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An assessment of passenger experience at Melbourne Airport

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ABSTRACT

This paper aims to assess the service quality at Melbourne airport by conducting an airport user survey. The results demonstrate that there are significant discrepancies between passengers' expectations of service quality and their perceptions of service quality at the airport. Measured values for passenger satisfaction are found to be consistently lower than those for passenger expectations, which imply that there is room for Melbourne airport to improve its service quality. Fourteen of the thirty service items used in the survey were rated as important and satisfactory, and thus should be maintained. Airport parking, immigration, internet/Wi-Fi access, and baggage delivery are areas that may have caused concerns for passengers and should be urgently addressed by airport management. These results complement the existing survey findings reported by Airports Council International and Australian Competition and Consumer Commission.

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1. Introduction

These days many people would agree that airports should invest in enhanced facilities and higher levels of service quality in order to attract passengers, thereby generating significantly higher non-aeronautical revenue, which is critical to airport profitability. [Merkert and Assaf \(2015\)](#) even argue that service quality is a significant performance indicator to an airport and should be treated with the same level of importance as profitability.

The issue of airport service quality has been widely examined in airport literature. For example, [Yeh and Kuo \(2003\)](#) evaluated the service quality of fourteen major Asia-Pacific international airports using a fuzzy multi-attribute decision making approach. [Arif et al. \(2013\)](#) assessed customer satisfaction at the United Arab Emirates' three airports. Transfer passengers' experiences at Bandar-anaike International Airport in Sri Lanka were studied by [De Barros et al. \(2007\)](#). In Australia, Melbourne Airport was once ranked within the top 5 airports that handled 15–25 million passengers according to the Airport Quality Service Survey conducted by Airports Council International (ACI) in 2008, but not any longer since then. In 2011 it did not even make the top 100 according to ACI's rankings. The [ACCC \(2015\)](#) has found that service quality at all the

monitored Australian airports has declined in the last decade in part due to the fact that customers' expectations are constantly changing, and Melbourne airport received the lowest quality of service rating amongst Australian airports in the last few years. This research selects Melbourne airport as a case study in order to re-examine the service quality issue using both expectation and perception data to identify areas requiring focus and investment of resources, so as to deliver satisfactory services that fulfil the needs and expectations of airport passengers.

2. Methodology

A service quality gap model proposed by [Parasuraman et al. \(1985\)](#) suggests that service quality constitutes the differences between expectation and performance along dimensions of quality. One of the suggested gaps is the difference between consumer expectations and perceptions. Any organisation seeking to build long-term relationships with its customers needs to identify and minimise the gap between the two accordingly.

The selection of service items is important for examinations of airport service quality gaps. The design of the questionnaire for this study follows [Fodness and Murray \(2007\)](#), [Tsai et al. \(2011\)](#) and the survey used by ACI's Airport Service Quality. Only the services that are most likely used by departure and arrival passengers are included in this research. The first segment of the questionnaire contained questions regarding respondents' socio-demographic traits including age, gender, education, nationality and income.

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The second segment collected passengers' flight information including purpose of travel, travel frequency, and cabin class. The third section was composed of 30 items which could be found in Table 2. Respondents were asked to indicate their satisfaction levels of "expectation" and "perception" separately according to their experiences after using Melbourne airport. Each item was rated using a five-point Likert scale, using the key "1 = strongly dissatisfied", "2 = dissatisfied", "3 = neutral", "4 = satisfied", and "5 = strongly satisfied".

The target population for this study consisted of passengers who travelled from/to Melbourne airport. Fifteen pilot questionnaires were handed out at Melbourne airport to check if the questions could be properly understood by the passengers. After a minor change to the wording of some questions, the survey was conducted from 1 to 30 September 2014 with the help of two research assistants who further explained the questions to the participants when distributing the survey. Considering the large number of passengers who use the airport and the purpose of using factor analysis in this research, 1000 passengers at Melbourne Airport acted as study participants. The survey was conducted between Monday and Sunday, with 500 questionnaires being randomly distributed to passengers at the international arrival lounge and check-in area from 6 a.m. to 12 p.m., and another 500 at the domestic boarding gates, as well as arrival lounges from 1 to 8 p.m. In total, 715 questionnaires were verified as useful.

It should be pointed out that the ACCC (2015) Airport Monitoring Report and ACI's Airport Service Quality did not examine the impact of demographic variables on the airport rating. In this research, Multivariate analysis of variance (MANOVA) has been used to help understand the differences between perception and expectation among different demographic groups. An Important Performance Analysis (IPA) introduced by Martilla and James (1977) can then be employed to devise managerial strategies by analysing passenger expectation (importance) and passenger perceptions (performance) of service quality. The IPA analysis can provide airport management with useful guidance in allocating resources appropriately and efficiently to satisfy the needs and desires of passengers.

3. Results and discussion

3.1. Sample characteristics

Table 1 shows the demographic information of the sample. About 52.4% of the respondents were male. In terms of education level, over half the travellers possessed a bachelor degree or a higher qualification. The most common nationality, constituting approximately half the respondents were Australian citizens (49.0%), followed by Asian passengers (33.6%). Approximately 60.8% of participants travelled for the purposes of holiday and/or visiting friends or relatives. Interestingly, the largest proportion of respondents' annual income fell within the category of A\$20,001–40,000, the second lowest annual income class investigated.

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

Table 2 reports the mean and standard deviation of the expectation and perception scores for the 30 items. The numbers in parentheses represent the ranks of the service items. A paired t-test suggests that there are significant differences between perception scores and expectation scores (p-values for all items are less than 0.001). All the expectation scores are significantly higher than the corresponding perception scores. The five items displaying the

Table 1
Demographic data (N = 715).

	Frequency	Percent
Gender		
Male	375	52.4%
Female	340	47.6%
Age Group		
20 -	60	8.4%
21–30	340	47.6%
31–40	145	20.3%
41–50	105	14.7%
51–60	55	7.7%
60+	10	1.4%
Nationality		
Australian	350	49.0%
New Zealander	20	2.8%
European	30	4.2%
North American	10	1.4%
Latin American	15	2.1%
Asian	240	33.6%
Other	50	7.0%
Travel Frequency (per year)		
Less than 3	760	53.15%
3–6	440	30.77%
7–10	160	11.19%
10 and more	70	4.89%
Education		
High school or lower	80	11.2%
Diploma	250	35.0%
Bachelor Degree	255	35.7%
Postgraduate Degree or higher	130	18.2%
Annual Income (A\$)		
less than 20,000	110	15.4%
20,001–40,000	260	36.4%
40,001–60,000	150	21.0%
60,001–80,000	125	17.5%
80,001–100,000	15	2.1%
Over 100,000	55	7.7%
Purpose of Travel		
Business	75	10.5%
Holiday/Visiting friends or relatives	435	60.8%
Study	125	17.5%
Others	80	11.2%

largest gaps are: item 2 ("Airport parking"), item 16 ("Internet/Wi-Fi access"), item 7 ("Waiting time at immigration"), Item 1 ("Surface transport to/from airport"), and Item 24 ("Battery recharge facilities"). These significant discrepancies suggest that passengers could have felt most disappointed by these services.

3.3. Factor analysis

A factor analysis was performed to reduce these 30 service items to an interpretable and manageable set of factors based on the expectation values. The principal component analysis with promax rotation generated three dimensions (Table 3) when eigenvalues were set at greater than 1.2. The oblique rotation method was selected because these dimensions were not expected to be independent of each other. Three factors, which can be summarised as "essential airport services", "service items for comfort, convenience and enjoyment", and "services related to business travel and baby changing facilities" cumulatively accounted for 56.7% of the variance. Table 3 shows the factor loadings after rotation (only those greater than 0.40 are displayed).

Cronbach's reliability coefficients in Table 3 range from 0.77 to 0.94, which are considered to be quite acceptable according to Kline (1999). The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy. The sample size is considered to be adequate for factor analysis, given that the KMO values are well above 0.70 (Hutcheson and Sofroniou, 1999).

Table 2
Mean and GAP (difference between perceptions and expectations) for airport service items.

Item	Expectation (E)		Perception (P)		GAP (mean)	
	Mean	SD	Mean	SD	P-E	
1	Surface transport to/from airport	4.24 (2)	0.985	3.69 (6)	0.950	-0.55
2	Airport parking	4.09 (5)	0.968	3.35 (23)	1.173	-0.74
3	Baggage carts/trolleys	4.10 (4)	0.985	3.69 (6)	0.934	-0.41
4	Check-in waiting time	3.98 (11)	1.100	3.57 (12)	0.965	-0.41
5	Courtesy and helpfulness of check-in staff	4.07 (6)	0.899	3.58 (11)	0.927	-0.49
6	Self check-in facilities	4.01 (10)	1.025	3.67 (7)	0.930	-0.34
7	Waiting time at immigration	4.02 (9)	0.986	3.45 (18)	1.002	-0.57
8	Courtesy and helpfulness of immigration staff	3.99 (10)	0.969	3.52 (14)	0.818	-0.47
9	Waiting time at security check	4.06 (7)	0.952	3.62 (10)	0.876	-0.44
10	Courtesy and helpfulness of security staff	4.05 (8)	0.952	3.66 (8)	0.902	-0.39
11	Clear directional signs	4.10 (4)	0.992	3.76 (2)	0.836	-0.34
12	Flight information screens	4.25 (1)	0.873	3.82 (1)	0.937	-0.43
13	Flight transfer	4.05 (8)	0.964	3.64 (9)	0.896	-0.41
14	Bank/ATM facilities	3.98 (11)	1.021	3.76 (2)	0.879	-0.22
15	Baby changing facilities	3.96 (12)	1.090	3.62 (10)	0.953	-0.34
16	Internet/Wi-Fi access	4.08 (6)	0.958	3.50 (15)	0.982	-0.58
17	Toilets	4.17 (3)	0.976	3.70 (5)	0.961	-0.47
18	Moving walkways and escalators	3.91 (13)	1.071	3.71 (4)	0.875	-0.20
19	Boarding gate seating	4.01 (10)	0.917	3.62 (10)	0.893	-0.39
20	Business lounge	3.74 (17)	1.048	3.53 (13)	0.952	-0.21
21	Business centre	3.67 (18)	1.044	3.37 (21)	0.995	-0.30
22	Children's playing area	3.51 (20)	1.058	3.38 (20)	0.967	-0.13
23	Speed of baggage delivery	4.01 (10)	0.913	3.48 (16)	0.868	-0.53
24	Battery recharge facilities	4.01 (10)	1.011	3.46 (17)	0.938	-0.55
25	Airport shopping	3.87 (14)	0.968	3.36 (22)	1.041	-0.51
26	Art displays	3.55 (19)	1.096	3.41 (19)	1.047	-0.14
27	Music in the terminal	3.55 (19)	1.108	3.41 (19)	1.047	-0.14
28	Natural light in the terminal	3.84 (15)	1.029	3.52 (14)	0.968	-0.32
29	Smoking area	3.83 (16)	1.149	3.45 (18)	1.043	-0.38
30	Temperature in the terminal	3.99 (11)	0.939	3.73 (3)	0.893	-0.26

For each factor, item scores were summed and divided by the number of items that loaded most highly onto that component to yield a factor score ranging from 1 to 5. Table 3 contains the mean and standard deviation of the factor score for each of the three factors from expectation's perspective. We also calculated the average scores for the three factors that contained the same service items for the perception data, which are 3.62, 3.49 and 3.56 respectively.

3.4. MANOVA and ANOVA tests

The one-way MANOVA test can be used to examine whether there are differences between the demographic variables in terms of perception and expectation scores, which is lacking in previous reports that study the service quality issue at Melbourne airport. The MANOVA tests indicate that women and men differed significantly on Factor 2 ("service items for comfort, convenience and enjoyment", $F(2, 712) = 12.377, p < 0.01$), and Factor 3 ("services related to business travel and baby changing facilities", $F(2, 712) = 4.678, p < 0.05$). The univariate ANOVA tests conducted after the MANOVA tests reveal that women tended to assign significantly higher expectation scores to "service items for comfort, convenience and enjoyment", and consistently gave higher ratings to the actual performance of this factor. Female passengers assigned higher expectation ratings to "services related to business travel and baby changing facilities" compared to male passengers, though there were no recorded differences between men and women in the perception ratings.

Table 4 shows that different age groups differed in both their perception and expectation ratings of all three factors. People aged between 50 and 60 years generally had higher expectations of service quality. Elderly passengers (60 and over) were more satisfied with the existing services than any other age group. It appears

that passengers with different education levels did not exhibit significantly different views on the airport service items. Nationality has been revealed as an important factor influencing ratings which reflect service expectation levels and ratings of the actual service post-experience. For example, passengers from North America tended to place less value on Factor 1 "essential airport items" and they also gave lower ratings for their actual experience in this area. Australians were more satisfied with the existing services associated with Factor 2 "service items for comfort, convenience and enjoyment" than were Asians, Europeans and North Americans. Income also affected the perception and expectation scores. In general, groups with lower incomes (A\$20,000 or less) gave lower expectation scores and higher perception scores compared to groups with higher incomes for almost all the service items. Passengers who have previously flown less than three times tended to display lower expectations of airport service quality, giving significantly higher perception scores for most of the actual services. Not surprisingly, passengers travelling for business purposes tended to be more demanding than those travelling for leisure, as evidenced by the significantly lower perception scores they gave for most of the airport service items.

3.5. IPA analysis

Fig. 1 highlights the relative positions of attributes in matrix format, with values measuring "importance" on the vertical axis and those measuring "performance" on the horizontal axis. The survey question items are grouped into four quadrants, which are "keep up the good work," "concentrate here," "low priority," and "possible overkill" respectively.

As shown in Fig. 1, all the items fell in quadrants I, II and III, with none in quadrant IV. Eight attributes in quadrant II are considered to be important but unsatisfactory, which include item 2 ("airport

Table 3
Principal component analysis results for expectation items.

	Expectation & perception (standard loading)		
	Factor 1	Factor 2	Factor 3
Airport service items			
Surface transport to/from airport	0.73		
Airport parking	0.66		
Baggage carts/trolleys	0.57		
Check-in waiting time	0.70		
Courtesy and helpfulness of check-in staff	0.62		
Self check-in facilities	0.62		
Waiting time at immigration	0.76		
Courtesy and helpfulness of immigration staff	0.69		
Waiting time at security check	0.72		
Courtesy and helpfulness of security staff	0.75		
Clear directional signs	0.70		
Flight information screens	0.74		
Flight transfer	0.64		
Bank/ATM facilities			0.66
Baby changing facilities			0.56
Internet/Wi-Fi access	0.57		
Toilets	0.65		
Moving walkways and escalators		0.47	
Boarding gate seating	0.56	0.44	
Business lounge			0.62
Business centre			0.67
Children's playing area		0.75	
Speed of baggage delivery		0.54	
Battery recharge facilities		0.57	
Airport shopping		0.71	
Art displays		0.80	
Music in the terminal		0.78	
Natural light in the terminal		0.64	
Smoking area		0.44	
Temperature in the terminal		0.49	
Mean factor score (standard deviation)	4.08 (-0.70)	3.81 (-0.74)	3.84 (-0.81)
Eigenvalues	12.77	2.91	1.33
% of variance explained	42.55	9.71	4.43
Reliability (Cronbach's alpha)	0.94	0.89	0.77
% of variance explained	42.55	9.71	4.43
Reliability (Cronbach's alpha)	0.94	0.89	0.77
Measure of sampling adequacy (KMO)	0.91		

Note: Factor 1: Essential airport services. Factor 2: Service items for comfort, convenience and enjoyment. Factor 3: Services related to business travel and baby changing facilities.

Table 4
Comparison of expectation and perception factors for different age groups.

	Mean score					Significant difference between groups at 0.05
	Group 1	Group 2	Group 3	Group 4	Group 5	
	Under 30	31–40	40–50	50–60	60 and over	
Expectation						
Essential service items	4.02	4.03	4.14	4.45	4.50	Group 4 and groups 1, 2.
Service items for comfort, convenience, and enjoyment	3.72	3.86	3.61	4.42	4.80	Group 4 and groups 1, 2, 3; Group 5 and groups 1, 2, 3.
Services related business travel and baby changing facilities	3.82	3.88	3.42	4.40	4.75	Group 3 and groups 1, 2, 4, 5; Group 4 and groups 1, 2; Group 5 and groups 1, 2.
Perception						
Essential service items	3.66	3.57	3.54	3.39	4.43	Group 5 and groups 1, 2, 3, 4; Group 1 and group 4;
Service items for comfort, convenience, and enjoyment	3.51	3.49	3.33	3.37	4.70	Group 5 and groups 1, 2, 3, 4.
Services related business travel and baby changing facilities	3.61	3.54	3.47	3.25	4.75	Group 5 and groups 1, 2, 3, 4; Group 4 and group 1.

parking”), item 4 (“check-in waiting time”), item 5 (“courtesy and helpfulness of check-in staff”), item 7 (“waiting time at immigration”), item 8 (“courtesy and helpfulness of immigration staff”),

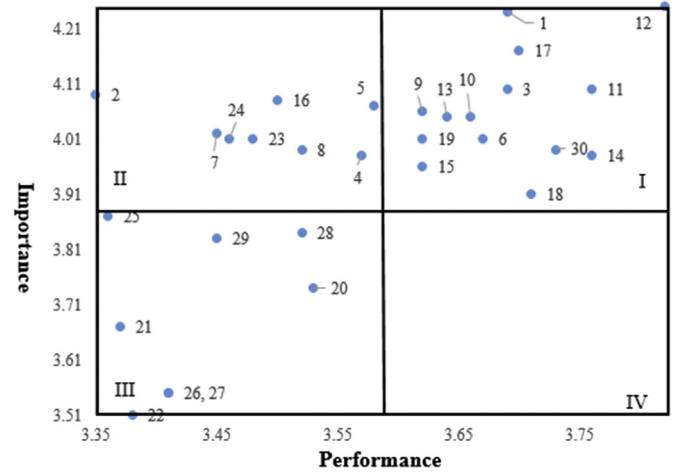


Fig. 1. Importance-performance analysis.
Note: The number indicates the service items shown in Table 2.

item 16 (“Internet/Wi-Fi”), item 23 (“speed of baggage delivery”) and item 24 (“battery recharge facilities”). These are the areas that should be improved first. In today’s digital age, internet availability is extremely important to airline passengers, as noted by Han et al. (2012). If internet access is made available during the waiting time for check-in or passport-check, airport passengers could become more tolerant of long queues. Fourteen service attributes in quadrant I were perceived as important and satisfactory and should be maintained. These items include “access to airport”, “security check”, “finding your way in the terminal”, and “airport facilities”. Eight service attributes in quadrant III are rated low in importance and satisfaction. Most of these items are associated with business travel facilities, airport decorations and environment, which most likely do not require airport management to invest additional efforts and resources. It should be warned that although the IPA model has produced some useful information, we should be cautious in using the results given the little variation in the importance and performance values.

4. Conclusions

This research aims to assess the service quality at Melbourne

airport through an airport user survey conducted among passengers. The results have shown that all the perception scores sit below the expectation scores, which implies that there is room for Melbourne airport to improve its service quality. Passengers were most satisfied with the ease of finding one's way through the terminal, but the service quality gaps were large for airport shopping and airport parking.

This study shows that female passengers tended to care more about service items relating to comfort, convenience and enjoyment, and consistently give higher ratings to the actual performance of these service items. Older age groups displayed higher expectations of airport service quality and they also gave higher ratings for existing airport services at Melbourne Airport. It appears that Australian citizens were more satisfied with most of the service items compared to travellers from Asia, Europe and North America. As one of Australia's major gateways and tourism destinations, it is critical for Melbourne airport to have a vision to improve the airport experiences of international travellers. As expected, groups with higher incomes, frequent flyers and business travellers tended to be more demanding in terms of service quality than other groups. These groups are important contributors to airline profitability. Thus, airport management must co-operate with airlines to address the concerns of these groups and improve their airport experience.

An application of the IPA model in this research suggests that fourteen of the thirty service items were rated as important and satisfactory, which should be maintained ("keep up the good work"). Areas such as airport parking, check-in, immigration, Internet/Wi-Fi and baggage delivery are important to passengers, but have received relatively lower performance scores. Airport management should endeavour to improve its services in these areas. With the privatisation and deregulation of public airports in

Australia and around the world, airport service quality, along with airport profitability and efficiency, should receive more attention as a source for research, rather than being an issue concerning only regulators and airport operators.

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