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NON-GENERIC MEASUREMENT STRUCTURE OF AIRPORT SERVICE QUALITY: A LITERATURE REVIEW

HAVALİMANI HİZMET KALİTESİNİN GENEL OLMAYAN ÖLÇÜM YAPISI: ALAN YAZIN TARAMASI

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ABSTRACT

Due to many driving forces, the aviation industry advance and grow significantly. Concordantly, the airport service infrastructures and related passenger services also diversify. Considering the processes that the passengers go through the airport and the time, the airports as business space gain important both for the airport business and the passengers. Therefore, the diversifying airport passenger services rise to prominence. In so far as the efforts to measure airport service quality with a wide range of heterogeneous services are an ongoing area of research, the purpose of this study is to present a systematic literature review on non-generic measurement structure of airport service quality with preservative context dependency discussions. As per the findings, it is determined that the most explored dimensions are servicescape, services, facilities, information, security and check-in; the less ones are access, comfort, convenience, ticketing, functional, ICQ. Moreover; It has been observed that the services offered are complementary and subsequently. Since many services, associated with the influence of cultural, geographical and technological factors, are produced simultaneously, it can differ the dimensions. In the light of findings, the current study presents a conceptual airport service quality model.

Keywords: *Multidimensionality, SERVQUAL, Quality Management, Airport Service Quality, Airport*

Jel Codes: *M10; M31; L93*

ÖZ

Birçok itici güç nedeni ile havacılık endüstrisi, önemli ölçüde ilerlemekte ve büyümektedir. Bu bağlamda havalimanı hizmet alt yapıları ve ilgili yolcu hizmetleri de çeşitlenmektedir. Yolcuların havalimanında geçtikleri süreçler ve zaman dikkate alındığında, havalimanları iş alanı olarak hem işletmecilik için hem de yolcular için önem kazanmaktadır. Bu nedenle çeşitlenmeye devam eden havalimanı yolcu hizmetleri ön plana çıkmaktadır. Havalimanı hizmet kalitesini çeşitli sayıda hizmetlerle ölçmeye yönelik çabaların içerik bağımlı tartışmalar eşliğinde süregelen bir araştırma alanı olması sebebiyle, bu çalışmanın amacı yolcu hizmetlerine ilişkin genel olmayan ölçüm yapısı hakkında sistematik bir literatür taraması sunmaktır. Bu çalışma 2020 yılında gerçekleştirilmiştir. Bulgulara göre en çok keşfedilen boyutların hizmet ortamı, hizmetler, olanaklar, bilgi, güvenlik ve check-in; daha azının ise erişim, konfor, rahatlık, biletleme, işlevsellik, ICQ olduğu değerlendirilmektedir. Ayrıca sunulan hizmetlerin birbirini tamamlayıcı ve peşi sıra geldiği görülmüştür. Kültürel, coğrafi ve teknolojik faktörlerin etkisi ile ilgili birçok hizmet aynı anda üretildiği için boyutlar farklılık göstermektedir. Bulgular ışığında çalışma kavramsal bir havalimanı hizmet kalitesi modeli sunmaktadır.

Anahtar Kelimeler: *Çok Boyutluluk, SERVQUAL, Kalite yönetimi, Havalimanı Hizmet Kalitesi, Havalimanı*

Jel Kodları: *M10; M31; L93.*

1. INTRODUCTION

The stunning technological developments gained in the aviation sector not only have increased the variety of services offered to passengers but also affected the passengers' perceptions of quality regarding both aeronautical and non-aeronautical services. Considering that the increasing number of airports facilitating and expanding the travel access, apparently the passengers start to have a revealing choice among airports (Fodness and Murray, 2007: 492) in terms of hub, cost and increasingly perceived service quality. To have a deep understanding about the passenger expectations and have competitive advantage, there needs an effort to develop an airport service quality measurement in a heterogeneous service sector like airport (Pantouvakis and Renzi, 2016: 90; Bogicevic et al., 2016: 13).

There are some specific factors to be considered as driving forces regarding that potential revenues and evolving demands. Such as; commercialization and privatization of airports, competitive forces in the airline industry, and the development of expectations of the passengers as to the airport and increasing airport competitive (Graham, 2008: 15). Furthermore, after recognizing service quality as vital factor (Airport Council International, 2014), an intensive effort to adopt customer directional management practices are put forth (Arif et al., 2013: 1). Because of non-aeronautical businesses are the first experiences that may have an influence on whole vacation (Rendeiro Martin-Cejas, 2006: 874), the airports can increase their total revenue through the non-aeronautical businesses by providing the service quality to the passengers (Jiang and Liang, 2019: 63). In this regard, the one of the first traces of this attribution has taken place with the research of Müller and Gosling (1991) presenting the importance airport passenger terminal. In their research, the authors argued that the perceptions of the passengers should be measured in a multidimensional concept in order to manage the services set up at the passenger terminal. In 2000, the Airport Council International (ACI) has initiated ACI a schedule to measure passenger perception regarding services at airports across world. The aim of the program simply is to reveal the passenger perceptions related to services, identify the crucial factors for the airport success, to track the change in the passenger's perception to services through the years and benchmark each airport with other (ACI, 2017). The ACI quality program has constituted an airport service quality (ASQ) scale with eight dimensions involving 34 attributes.

On the other hand; the airport passenger services are permanently changing due to the demand for higher standards in sector (Donnelly and Shiu, 1999: 498). Due the fact that exploring the structure of the airport service quality is ongoing process (Parasuraman et al. 1990: 73), like other service sectors, airport decision-makers need to adopt other techniques to measure the quality of services and satisfaction of the passengers. An effective quality assessment methodology for the airports'non-aeronautical services is a necessity (Bezerra and Gomes, 2016: 17; ACI, 2017).

The international organizations (ACI, 2014) operating on the quality assurance of the aeronautical services force airports strictly follow to international standards seem to meet this need. However, the quality of non-aeronautical services at an airport can differ according to its competitive position. Bezerra and Gomes (2016) has stated on the issue that the existing ASQ attributes are insufficient to meet the all-airports efforts to measure service quality and the validity and the reliability of the scales has not been run through, and the ASQ database of ACI is inaccessible to the researchers. In this regard, there is an intense effort over the scientific researches connate practical methodology and quality assessment tools to improve the service standards continuously. The ASQ surveys which are already in use for the airport managers, regulatory authorities or sectoral decision makers, have also several limitations (Trischler and Lohmann, 2018: 66). The context dependency discussion in service-quality researches highlights that the quality of a service mostly depends on its context. For all these

reasons, the scale development studies for measurement are continuing and content-dependent relatively different multidimensional ASQ scales arise.

The current study puts forward a literature review regarding the relevant researchers engaging in non-aeronautical airport service quality. Specifically, the author analyzed researches presenting multidimensional passenger service quality on both the land and the air side of the airports. The criteria that make up the study are as follows: the highly qualified research journals, the year of publication constitutes of between 2007-2020. The author especially selected the year of 2007 as a starting point since Fodness and Murray stated (2007) that there is a choice among airports in terms of quality (Prentice and Kadan, 2019). When the author reviews related literature, Spasojevik et al. (2017) put forward a literature review showing the researches between 2000-2014 to provide a summary of issues, trends without the methodologies. On the other hand; Bellizzi et al. (2020) presented a literature review that scanned methodology and survey designs with the passenger' view over Customer Satisfaction Surveys (CSS) between the year of 2008-2018.

This study contributes to related literature in terms of presenting the passenger service quality attributes with multidimensional construct produced by various researchers. The author presents a more specific framework of multidimensional quality measurement and varying quality attributes from the relevant researches.

In the current study, the author aims at scanning and revealing the literature of the multidimensionality measurement of ASQ on the non-aeronautical services perceived by passengers. For this purpose, firstly the author figures out the databases, academic sources and scholarly publishers to scope this study. Based on researches, this study brings a comprehensive review by analyzing the current multidimensional measurement of ASQ. Finally, the author reveals a conceptual multidimensional model to both researchers and practitioners.

2. BACKGROUND

In terms of institutions, service quality is an important agent against competitors (Chou et al., 2011: 2117). The customer satisfaction increases because of service quality (Kyoon Yoo and Ah Park, 2007: 908). Addition to its critical role (Ladhari, 2009), the airline industry has exerted some pressure on airports in order to increase customer satisfaction by improving assets and commercial activities (Rhoades et al, 2000: 261). Therefore, it seems important for airport managers to measure ASQ over passengers.

From this point of view, the literature has tried to produce the components of the airport service quality with a diverse perspective so far. Some researchers developed models that involves different dimensions of the ASQ (Bulut and Aydogan, 2020; Chonsalasin et al. 2020; Prentice and Kadan, 2019; Jiang and Liang; 2019; Kratudnak and Tippayawong, 2018; Trischler and Lohman, 2018; Elias Gonçalves and Caetano, 2017; Bezerra and Gomes, 2016; Pabedinskaite and Viktorija, 2014; Gupta et al. 2013; Lubbe et al, 2011; Tsai et al, 2011; Liou et al. 2011; ACI, 2011; Fodness and Muray, 2007), some researches set forth quality attributes (Bogicevic et al., 2013; Chien-Chang, 2012; Baek et al, 2012; Fernandes and Pacheco, 2008; Wirasinghe et al, 2007; Yeh and Kuo, 2003; Janic, 2003; Rhoades et al, 2000). Hence, it is generally accepted that ASQ is multidimensional (Fodness and Murray, 2007: 492) and the researches continue for a comprehensive framework. On the other hand, other than small number of recent studies, an effective ASQ assessment methodology was already in use for different purposes such as benchmarking (Chen, 2002) private reporting or advertisement.

This paper compheransively reveals the researches involving the multidimensional assessment and the development of ASQ literature. In light of the above mentioned; in the following phase, the multidimensional measurement researches including relevant attributes, dimensions and research models are put forth.

3. METHODOLOGY

This study carried out the systematic literature review (SLR) (Spasojevik et al., 2017, Bellizzi et al., 2020) method regarding to multidimensionality measurement of ASQ. A SLR intends to identify, appraise and summarize related non-aeronautical passenger services researches of airport (Petticrew and Roberts, 2008) by providing objective, replicable, comprehensive scope of designated research topic (Weed, 2006; Pickering and Byrne, 2013).

In this study, the researches regarding multidimensional ASQ measurement to be accessed in scientific databases, academic sources and scholarly publishers like Ebscohost, Emerald insight, ScienceDirect Elsevier, Google Scholar has been searched. The date range is from year 2007 to 2020. The researches revealing the multidimensional structures of ASQ measurements are selected. The author executed the research in 2020. Since the study focused on multidimensionality measurement of airport service quality, the following keyword combinations were used: airport service quality + measurement + multidimensional in research articles. Then the databases presented some researches in academic journals at table 1 below. Among these articles, the indexes of the journals selected according to the criteria determined within the scope of the research are presented in Table 2.

Table 1: The Overall Number of Researches from The Databases Regarding Airport Service Quality

Database	Quantity	Added Criteria
Emerald insight	7	English, Academic Journals, open access
ScienceDirect	21	English, Academic Journals, open access
Ebscohost	21	English, Academic Journals
Google Scholar	175	English, Academic Journals

Table 2: Display of Selected Journals According to Indexes

Journal	Index Status
International Journal of Transportation Science and Technology	Scopus
Total Quality Management	Scopus
Journal of Services Marketing	Scopus
Aviation	Scopus, ESCI
International Journal of Business, Economics and Management	China Citations Database, Socionet, Q-Sensei
Journal of Retailing and Consumer Services,	Scopus
Experts Systems with Applications	Scopus,WOS
Journal of Air Transport Management	Scopus
Tourism Management Perspectives	Scopus,WOS, SSCI

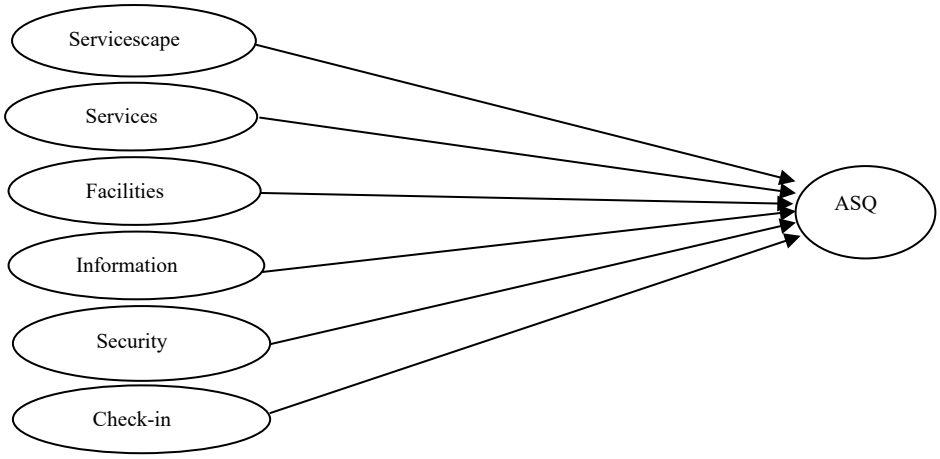
4. FINDINGS

The study presents the researches as findings according to abovementioned criteria at Appendix 1. The researches are shaped in research information, attributes, dimensions, research design and sample and research model. Although it is observed that the measurement of ASQ literature is increasing, there are still few researches at the literature. As per the findings by scanning the related literature, the efforts to measure the ASQ is an ongoing research area. In this sense, the current review study shows the scanned researches comparatively that the structure of the ASQ measurement is stated in all researches as multidimensional.

Yet, this current review study shows in the great scheme of ASQ Measurement structures that the measurement is not generic (Bezerra and Gomes, 2016: 85-86). On the other hand, the ASQ measurement can thrive not only by means of number of dimensions but also by context within. It is seen that the number of dimensions, the contents of dimensions and nomenclatures of them have differentiated.

It is observed that the dimensions consist of the attributes defining the ASQ are mostly explored and confirmed as are servicescape, services, facilities, information, security and check-in. The following figure 1 proposes conceptual multidimension ASQ measurement model on non-aeronautical services of airports.

Figure 1 Conceptual Multidimension ASQ Model



5. CONCLUSION

When the ASQ-related literature is examined thoroughly, it seems that some researches have made the **ASQ** measurement scale out as a one-dimensional structure. However, considering that decision makers need a holistic approach to evaluate the airport non-aeronautical services (Paternoster, 2007: 226) which is to compile variety of new dimensions (Al-Azzam, 2015: 46; Gupta and Kaushik, 2018: 583), the scale structure is expected to be in form of multidimensional (Martinez and Martinez, 2010: 29). Moreover; as Parasuraman et al. (2007) stated that each of the service quality dimension needs to cover sector specific items on which can depend the contexts where the service is given. In other words, the necessity of measuring ASQ with a multi-dimensional structure rather than a one-dimensional structure arises

because the services provided by the airport operations are very diverse, and the attributes contributing to quality include differences in time, space, technological developments and cultures. The studies conducted in recent years reveal the multidimensional airport service quality measurements that are caused by these reasons. As a result, this study shows that the services put forward in the multidimensional ASQ measurement studies are based on the international standards and passenger expectations. The conceptual model will contribute to measurement acknowledgment for the quality of the airport service and as a reference for the researches to be carried out. It is seen that the service quality scales progress by extending from the land side of the passenger services to air side of passenger services. That also connotes that the expanding quality scales focus on non-aviation passenger services, which constitute a significant part of airport revenues. In this sense, the services offered to the passengers show permeable features due to the developing technological factors, the continuity of the service and the successive follow-up of the services. Apparently, the various multidimensional passenger service quality scales revealed by the ongoing research continue to diversify with the effect of the mentioned permeability.

KAYNAKÇA

1. ACI, (2017). Airport-Service-Quality/ Customer-Experience-ASQ, Airports Council International, http://www.aci.aero/Customer-Experience-ASQ/Homepage [Retrieved June 29, 2017].
2. ACI, (2014). Airport-Service-Quality/About-ASQ, http://www.aci.aero/Airport-Service-Quality/ASQ-Home. 11.05.2015
3. AL-AZZAM, A. F. M. (2015). “The impact of service quality dimensions on customer satisfaction: A field study of Arab bank in Irbid city, Jordan”, European Journal of Business and Management, 7(15), 45-53.
4. ARIF, M., ARIF, A. AND WILLIAMS, A. (2013). “Customer service in aviation industry – An exploratory analysis of UAE airports”, Journal of Air Transport Management, 32, 1-7.
5. BAEK, S., HAN, S., HAM, S. (SUNNY), YANG, I. (2012). “Passenger’s perceptions of airline lounges: Importance of attributes that determine usage and service quality measurement”, Tourism Management, 33, 1103-1111.
6. BELLIZZI, M. G., EBOLI, L., & MAZZULLA, G. (2020). “Air Transport Service Quality Factors: A Systematic Literature Review”, Transportation Research Procedia, 45, 218-225.
7. BEZERRA, G. C. L., & GOMES, C. F. (2016). Measuring airport service quality: A multidimensional approach. Journal of Air Transport Management, 53, 85-93.
8. BRIDA, JUAN GABRIEL & MORENO-IZQUIERDO, LUIS & AGUIRRE, SANDRA. (2016). “Customer perception of service quality: The role of Information and Communication Technologies (ICTs) at airport functional areas”, Tourism Management Perspectives, 20.
9. BULUT, C. AND AYDOGAN, S. (2020). “Airport service quality: a reconceptualization and a practical application on the non-aeronautical services”, Aviation. 24 (4), 182-196.

10. BOGICEVIC, V., YANG, W., BILGIHAN, A., BUJISIC, M., (2013). “Airport service quality drivers of passenger satisfaction”. Tour. Rev. 68 (4), 3-18. http://dx.doi.org/10.1108/TR-09-2013-0047 10.10.2020.

11. CHEN, H-L. (2002). “Benchmarking and quality improvement: a quality benchmarking deployment approach”, International Journal of Quality & Reliability Management, 19 (6), 757-73.

12. CHONSALASIN, D., JOMNONKWAO, S., & RATANAVARAHA, V. (2020). “Measurement model of passengers’ expectations of airport service quality”, International Journal of Transportation Science and Technology. http://www. https://www.sciencedirect.com/science/article/pii/S2046043020300721 10.12. 2020.

13. CHIEN-CHANG, C. (2012). “Evaluating the quality of airport service using the fuzzy multi-criteria decision-making method: a case study of Taiwanese airports”, Expert Systems, 29(3), 246-260

14. CHOU, C. C., LIU, L. J., HUANG, S. F., YIH, J. M., & HAN, T. C. (2011). “An evaluation of airline service quality using the fuzzy weighted SERVQUAL method”, Applied Soft Computing, 11(2), 2117-2128.

15. DONNELLY, M. and SHIU, E. (1999). “Assessing service quality and its link with value for money in a UK local authority's housing repairs service using the SERVQUAL approach”, Total Quality Management, 10 (4-5), 498-506.

16. ELIAS GONÇALVES, M. W., AND CAETANO, M. (2017). “Airport Level of Service: A Model according to Departing Passenger’s Perceptions at a Small-sized Airport”, Journal of Airline and Airport Management, 7(1), 65-79.

17. FERNANDES, E. AND PACHECO, R.R. (2008). “A Quality approach to airport management”, Quality & Quantity, 44(3): 551-564.

18. FODNESS, D., MURRAY, B. (2007). “Passengers' expectations of airport service quality”, Journal of Services Marketing, 21, (7).

19. GRAHAM, A., (2008). Managing Airports: An International Perspective, third ed. Butterworth Heinemann-Elsevier, Oxford.

20. GUPTA, A., ARIF, M., AND WILLIAMS, A. (2013). “Customer Service in Aviation Industry –An Exploratory Analysis of UAE Airports”, Journal of Air Transport Management, 32 (1-7).

21. GUPTA, P., & KAUSHIK, N. (2018). “Dimensions of service quality in higher education–critical review (students’ perspective)”, International Journal of Educational Management, 32 (4), 580-605.

22. JANIC, M., (2003). “Assessment and management of quality of service at an airport passenger terminal”, Transport Planning and Technology, 26 (3), 239-263.

23. JIANG, H., & LIANG, T. (2019). “Investigate Airport Service Quality-A Case Study of Airports in Shanghai”, International Journal of Business, Economics and Management, 6(2), 61-75.

24. JIANG, H AND ZHANG, Y (2016). “An investigation of service quality, customer satisfaction and loyalty in China's airline market”, Journal of Air Transport Management, 57, 80-88.

25. KRATUDNAK, S., & TIPPAYAWONG, K. Y. (2018). “Analysis of key factors for airport service quality: A case study of three regional airports in Thailand”. In

International Conference on Industrial Engineering and Operations Management. Bandung, Indonesia.

26. KYOON YOO, D. AND AH PARK, J. (2007). "Perceived service quality: Analyzing relationships among employees, customers, and financial performance", International Journal of Quality & Reliability Management, 24 (9), 908-926.
27. LADHARI, R. (2008). "Alternative measures of service quality: a review", Managing Service Quality, 18 (1), 65-86.
28. LIOU J. J. H., TANG, C., YEH, W., TSAI, C. (2011). "A decision rules approach for improvement of airport service quality", Experts Systems with Applications 38, 13723-13730.
29. LOHMANN, G. AND TRISCHLER, J. (2017). "Licence to build, licence to charge? Market power, pricing and the financing of airport infrastructure development in Australia", Transport Policy, 59, 28-37.
30. LUBBE, B., DOUGLAS, A. AND ZAMBELLIS, J. (2011). "An application of the airport service quality model in South Africa", Journal of Air Transport Management, 224-227.
31. MARTÍNEZ, J. A., & MARTÍNEZ, L. (2010). "Some insights on conceptualizing and measuring service quality", Journal of Retailing and Consumer Services, 17(1), 29-42.
32. PABEDINSKAITE, A., AKSTINAITE, V. (2014). "Evaluation of the airport service quality", Social and Behavioural Sciences, 110, 398-409.
33. PANDEY, M. M. (2016). "Evaluating the service quality of airports in Thailand using fuzzy multi-criteria decision-making method", Journal of Air Transport Management, 57, 241-249.
34. PANTOUVAKSI, A., RENZI, M. F., (2016). "Exploring different nationality perceptions of airport service quality", Journal of Air Transport Management, 52(C), 90-98.
35. PARASURAMAN, A., LEONARD L. BERRY, AND VALARIE A. ZEITHAML (1990). "Guidelines for Conducting Service Quality Research", Marketing Research, 2, 4.
36. PARASURAMAN, A., ZEITHAML, V. A. AND MALTHORA, A. (2005). "E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality", Journal of Service Research, 7(3). 13-33.
37. PATERNOSTER, J. (2008). "Excellent airport customer service meets successful branding strategy", Journal of Airport Management, 2(3), 218-226.
38. PETTICREW, M., & ROBERTS, H. (2008). "Systematic reviews in the social sciences: A practical guide", John Wiley & Sons. https://dl.uswr.ac.ir/bitstream/Hannan/131642/1/Systematic%20Reviews%20in%20Social%20Science.pdf. [Retrieved May 22, 2020]
39. PICKERING, C., & BYRNE, J. (2013). "The benefits of publishing systematic quantitative literature reviews for PhD candidates and other early-career researchers", Higher Education Research & Development, 33(3), 534-548.
40. PRENTICE, C., & KADAN, M. (2019). "The role of airport service quality in airport and destination choice". Journal of Retailing and Consumer Services, 47, 40-48.

41. RHOADES, D. L. , WAGUESPACK JR B., YOUNG, S. (2000). “Developing a quality index for US airports”, Managing Service Quality: An International Journal, 10(4), 257-262.

42. RENDEIRO MARTIN-CEJAS, R., (2006). “Tourism service quality begins at the airport”, Tourism Management. 27 (5), 874-877.

43. TSAI, H. W., HSU, W. AND CHOU, C. W. (2011). “A gap analysis model for improving airport service quality”, Total Quality Management, 22(10), 1025-1040.

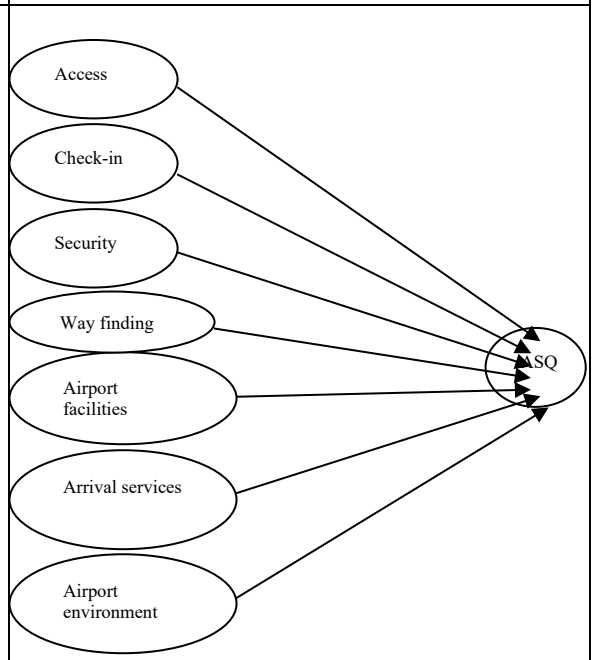
44. TRISCHLER, J. AND LOHMANN, G. (2018). “Monitoring quality of service at Australian airports: A critical analysis”, Journal of Air Transport Management, 67, 63–71.

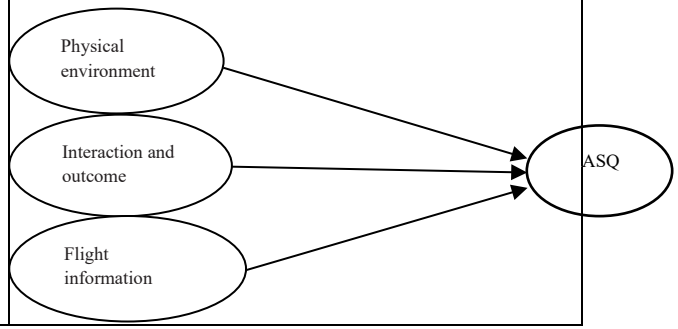
45. WEED, M. (2006). “Sports Tourism Research 2000–2004: “A Systematic Review of Knowledge and a Meta-Evaluation of Methods”, Journal of Sport & Tourism, 11(1), 5-30.

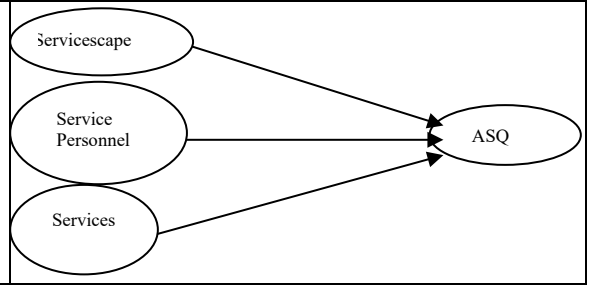
46. WIRASINGHE, S.C., CORREIA, A. R. AND DE BARROS, A. G (2008). “A Global index for level service evaluation at airport passenger terminals”, Transportation Research Part E. 44, 607-620.

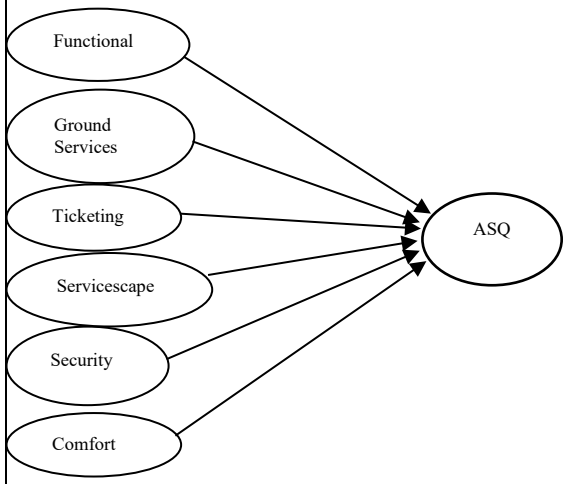
47. YEH, C. H., KUO, Y. L., (2003). “Evaluating passenger service of Asia-Pacific international airports”, Transportation Research Part E 39, 35–4

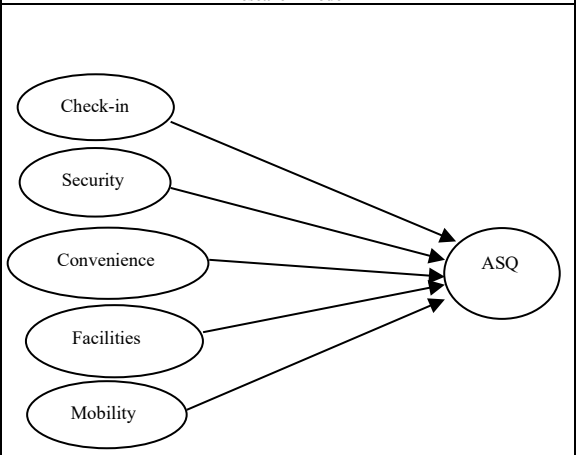
Appendix 1; The Great Scheme of ASQ Measurement Structures

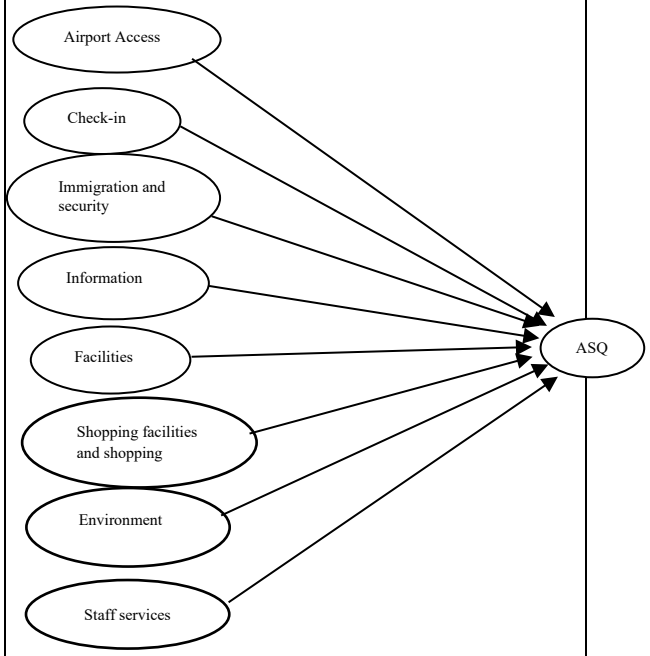
Research info	Attributes		Research Design and Sample	Research Model
1.Chonsalasin et al. 2020; International Journal of Transportation Science and Technology	**Access;** Land transportation has a variety of alternatives, both to and from the airport	Sufficient parking spaces Value for money of Parking facilities Availability of baggage carts/ trolley	Method of collecting data from 1037 passengers through questionnaire at four regional airports of Thailand (Southern, northern, central, and northeastern),	
	Check-in; Waiting time in check-in line Efficiency of check-in staff Courtesy and helpfulness of check-in staff	Waiting time at passport inspection Courtesy and helpfulness of inspection staff		
	Security; Courtesy and helpfulness of security staff Effectiveness of security inspection	Waiting time for safety inspection Feeling of being safe and secure		
	Way finding; Ease of finding directions at the airport Flight information screen Walking distance in the passenger terminal	Ease of connecting other flights Courtesy and helpfulness of airport staff		
	Airport facilities; Sufficiency and quality of restaurants/ shops inside the airport Value for money of restaurant/ eating facilities Availability of ATM/ Bank/ Money changers	Shopping facilities Value for money of shopping facilities Availability of Business/ Executive Lounges		
	Arrival services; Checking passport/ Identification card at the Immigration checkpoint	Speed of Baggage delivery service Custom inspections		
	Airport Environment; Availability and adequacy of restrooms Cleanliness of washrooms/ restrooms	Comfort in the waiting area for passengers Cleanliness of airport terminal Atmosphere or decoration of the airport		

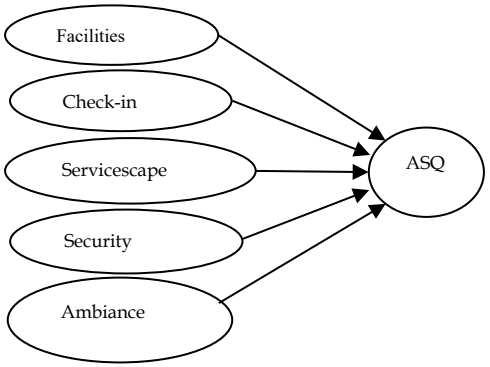
Research info	The Attributes	Research Design and Sample	Research Model
2.Tsai et al., 2011; Total Quality Management and Business Excellence	**Physical environment;** Airport facilities planning Sanitary condition of lavatory Environment beauty and cleanliness Facilities allocation and space design Airport circulation planning Internal direction line arrangement Exterior surrounding circulation planning Convenience of public transportation **Interaction and outcome;** Basically, procedural service Airport receptionist's attitude Security inspection procedure Check-in and baggage delivery service **Flight information;** On-time departure of flights Clarity of broadcasting system Accuracy of flight information board	Method of collecting qualitative data from the executives and experienced airline passengers, through questionnaire 226 responders at Taoyuan International Airport in Taiwan	

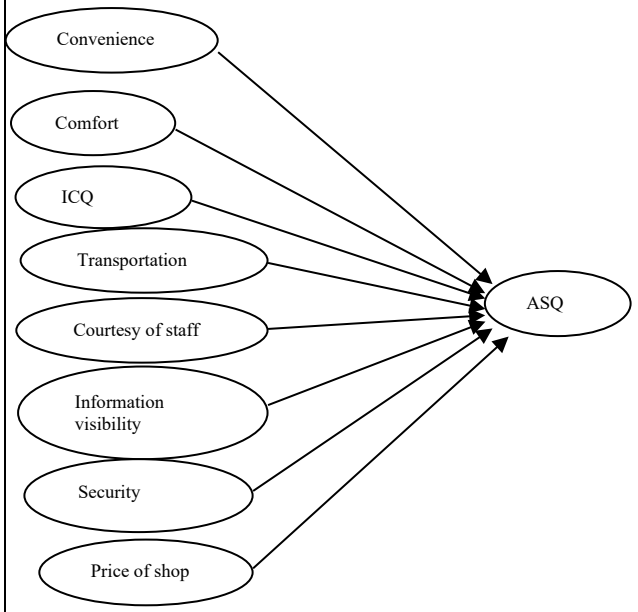
Research info	The Attributes	Research Design and Sample	Research Model
3.Fodness and Muray, 2007; Journal of Services Marketing	**Servicescape;** Sp Layout and function Ambient conditions Signs and symbols **Service Personel;** Attitudes Behaviors Expertise **Services;** Productivity Maintenance Leisure	Method of collecting data from 1765 passengers through questionnaire at Airport	

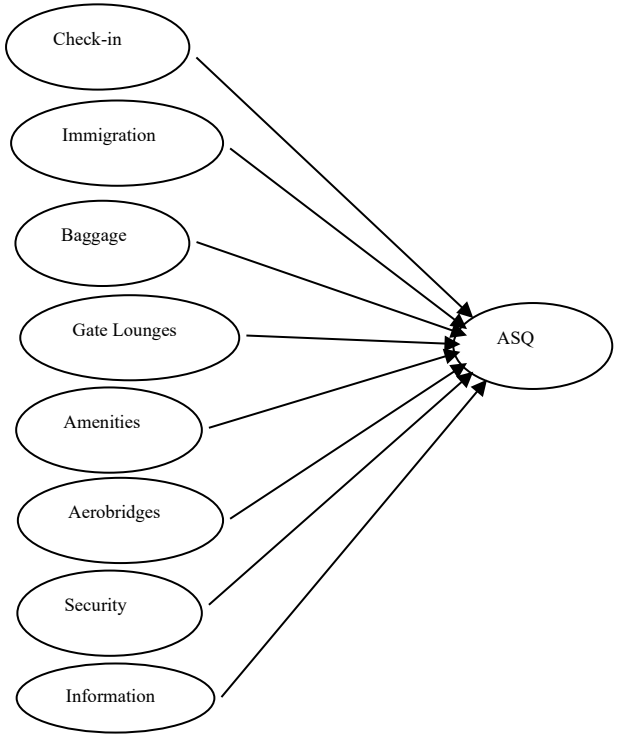
Research info	Attributes		Research Design and Sample	Research Model
4.Bulut and Aydogan, 2020; Journal of Aviation	**Functional quality;** VIP passenger services Access to rent a car service		Method of collecting data from 250 passengers through questionnaire at İzmir international airport	
	Ground services quality; Transit speed between gate and plane Transportation safety of airport vehicles Transportation quality of airport vehicles	Overall cleanness/hygiene during the transportation Easy transit between car parking place and terminal		
	Ticketing quality; Speed of reissuing the tickets Easy access to the ticket sales office for refunding	Speed of ticketing Speed of controlling/stamping the tickets		
	Servicescape quality; The temperature level of the terminal building Sound comfort of the terminal building	The brightness level of the terminal building The comfort of the terminal building Flight information screens at the terminal building		
	Security quality; Access to Information Desks The efficiency of security points	Respond quality of Information Desks Efficient management of the queues		
	Comfort quality; Children's play facilities are adequate in recreational /entertainment places Internet access to terminal buildings is sufficient	The prices at the airport shops are convenient There are no queues during the departure procedures for passenger services.		

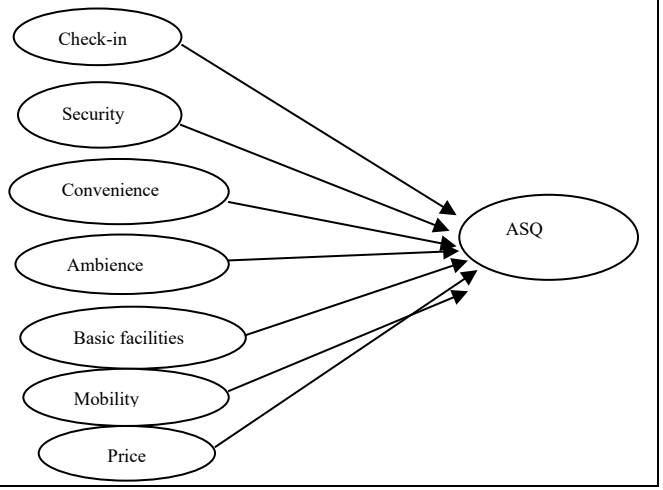
Research info	The Attributes		Research Design and Sample	Research Model
5.Kratudnak and Tippayawong, 2018; Proceedings of the International Conference on Industrial Engineering and Operations Management Bandung, Indonesia	**Check-in;** Check-in process efficiency Courtesy and helpfulness of check-in	Wait time at check-in	Method of collecting data from 300 travelers through questionnaire at three regional airports in Thailand	
	Security; Thoroughness of security screening Feeling of begin safe and secure	Wait-time at security checkpoint Courtesy and helpfulness of security staff		
	Convenience; Courtesy and helpfulness of airport st Availability and quality of stores	Availability of Bank/ATM/Exchange Availability and quality of food facilities		
	Facilities; Cleanliness of washroom/toilets Availability of washroom/toilets	Enough available seats in waiting area		
	Mobility; Walking distance in airport Clarity of airport signs	Flight information display		

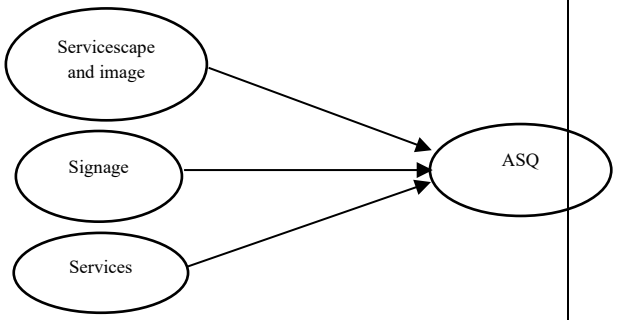
Research info	Attributes		Research Design and Sample	Research Model
6.Jiang and Liang, 2019; International Journal of Business, Economics and Management	**Airport Access;** Public transportation to/from airport. Waiting time and cost of car parking Car park availability and standard Service quality of car rental facilities	Clarity of external signage indicating directions to terminals; parking areas Convenient location and sufficient number of baggage trolleys	Method of collecting data from 390 passengers through questionnaire at Pudong international airport and Hongqiao international airport at Shanghai	
	Check-in; Check-in waiting time Efficiency of check-in procedures Self-check-in facilities	Transfer connection time Waiting time for next flight		
	Immigration and security; Immigration inspection waiting time Immigration inspection processing time Security clearance waiting time	Security clearance processing time Information visibility		
	Information; Information desk availability Ease of access to flight information Clarity of airport services signs	Accuracy of flight information board Departure punctuality		
	General Airport facilities Washroom availability Adequate seating in departure lounges Availability of lifts, passenger conveyors, escalators and air-bridges Comfort of departure lounges Free Wi-Fi Internet kiosk availability Charging station availability	Walking distance and time spent between check-in desk to immigration Walking distance and time spent between immigration and departure gate Duration of unloading passengers from the aircraft Play areas for children Baggage delivery time		
	Shopping facilities and shopping; Commercial services e.g., banks, post office Money exchange Various shops providing different kinds of products	Various restaurant providing different kinds of food Shop and restaurant prices Shops and restaurants' services quality		
	Environment; Overall airport physical layout Airport terminal cleanliness and beauty Airport terminal lighting Airport facilities allocation and space design	Presence of silence zones Presence of business centers Sanitary condition of washrooms Airport terminal safety		
	Staff services; Response to passengers' complaints and comments Friendliness of the staff	Service efficiency		

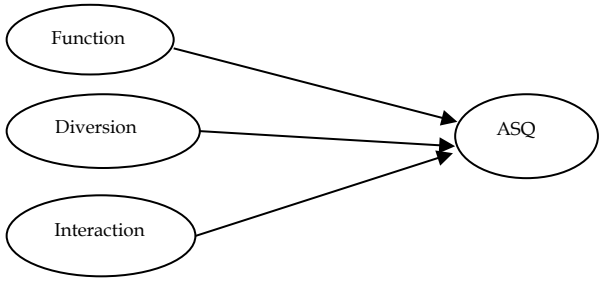
Research info	Attributes		Research Design and Sample	Research Model
7.Prentice and Kadan, 2019; Journal of retailing a consumer service	**Facilities;** The airport provided comfortable and spacious seating around the terminal	The airport provided aero-bridges that eased access from the terminal to the aircraft Retail and dining options/Restaurants offered a wide range of products	Method of collecting data from 373 passengers through questionnaire at Australian major airports.	
	Check-in; The check-in process was efficient Check-in staff were helpful, friendly and courteous	The self-check-in kiosks were appropriately designed		
	Servicescape; The airport's signs clearly directed me to services/facilities The airport's layout was properly designed to cater for passenger's special needs.	The airport's physical layout avoided crowding and enabled easy movement		
	Security; I felt safe and secure during security screening Security screening was thorough	Security staff were helpful, friendly, and courteous		
	Ambiance; The airport maintained clean facilities The temperature at this airport was comfortable	The noise levels at this airport were acceptable The aroma at this airport was fitting Overall, I was satisfied with the ambiance of this airport		

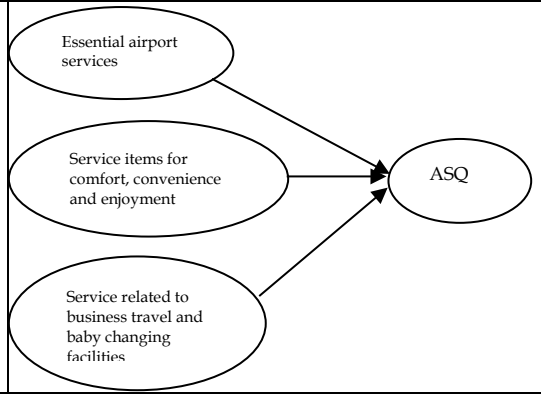
Research info	Attributes	Research Design and Sample	Research Model
8.Liou et al; 2011; Expert Systems with Applications	**Convenience;** Washroom facilities Shops-variety Restaurants-variety Money exchange Cash machines Luggage carts Telephone and Internet **Comfort;** Cleanliness of the environment Lighting of the terminal Congestion level Walking distance **ICQ;** Immigration Customs and quarantine Baggage claim **Transportation;** Ground transportation Parking Rental facilities **Courtesy of staff;** Helpfulness of the information desk Friendliness of the staff **Information visibility;** Guidance/sign/directions Flight displays **Security;** Efficiency of inspection Courtesy of inspectors **Price of shop;** Prices at shops and restaurants	Method of collecting data from 503 passengers through questionnaire at Taoyuan International Airport, Taiwan	

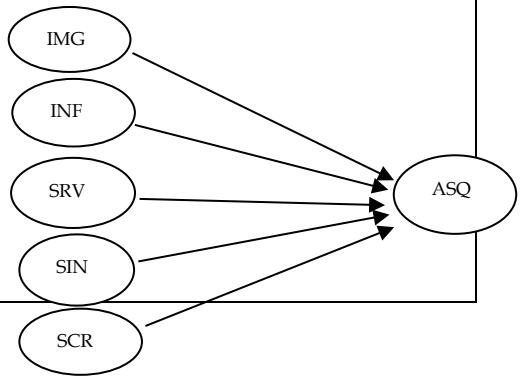
Research info	Attributes		Research Design and Sample	Research Model
9.Trischler and Lohman, 2018; Journal of Airline and Airport Management	**Check-in;** Check-in availability Check-in standard Check-in waiting time	Number of departing passengers per check-in desk, kiosk and bag drop facility (peak hour)	Method of collecting data from 21 stakeholder groups through questionnaire at four largest airports, Australian	
	Immigration; Waiting time in outbound Immigration area Number of departing passengers per outbound immigration desk (per hour) Waiting time in inbound Immigration area	Number of arriving passengers per inbound Immigration desk (peak hour) Waiting time in inbound baggage inspection area Number of arriving passengers per baggage inspection desk (peak hour)		
	Information; Flight information display screens Number of passengers per flight information display screen (peak hour)	Number of passengers per information point (peak hour) Signage and wayfinding		
	Baggage; Baggage processing facilities availability Baggage processing facilities standard Average throughput of outbound baggage system (per hour) Circulation space for inbound baggage reclaim	Information display for inbound baggage reclaim Number of arriving passengers per m^2 of inbound baggage reclaim area (peak hour) Findability of baggage trolleys Number of passengers per baggage trolley (peak hour)		
	Gate lounges; Seating in lounge area (quality and availability) Number of departing passengers per seat in gate lounges (peak hour)	Crowding in lounge area Number of departing passengers per m2 of lounge area (peak hour)		
	Amenities; Standard of washrooms	Number of departing passengers per washroom (peak hour)		
	Aerobridges; Aerobridges availability Aerobridges standard Percentage of international passengers arriving using an aerobridge Percentage of international passengers departing using an aerobridge	Number of arriving domestic passengers per aerobridge (peak hour) Number of departing domestic passengers per aerobridge (peak hour)		
	Security; Quality of security search process	Number of departing passengers per security clearance system (peak hour)		

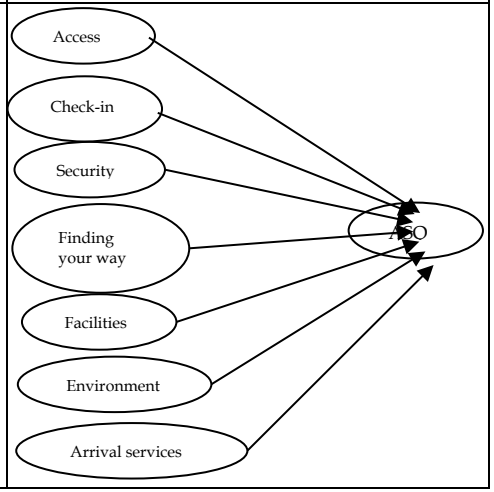
Research info	Attributes	Research Design and Sample	Research Model
10.Bezerra and Gomes, 2016; Journal of Air Transport Management	**Check-in;** Availability of luggage carts Courtesy and helpfulness of check-in staff Wait-time at check-in Check-in process efficiency **Security;** Thoroughness of security screening Feeling of being safe and secure Wait-time at security checkpoints Courtesy and helpfulness of security staff **Convenience;** Availability of Banks/ATM/Exchange Courtesy and helpfulness of airport staff Availability and quality of food facilities Availability and quality of stores **Ambience;** Acoustic comfort Cleanliness of airport facilities Thermal comfort **Basic facilities;** Departure lounge comfort Cleanliness of washroom/toilets Availability of washroom/toilets **Mobility;** Flight information Walking distance inside terminal Way finding **Price;** Prices at food facilities Prices at stores	Method of collecting data through questionnaire 1155 passengers Guarulhos International Airport in Brazil	

Research info	Attributes	Research Design and Sample	Research Model
11.Pantouvakis and Renzi, 2016; Journal of Air Transport Management	**Servicescape and image;** The cleanliness at the airport The adequate airport lighting The efficacy of airport air-conditioning The adequate assistance during luggage control The comfort of security control I feel safe at the airport I have a positive impression about the level of comfort at the airport I have the impression that waiting times at the airport are short I have a positive impression of the airport's employees I have a positive impression about the information provided **Signage;** The clarity of external signs The ease of finding external airport signs The clarity of internal signs The ease of finding internal airport signs The ease of finding screens for video announcements **Services;** The speed of security control The courtesy of security control employees The competence of security control employees The ease of finding the people in charge of giving information	Method of collecting data through questionnaire 922 passengers Fiumicino Airport, Italy	

Research info	The Attributes	Research Design and Sample	Research Model
12.Lubbe et al; 2011; Journal of Air Transport Management	**Function;** External signs Signs to airport facilities Physical layout Variety of ground transportation Convenient location of baggage carts Accessibility of connecting flights Baggage waiting time Speed of check in process Duration of exit from airplane **Diversion;** Availability of national retail outlets Availability of national chain restaurants Availability of local cuisine Stores portraying local culture Decor match local culture Art display Current decor Availability of conference facilities Availability of business centers Availability of quiet areas **Interaction;** Respond promptly to requests Offer individualized attention Complaints responded to immediately	Method of collecting data from 100 passengers through questionnaire at O.R. Tambo International Airport, South Africa	

Research info	The Attributes		Research Design and Sample	Research Model
13.Jiang and Zhang, 2016; Journal of Air Transport Management	**Essential Airport Services;** Airport service items Surface transport to/from airport Airport parking Baggage carts/trolleys Check-in waiting time Courtesy and helpfulness of check-in staff Self-check-in facilities Waiting time at immigration	Courtesy and helpfulness of immig Waiting time at security check Courtesy and helpfulness of securi Clear directional signs Flight information screens Flight transfer Internet/Wi-Fi access Boarding gate seating	Method of collecting data from 1000 passengers through questionnaire at Melbourne International Airport in Australia	
	Service items for comfort, convenience and enjoyment; Moving walkways and escalators Children's playing area Speed of baggage delivery Battery recharge facilities Airport shopping	Art displays Music in the terminal Natural light in the terminal Smoking area Temperature in the terminal		
	Service related to business travel and baby changing facilities; Bank/ATM facilities Baby changing facilities	Business lounge Business center		

Research info	Attributes		Research Design and Sample	Research Model
14.Brida et al; 2016; Tourism Management Perspectives	**Image Perception (IMG);** Modern infrastructure Innovation capacity High-tech usage level Terminal crowding Terminal size	Disabled passenger facilities Willingness to assist customers Identification with local culture Airport safety Terminal maintenance	Method of collecting data from 995 travelers through questionnaire at Santiago de Chile's Arturo Merino Benítez International Airport	
	Airport Information (INF); Accurate information Orientation ease Clearness of signage	Size of signage Quantity of signage		
	Terminal Servicescape (SRV); Lightning Temperature Noise level	Safety perception Terminal cleanliness		
	Airport sound information systems (SIN); Sound information accuracy Timely information	Sound volume Sound clearness		

Research info	Attributes		Research Design and Sample	Research Model
15.Pandey, 2016; Journal of Air Transport Management	**Access;** Ground transportation to/from airport Vehicle Parking Facilities	Value for money of Parking facilities Availability of baggage carts/trolley	Method of collecting data from 625 passengers through questionnaire at Suvarnabhumi and Don Mueang airport, Thailand	
	Check-in; Waiting time in check-in line Efficiency of check-in staff	Courtesy and helpfulness of check -in staff		
	Security; Waiting time at passport inspection Courtesy and helpfulness of inspection	Waiting time at security inspection Feeling of being safe and secure		
	Finding your way; Ease of finding your way through airpo Flight information screen	Walking distance inside terminal Ease of making connections with other flig		
	Facilities; Restaurant/Eating Facilities Availability of ATM/Bank/Money cha	Internet access/Wi-fi Business/Executive Lounges		
	Environment; Availability of washrooms/toilets Cleanliness of washrooms/toilet	Comfort of waiting/gate area		
	Arrival Services; Passport/Personal ID inspection	Speed of Baggage delivery service		