Social Science Asia, Vol.6 No.3, July-Sept.,2020, p:30-45
DOI : 10.14456/ssa.2020.20

DEVELOPING AND EVALUATING AN AIRPORT SERVICE QUALITY MODEL: THE CASE OF AIRPORT BASED IN THAILAND

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Abstract

The aim of this research was to develop an effective model for airport service quality for application at Suvarnabhumi Airport (Thailand). The objectives of the study included the derivation of an integrative model from previous industry-specific airline service quality models and evaluating and testing of the model based on expert and passenger views. An exploratory sequential mixed methods approach was used for the study. The data were collected using semi-structured interviews with experts (n=5) and passengers (n=10), and a passenger survey (n=500). The results indicated that the check-in process, security process, immigration and customs processes, staff interaction, signs and information, airport accessibility, the airport environment, food offerings, retail offerings, other facilities and the transfer and arrival processes, all influenced passenger perceptions of service quality. The implication of the findings is that these areas should be the focus of planned improvements to service quality and passenger satisfaction.

Keywords*:* Service quality, airport service, ground services

1. INTRODUCTION

One of the fundamental problems of service quality is identifying the specific aspects of the service environment which affect perceptions of service quality, and therefore outcomes such as customer satisfaction. This issue was noted as early as 1992, with the proposal of the SERVPERF model (Cronin & Taylor, 1992) which took the SERVQUAL model (Parasuraman, Zeithaml, & Berry, 1985; Zeithaml, Parasuraman, & Berry, 1990) and replaced its generic dimensions with context-specific dimensions to be determined based on factors such as industry type, customer characteristics and expectations, and even culture. A review of service quality models has shown that the benefits of adapting the service quality model are well-recognized, with many authors using more creative approaches than the SERVQUAL framework, although most still chose relatively simple, process-oriented and single-level models (Ladhari, 2008). Standard service quality models also have problems including validity and reliability and inadequate investigation of internal relationships (Martínez & Martínez, 2010).

Models of airport service quality are diverse, with authors identifying a variety of dimensional models, drawing on both process and outcome perspectives (Bezerra & Gomes, 2015; Chou, 2009; Fodness & Murray, 2007; Hutchinson, Bogicevic, Yang, Bilgihan, & Bujisic, 2013; Lubbe, Douglas, & Zambellis, 2011; Lupo, 2015; Rhoades, Waguespack Jr, & Young, 2000; Tsai, Hsu, & Chou, 2011).

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These models point to the complexity of the service environment for airports, with multiple process stages, and the highly variable needs of passengers in the pre-arrival stage, including check-in, security, immigration and customs, and the pre-departure waiting period, as well as passengers arriving and transferring at the airport, who have different needs again.

To date, none of these proposed models have emerged as the leading model of airport service quality, as has occurred in other areas such as with the SERVQUAL (Parasuraman et al., 1985; Zeithaml et al., 1990) and SERVPERF (Cronin & Taylor, 1992) generic service quality models. However, the models reviewed, do have some significant overlapping areas, with many shared components. Thus, there is an opportunity to integrate these models to derive a consensus model that reflects the most important elements of service quality for airport passengers, by identifying the core elements that make up the shared perspective of these models. Suvarnabhumi Airport, Bangkok's largest international airport, is the ideal test location for such a model. This airport, which welcomed 48.8 million passengers in 2017, is the ninth largest airport in the world (Airports Council International, 2018).

The aim of this research was to develop an effective model of airport service quality for use at Suvarnabhumi Airport. This aim was achieved through integration of existing airline service quality models, followed by expert review and passenger testing.

2. LITERATURE REVIEW

Definition and Measurement of Service Quality

Service quality, in its most essential form, can be defined as the difference between the customer's expectation of how a service should be, and their perception of the service that is actually received (Parasuraman et al., 1985; Zeithaml et al., 1990). The relative simplicity of this definition is surprising given the number of more specific definitions and measurement models that have emerged for the service quality concept. Of these, perhaps the best known model is the SERVQUAL model, also known as the "gap" model or RATER model (Parasuraman et al., 1985; Zeithaml et al., 1990), which has served as the basis for derivative models such as SERVPERF (Cronin & Taylor, 1992). However, these generic models are not necessarily the best to use in any given situation. As one study has pointed out, the formulation and internal structure of these models is weak, and may not have been tested fully prior to proposition (Martínez & Martínez, 2010). Thus, there are internal inconsistencies such as poor definition of the various dimensions of service quality, lack of reliability and validity data, and potentially unexplored internal relationships within the leading service quality models (Martínez & Martínez, 2010).

Researchers have responded to this gap by creating new models to explore different aspects of service quality. This approach follows the model of SERVPERF, in which dimensions of service quality are defined to be context-specific rather than generalized (Cronin & Taylor, 1992). One review of the service quality construct and its measures, identified approximately 30 different measurement models, including alternative generic models and models that are highly specialized to different service conditions (Ladhari, 2008). This author found wide variation in dimensional constructs, although they noted that the dimensions of the SERVQUAL model were often maintained. They also found that there was a split between technical or outcome quality and functional or process quality, with most models focusing on process quality rather than outcome quality. However, there were also procedural weaknesses identified, including weaknesses such as a lack of attention in validating research models and too little focus on multidimensional models (Ladhari, 2008). Thus, while industry-specific and other context-specific service quality models are frequently developed, these models may not be of consistent quality.

Airport Service Quality Models

This research is mainly concerned with the integration of service quality models which have been proposed for airport service situations. A summary of previous studies is provided below, emphasizing the model development aspects of the studies (Table 1). These studies have mainly developed their own models of airport service quality, with only Lubbe, Douglas and Zembellis (2011) deploying a previously used model, which was proposed by Fodness and Murray (2007).

Table 2 summarizes the specific aspects of service quality that are commonly identified in these models, and which was used as the basis for this study, as well as some evidence from empirical research. Some of the empirical studies were general models of service quality applied to the airport environment (Brochado, Rita, Oliveira, & Oliveira, 2019; Yeh & Kuo, 2003). Others have focused on specific areas of service, like shopping, the physical environment of the airport, airport lounges, or check-in services (Ali, Kim, & Ryu, 2016; Del Chiappa, Seijas Giménez, & Zapata-Aguirre, 2017; Han, Lee, & Kim, 2018; Lee, Chua, Kim, & Han, 2017; Rendeiro Martín-Cejas, 2006). There are also some other interesting aspects of the empirical research; for example, while most studies used passenger surveys, one study addressed the question of service quality using online reviews (Brochado et al., 2019). Only one study specifically addressed service in Asian airports (Yeh & Kuo, 2003). This study was comprehensive at the time, given that data were collected in the early 2000s. However, changes that have taken place in passenger aviation since the 1990s such as the introduction of low-cost carriers and the subsequent spike in passenger air travel (Poon & Waring, 2010), could mean that the specific findings of Yeh and Kuo (2003) are no longer sufficient for measuring service quality perceptions.

In summary there are some significant shared aspects of airport service quality, although there have been different approaches to classifying and categorizing these items. There are also differences in specific measurement criteria that authors have used. At the same time, there are also fundamental differences in the approaches used by different authors; for example, while Rhoades, et al. (2000) focused on service areas, Fodness and Murray (2007) focused on service activities. Thus, even though these models incorporate similar models, they are fundamentally incommensurate, and there is a gap between the models. These gaps are partially filled by the empirical research, but these empirical studies are also not comprehensive. Thus, there is room for an integrative model to combine these factors.

Table 1 Summary of previous models of airport service quality

Author(s)	**Dimensions**
Rhoades, Waguespack and Young (2000)	**Passengers** (waiting areas, connecting flights, baggage delivery, passport/customs, check-in efficiency, ground transportation, special services, parking, shopping/retail, food/beverage, frequency/availability of flights and destinations) **Administration** (capacity, design, services) **Airlines** (capacity) **Employees/tenants** (Parking, location, services)
Fodness and Murray (2007)	**Function** (effectiveness: external signs, signs to facilities, physical layout, ground transportation, baggage cart location, connecting flight accessibility; efficiency: baggage wait time, check-in speed, plane exit duration) **Interaction** (access, problem-solving, advice)

Table 1(continued)

	Diversion (maintenance: national retail and chain restaurants, local cuisine, local stores; ambience; décor: décor match to culture, art display, updated décor; productivity: conference facilities, business centers, quiet areas)
Chou (2009)	**Check-in** (wait time, total check-in time, courtesy, congestion) **Immigration process** (wait time, total time, courtesy, congestion) **Customs inspection** (total time, courtesy, congestion) **Overall** (facilities, phone response, availability of lifts, etc., walking distance, cleanliness, art and exhibitions, information displays, services, signposting)
Lubbe, Douglas and Zambellis (2011)	Fodness and Murray's (2007) model specification
Tsai, Hsu and Chou (2011)	**Physical environment** (facilities planning, lavatory hygiene, environmental beauty and cleanliness, allocation and design of space) **Airport circulation** (internal directions, external circulation, public transportation convenience) **Interaction and outcome** (procedural service, staff attitude, security inspection procedures, check-in and baggage delivery) **Flight information** (on-time departure, clear broadcasting, accurate flight information boards)
Bogicevic, Yang, Bilgihan and Bujisic (2013)	Check-in time, security check, signage, accessibility, parking, baggage handling, staff, shopping, dining options, cleanliness, adequate seating, Internet kiosk, charging stations, Wi-Fi
Bezerra & Gomes (2015)	**Check-in** (Wait time, process efficiency, courtesy/helpfulness, luggage cart availability) **Security** (courtesy/helpfulness, thoroughness, wait time, safety/security) **Convenience** (food availability and quality, Bank/ATM/Exchange availability, retail availability and quality, staff courtesy/helpfulness) **Ambience** (thermal comfort, acoustic comfort, cleanliness) **Basic facilities** (departure lounge, availability and cleanliness of washrooms/toilets) **Mobility** (signage/wayfinding, flight information, walking distance) **Prices** (food prices, retail prices)
Lupo (2015)	**Processing time** (immigration, customs, luggage) **Convenience** (availability/accessibility of washrooms, shops and restaurants, money exchange, luggage carts, rental facilities) **Comfort** (cleanliness, lighting, congestion) **Information** (Clearness, frequency, and positioning of flight and airport information) **Staff** (helpfulness, friendliness, courtesy, availability, reliability) **Safety and security** (airport safety procedures, security facilities)

Table 2 Summary of shared aspects of service quality from theoretical models and empirical studies

Dimension	**Aspects**	**Authors**
Check-in	Wait time Check-in speed Staff courtesy Staff efficiency Luggage carts	Rhoades, et al. (2000) Yeh & Kuo (2003) Martín-Cejas (2006) Fodness and Murray (2007) Chou (2009) Lubbe, et al. (2011) Tsai, et al. (2011) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Lupo (2015) Brochado, et al. (2019)
Security	Wait time Security speed Staff courtesy Staff efficiency	Yeh & Kuo (2003) Tsai, et al. (2011) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Lupo (2015)
Immigration/customs	Wait time Check-in speed Staff courtesy Staff efficiency	Yeh & Kuo (2003) Chou (2009) Tsai, et al. (2011) Lupo (2015)
Other staff interactions	Courtesy Efficiency Friendliness	Yeh & Kuo (2003) Tsai, et al. (2011) Bogicevic, et al. (2013) Lupo (2015) Lee, et al. (2017) Brochado, et al. (2019)
Signs/Information	Flight information boards Airport signage	Yeh & Kuo (2003) Fodness and Murray (2007) Chou (2009) Lubbe, et al. (2011) Tsai, et al. (2011) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Lupo (2015)
Airport accessibility	Walking distances Transport options (lifts, moving walkways, transfer systems) Circulation	Yeh & Kuo (2003) Fodness and Murray (2007) Chou (2009) Lubbe, et al. (2011) Tsai, et al. (2011) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Ali, et al. (2016)

Table 2 (continued)

Airport environment	Ambience (thermal comfort, lighting, décor, art and exhibitions) Congestion Hygiene and cleanliness	Yeh & Kuo (2003) Fodness and Murray (2007) Chou (2009) Lubbe, et al. (2011) Tsai, et al. (2011) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Lupo (2015) Ali, et al. (2016) Brochado, et al. (2019)
Food	Food quality Food choice Local food Food staff courtesy and efficiency Food price	Rhoades, et al. (2000) Yeh & Kuo (2003) Fodness and Murray (2007) Lubbe, et al. (2011) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Lupo (2015) Del Chiappa, et al. (2017) Brochado, et al. (2019)
Retail	Retail quality Retail choice Retail price Retail staff courtesy and efficiency	Rhoades, et al. (2000) Yeh & Kuo (2003) Fodness and Murray (2007) Lubbe, et al. (2011) Bogicevic, et al. (2013) Lupo (2015) Han, et al. (2018)
Other facilities and services	Departure lounge Quiet area Seating facilities/waiting areas Business facilities Conference facilities ATM Exchange service Wi-Fi Charging stations Internet kiosk	Rhoades, et al. (2000) Yeh & Kuo (2003) Fodness and Murray (2007) Lubbe, et al. (2011) Chou (2009) Bogicevic, et al. (2013) Bezerra & Gomes (2015) Lee, et al. (2017)
Transfer and Arrival	Baggage handling efficiency Transfer speed Airplane unloading speed Ground transportation Airport information services Parking	Rhoades, et al. (2000) Yeh & Kuo (2003) Fodness and Murray (2007) Lubbe, et al. (2011) Tsai, et al. (2011) Bogicevic, et al. (2013)

3. RESEARCH METHODOLOGY

The study used a mixed-methods design to develop and test the model of airport service quality. An exploratory sequential design was chosen, in which the qualitative research stream was used in the developmental stage for the model, which was then tested in the quantitative research stream (Creswell & Plano Clark, 2018). This approach was selected as it was the best choice for the development of the model, since such designs allow for development and consequent testing and generalization of theoretical models (Schoonenboom & Johnson, 2017).

In the qualitative stage, a proposed model was developed based on the literature review. Two rounds of interviews were held with each of two stakeholder groups, including experts (n= 5) and customers (n = 10) to evaluate the model. Respondents were selected purposively to ensure the relevance of their experience and level of knowledge regarding the questions (Eriksson & Kovalainen, 2015). Experts were selected from the staff of Suvarnabhumi and Don Muang International Airports who worked at the managerial level in customer service and passenger management roles. These experts included two passenger service managers and one passenger experience designer from Suvarnabhumi Airport and two passenger service managers from Don Muang Airport. Passengers were selected from the list of outgoing passengers for both domestic and international flights at Suvarnabhumi Airport in December 2018. Passengers included six Thai passengers and four international passengers. Data were collected using a semi-structured interview, with passenger and expert interview guides developed separately. Passenger questions focused on the passenger experience; e.g. "*What stood out about the airport service?"* and "*How would you describe your contact with the check-in staff?".* Expert questions focused on the customer experience as perceived by staff; e.g., "*What are the areas you receive the most complaints for?"* and *"What are the customer's expectations for check-in?".* Interviews were recorded and transcribed for analysis.

Content analysis was chosen as the analytical tool due to its ability to evaluate and interpret textual information (Eriksson & Kovalainen, 2015). A directed approach to content analysis was used, with an initial coding frame developed from existing models and refined through application to the interview transcripts (Hsieh & Shannon, 2005). Analysis continued until theoretical saturation was reached and no additional information emerged. Information derived from the content analysis was then used to refine the proposed model.

Conceptual Framework

The conceptual framework (figure 1) developed from the qualitative research and literature review is an integrative model, incorporating elements of previous studies as reviewed in the literature review. The model is process-focused.

In the quantitative stage, the refined model was used to develop a questionnaire. Data were collected using a survey, taken by airline passengers at Suvarnabhumi Airport (n = 500). The sample size was chosen to be as large as possible in the time available, to ensure that the sample was adequate for structural equation modelling (SEM), which requires a larger sample size (Westland, 2010). The sampling process used convenience sampling. Although convenience sampling is a non-random technique, it is frequently used in customer surveys where there is no easy way to select a truly random sample (Bryman & Bell, 2015). Data was analyzed in SPSS. Analysis included descriptive statistics, as well as evaluation of SEM assumptions and model validity.

The main analysis used SEM, which was conducted in SPSS AMOS. SEM was used to evaluate the proposed research model and identify latent variables and the relationships of the variables within the model (Kline, 2016).

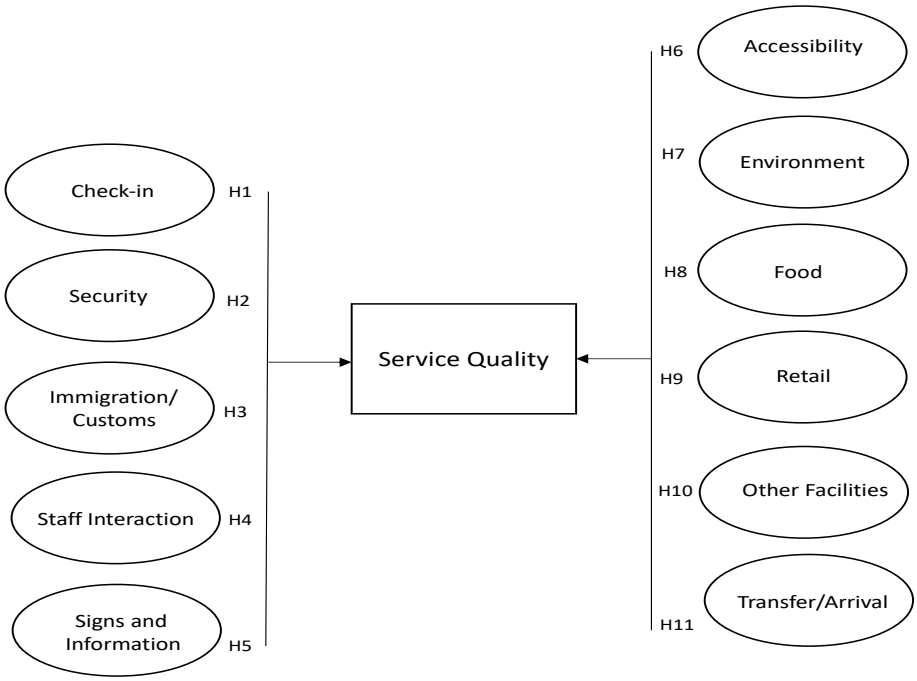

Figure 1. Conceptual framework of the paper

4. RESULTS AND DISCUSSION

Interviews

Interviews were conducted with four experts and two passengers. These respondents considered staff interaction and security as the most important dimensions of service quality, while food and retail shops were most commonly considered as the least important dimensions.

Respondents were asked to prioritize the most and least important aspects of each of the dimensions. Table 3 summarizes the respondents' perspectives on which aspects of each dimension were most and least important. This shows that in the service areas, including check-in, security, and immigration, staff efficiency is considered the most important aspect of the service experience. All aspects of staff interaction were considered important, as were all aspects of signage. However, other dimensions did have some differences. Circulation and route convenience were important aspects of accessibility, but walking distance was not. Congestion and crowding, along with ambience (temperature, lighting and décor) were identified as the most important aspects of the environment, but there was no consensus on the least important aspects. For food, price was the most important aspect, while a variety of choice was the least important. For retail, price and quality were the most important, while staff efficiency was the least. Finally, the most important other service/facility was Wi-Fi (which was unanimous), while ATM provision was the least important.

Most respondents did not identify missing dimensions, but one dimension identified by three respondents was staff performing above and beyond their official responsibility. This was added to the Staff Interaction dimension for the questionnaire.
Finally, respondents were asked about their best and worst airport experiences. Best experiences typically focused on comfortable,

Table 3. Most and least important aspects of service quality dimensions

Dimension	Most Important	Least Important
Check-in	Staff efficiency	Wait time
Security	Staff efficiency	Speed
Immigration	Staff efficiency	No consensus
Staff interaction	All considered important	
Signs	All considered important	
Accessibility	Circulation Route convenience	Walking distance
Environment	Congestion and crowding Temperature, lighting and décor	No consensus
Food	Price	Variety of choices
Retail	Price Quality	Staff efficiency
Other Services and Facilities	Wi-Fi	ATM
Transfer/Arrival	Parking bay availability	Airport service availability

uncrowded airports, short waiting times and staff performing above and beyond their responsibility, while worst experiences tended to focus on uncomfortable environments (no place to sit, uncomfortable temperature and lighting), discourteous or poorly informed staff, and congestion around check-in and gates.

Reliability and Validity of the Model

Reliability and convergent and discriminant validity of the dimensions of the model were tested using CR (CR > .7), AVE (AVE > .5) and MSV (MSV < AVE) (Hair, Black, Babin, & Anderson, 2016). Results are summarized in Table 4. As this table shows, most of the dimensions showed adequate reliability, with the exception of Other Facilities which was slightly below the CR > .7 value required for reliability (Hair et al., 2016).

The convergent and discriminant reliability values were adequate for all dimensions. Thus, the model was shown to have mostly adequate reliability, and also showed evidence of validity. This preliminary validation of the model enabled it to move forward to the SEM process, which is reported below.

Table 4. Reliability and validity of model dimensions

Dimension	CR	AVE	MSV
Check-in	.715	.596	.585
Security	.802	.582	.520
Immigration/Customs	.799	.681	.602
Staff Interaction	.701	.604	.586
Signs and Information	.747	.751	.704
Accessibility	.802	.546	.502
Environment	.740	.602	.598
Food	.814	.708	.682
Retail	.857	.599	.570
Other Facilities	.692	.504	.491
Transfer/Arrival	.895	.692	.686

SEM Analysis

The SEM analysis (Figure 2) used a combination of exploratory and confirmatory factor analysis to investigate the proposed model. This model demonstrates both the factors included in the service quality model and the measures that are included in each of the latent constructs. The goodness of fit measures passed threshold values, indicating that the fitted model was appropriate for the data (chi-square = 1.322, p = .798; RMSEA = .02; CFI = .98). Therefore, the model was accepted. (Figure 2 is a composite model demonstrating the results of both the EFA and CFA processes, which were conducted independently.)

First, the individual factor loadings were evaluated to determine which of the measured items contributed to the latent variables. Table 5 summarizes the items that were significant (factor loading > .70) for each of the proposed dimensions of airport service quality, as determined using EFA. This shows that all factors for Security, Immigration and Customs, and Staff Interaction were included. One item was excluded from both Check-in and Accessibility. Two items were excluded from Signs and Information, Airport Environment, Food, and Transfer and Parking. Three items were excluded from Retail. Four items were excluded from Other Facilities and Services, and two items from Transfer and Arrival. This resulted in a reduced set of items for most of the scales, as discussed in the following section. The exploratory factor analysis resulted in the formation of a reduced model, which was then used to perform the CFA process, testing the relationships of the latent constructs identified through CFA to the central outcome of Service Quality.

The second stage of analysis was CFA, which tested the relationships of the latent constructs with the outcome variable of Service Quality. This stage was used for verification of the internal relationships of the variables (Schoonenboom & Johnson, 2017). Factor loadings of ≥ .70 were used to test whether the constructs were associated with Service Quality during the CFA process. All 11 dimensions were associated using this measure, with all having positive effects. Thus, each of the top-level hypotheses were accepted, with Check-in, Security, Immigration and Customs, Staff Interaction, Signs and Information, Other Facilities and Information, Accessibility, Airport Environment, Food, Retail, and Transfer and Parking, all having an effect on perceived

service quality. Thus, the deductive test of the model derived inductively from the qualitative research showed that there is a definable factor structure with a total of 11 latent constructs, which contribute to the perception of service quality.

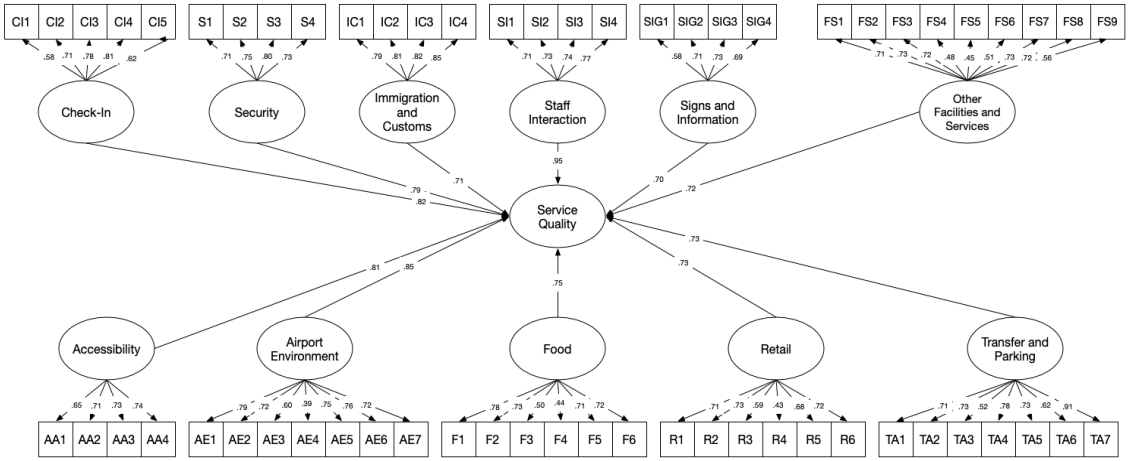

Figure 2 CFA model

Table 5 Summary of accepted factors

Dimension (Factor Loading on Service Quality)	Factors Included	Factor Loading
Check-in: Customer check-in experience (.82)	CI1. Wait time for check-in CI2. Check-in speed CI3. Check-in staff courtesy CI4. Check-in staff efficiency CI5. Availability of luggage carts	.71 .78 .81
Security: Customer security (.79)	S1. Wait time for security S2. Security speed S3. Security staff courtesy S4. Security staff efficiency	.71 .75 .80 .73
Immigration and Customs: Exit passport checks and immigration (.71)	IC1. Immigration/customs wait time IC2. Immigration/customs speed IC3. Immigration/customs staff courtesy IC4. Immigration/customs staff efficiency	.79 .81 .82 .85
Staff Interaction: Passenger-staff contact outside specified areas (.95)	SI1. Staff courtesy SI2. Staff efficiency SI3. Staff friendliness SI4. Staff willingness to go beyond their duties	.71 .73 .74 .77
Signs and Information: Posted signs and announcements (.70)	SIG1. Flight information board placement SIG2. Flight information board accuracy SIG3. Flight information board updates SIG4. Airport signage	.71 .73

Table 5 (continued)

Accessibility: Ability of passengers to access services and meet special needs (.81)	AA1. Walking distance AA2. Availability of lifts, moving walkways and stairs AA3. Availability of transfer systems AA4. Convenience of routes through the airport	.71 .73 .74
Airport Environment: Décor and ambience of the physical environment (.85)	AE1. Airport temperature comfort AE2. Airport lighting AE3. Airport décor AE4. Art and exhibitions AE5. Congestion and crowding AE6. Airport cleanliness AE7. Restroom hygiene	.79 .72 .75 .76 .72
Food: Quality, price and service of food outlets (.75)	F1. Food quality F2. Food choice F3. Local food F4. Food staff courtesy F5. Food staff efficiency F6. Food prices	.78 .73 .71 .72
Retail: Quality, price and service of retail outlets (.73)	R1. Retail quality R2. Retail choice R3. Local retail (e.g. souvenirs, local products) R4. Retail staff courtesy R5. Retail staff efficiency R6. Retail prices	.71 .73 .72
Other Facilities and Services: Quality, price and service of Wi-Fi, kiosks and other services (.72)	FS1. Departure lounge FS2. Quiet area FS3. Seating facilities FS4. Business and conference facilities FS5. ATM FS6. Exchange FS7. WiFI FS8. Charging stations	.71 .73 .72 .73 .72
Transfer/Arrival: Service quality of transfer, arrival and parking services (.73)	TA1. Baggage delivery time TA2. Transfer time TA3. Airport unloading time TA4. Ground transportation accessibility TA5. Ground transportation availability TA6. Airport information services availability TA7. Parking availability	.71 .73 .78 .73 .91

5. DISCUSSION

The findings above demonstrate that the proposed integrative model of airport service quality generally reflected the dimensions found during the process of expert and passenger interviews and CFA, even though not all of the individual items were reflected in the factors identified. The quantitative findings were generally consistent with the factors identified by the expert interviews, indicating that the model is consistent with

both passenger and expert perceptions of service quality in an airport setting.

The relative rating of individual items (based on the factor loadings) is somewhat inconsistent between studies. Food and retail were among the two lowest factor loadings (although signs and information and other facilities and services had slightly lower factor loadings and transfer and parking was roughly equal). This indicates that many of the non-interactive and ancillary areas of service are less related to the service quality perception compared to the core activities of check-in, security and customs, and immigration and general staff interaction. Staff interaction, identified by the interviewees, had the highest factor loading of any of the constructs, with check-in, security, and airport environment also being relatively high. Thus, the general perceptions of the experts that were interviewed and the general passenger market were not the same, which should be taken into account when constructing service quality models for specific airports.

This research builds on previous studies which have identified service quality dimensions that are relevant to airports (Bezerra & Gomes, 2015; Chou, 2009; Fodness & Murray, 2007; Hutchinson et al., 2013; Lubbe et al., 2011; Lupo, 2015; Rhoades et al., 2000; Tsai et al., 2011). These previous studies have all identified overlapping but distinct sets of factors in the airport service, which have been shown to be significant in previous studies. Thus, there was considerable evidence that an integrative model, such as the one developed here, would be successful. However, there were some concerns about including certain service quality dimensions, since these dimensions had been relatively poorly explored previously. For example, only a small number of studies had addressed immigration and customs or staff interaction (Chou, 2009; Hutchinson et al., 2013; Lupo, 2015; Tsai et al., 2011), especially as compared to aspects like check-in, and signs and information, which were routinely included in previous studies (Bezerra & Gomes, 2015; Chou, 2009; Fodness & Murray, 2007; Hutchinson et al., 2013; Lubbe et al., 2011; Lupo, 2015; Tsai et al., 2011). The development of the integrative model was intended to show that a much broader set of factors could be used to measure service quality extensively. The factors in this study, while derived from previous studies, differed in that they used a maximal and broad approach to measuring service quality, and as such were able to address the broadest set of outcomes possible. This is distinct from other models, which have typically taken a more focused approach to service quality. By choosing an activity-oriented approach, the model derived here can also be applied to specific areas, enabling improvement in the airport's activities. This is more straightforward for service quality and customer experience staff than, for example, Fodness and Murray's (2007) process-focused approach.

The model was successful overall, with the findings demonstrating that all eleven of the identified factor clusters were associated with service quality. It also succeeded in eliminating several of the service quality aspects that were not strongly associated with these dimensions. Therefore, this research presents a valuable contribution to the literature, namely, the development of an integrative model for airport service quality. Given that only the model of Fodness and Murray (2007), which was used by Lubbe, et al. (2011), has been adopted more widely than its original specification, this research potentially fills a gap in the study of airport service quality.

6. CONCLUSION AND RECOMMENDATIONS

The objective of this study was to develop an integrative airport service quality model, and to test this model in the context of Suvarnabhumi Airport. The study combined findings from a literature review and expert interviews to develop an extensive integrative model of airport service quality, identifying eleven dimensions of service quality by following the passengers' process through

points of service contact in the airport. Testing of the model using a passenger survey demonstrated that all eleven of these dimensions contributed to service quality perceptions. The analysis also identified individual observed variables that contributed to each of these dimensions. Thus, the research was successful in identifying the factors that contribute to airport service quality perceptions. The implication of this research is that there is a wide variety of factors that contribute to service quality perceptions in airports, and that these factors occur at all stages of the passenger journey through the airport. Thus, there is no area where airports can reduce service levels without affecting passenger service quality perceptions.

There are some practical implications of the model which should be considered. First and foremost, this is a model that can actually be used in assessing service quality in airports. Airports are perhaps one of the most complex servicescapes, with a variety of different service providers offering multiple types of services (some of which are optional and some of which are not). This means that a relatively simple generic service model like SERVQUAL may not be adequate for assessing the service quality and evaluating how it contributes to outcomes like visitor satisfaction. The model presented here can be used to evaluate service quality in different areas of the airport, pinpointing problems with specific services that customers expect. For example, it could be used as part of an importance-performance analysis (IPA) survey to assess service quality gaps in the airport environment. The model does need further testing to ensure that it can be generalized in different airports before it can be broadly applied. For example, to determine if the model applies to smaller airports or primarily domestic airports, in comparison to the large, international Suvarnabhumi Airport in which the study took place, or if it is sensitive to cross-cultural variation in service quality preferences. By conducting further tests of the service quality model, it will be possible to answer these questions.

There were some limitations to this research. As the study was conducted at only a single airport, the model may not be fully reflective of passenger preferences and requirements in other cultural and social contexts. Another limitation is that since these findings were derived from passengers at a major international airport, it is possible that passengers in different types of airports (for example regional airports or smaller international airports) may have different service expectations or preferences. These limitations offer opportunities for additional research, for example testing of the model in different airport contexts or countries. The model should also generally be tested more broadly, for example by removing the items that were not contributory to individual dimensions and re-testing for reliability and validity. This is part of the next stage of the planned research to further develop the current model.

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