scores were lower than passengers' expectation scores, which implies that the airlines need to improve their service quality. Significant differences were found between these four airlines: China Eastern Airlines achieved the highest service quality, while Air China achieved the lowest service quality.

According to Clemes *et al.* (2008), passengers' perceptions of travel service quality have changed in this changing environment. Other important factors such as airfare or reliability also need to be considered. As a result, this research finds that the most important factors for passengers in choosing an airline are cheaper airfare and flight schedule and frequency, not high service quality. The results obtained in this research should provide more information for the management of carriers to help them plan the improvement of their service quality by reducing the GAPs between expectations and perceptions (Chow 2014).

This study was only limited to and mainly focused on four Chinese airlines in China's domestic market. Therefore, the participants in this study were passengers who travelled only with these four airlines from Shanghai Honqiao and Pudong International Airport. The results of the study could be different if it had examined more airlines and international passengers. Consequently, further studies could be expanded to include international airlines from other countries, such as Qantas Airlines and Singapore Airlines.

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