A review of air transport service quality studies: current status and future research agenda

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Abstract: Air transport service quality has been a popular research topic in the last decade. A systematic literature review on this topic was conducted on the articles published in quality transport, tourism, and consumer service journals. We present the statistics on study locations, leading authors and affiliations, citations, and research frameworks and data collection methods. We show that there is an increasing use of online survey tools for data collection. Most of the articles have explicitly or implicitly used the SERVQUAL model or its variations such as AIRQUAL to examine the air transport service attributes. Several research areas are identified to bring the SERVQUAL model and the air transport service quality research up to date: the digital and technology-enabled service dimensions, the privacy and cybersecurity consideration, the corporate social responsibility dimension, and the hygiene requirement. We also call for in-depth studies into some individual service dimensions such as services for special needs passengers.

1. Introduction

Air passengers are the key stakeholders in the air transport industry. Developing a passenger-centred airport and providing passenger-centric services are key to the success of airport and airline companies (Cao et al., 2023). Maintaining a high level of customer satisfaction through offering quality customer services is an important tool to achieve a competitive advantage for both airports and airlines. Research has shown that perceived service quality and airport efficiency and profitability are closely linked (Merkert & Assaf, 2015). This is also the case for airlines where the delivery of high-quality services as an effective marketing strategy can increase an airline's customer patronage, and market share (Morash & Ozment, 1994). Therefore, regular review and evaluation of the existing air transport services are a focus and interest for both the aviation industry and academics.

Consumers' expectations have been constantly changing and shifting, particularly in the last decade, driven by the applications of new technologies in aviation, the increasing awareness of environmental problem and most recently, the influence of Covid-19. This has undoubtedly strengthened the need for air service evaluation in the new contexts and it is not surprising that the number of scholarly studies on air transport service quality has been increasing in recent years (Bakır et al., 2022). Despite this, literature review papers on air transport service quality still remain small in number. Only a handful of papers so far have summarised the research topics and trends from various aspects of air transport services. For example, Bellizzi et al. (2020) reviewed 14 studies on airport services and 14 papers on airline services for the period 2008-2018. This survey paper focuses mainly on data collection and analysis methods, and does not represent a comprehensive review and analysis of the air service quality indicators and dimensions. Bakır et al. (2022) conducted a bibliometric analysis of the airport service quality literature. With a survey of 100 papers published from 1975 to 2020, the authors provided an overview of the evolution of the research on airport service quality. In particular, they revealed three underlying research clusters: developing psychometric measurements on airport service quality, evaluating airport service quality dimensions using SERVQUAL and SERVPERF models, and using advanced quantitative methods for airport service quality evaluation. The research findings of our paper are quite consistent with those reported in Bakır et al. (2022). However, our research places a greater emphasis on the emergence of new data collection methods using online survey software and social media, and the need to include new air transport service quality dimensions that have surfaced in the last few years.

Although most studies focus on just one type of air transport services: airport or airline, it is acknowledged that air passengers that use in-flight services also need to spend time at an airport and use airport service before making a flight

(Bellizzi et al., 2020). Therefore, studies on airline service quality should also include air passengers' airport experiences. Accordingly, our research will investigate the service quality studies on both the land and air sides. Most countries had deregulated the air transport sector by 2010 that allowed airlines to compete on price and non-price factors, and competition on service quality is a main instrument to attract passengers. Thus, this study will only look at publications from 2010 to present. A systematic literature review on air transport service quality will be conducted for the papers published in quality journals to reveal the current research status, emerging topics and trends. From 2010 to now, there was a golden period during which airlines gradually recovered from the hit of the 2008 global financial crisis and also a painful pandemic period where aviation activities plummeted to the lowest level in decades. The aviation industry has not been fully recovered from the attack of the pandemic and the aviation businesses remain vulnerable at this stage. A timely review of the air transport service quality literature will not only provide future research directions to researchers in this field, but also generate valuable insights for the industry practitioners to understand service types and standards to meet the needs of the post-Covid travellers.

The rest of this paper is organised as follows. Section 2 is the research methodology that depicts our literature selection criteria, followed by a report of the reviews in Section 3. Section 4 summarises the research trends and identify future research directions.

2. Research methodology

A systematic literature review (SLR) uses a structured approach when comprehensively searching for literatures that are relevant to specific scopes and/or research questions (Mendes et al., 2022). According to Bellizzi et al. (2020), unlike other modes of transportation, literatures on air transport sector and its service quality are relatively recent. This necessitated a systematic search for literatures to promote a better understanding on the complicated nature of air transport service quality to date which in turn informs research gaps for a future focus. There are a number of different databases that can be accessed for the literature search. The authors agreed to use the Scopus database as it contains a larger and more comprehensive number of publications than other databases (Abduljabbar et al., 2022). The Scopus database also offers additional search functionalities that are better suited for a systematic approach when searching for more appropriate journal articles with specific search criteria. The database was accessed on 23 February 2023.

The SLR followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009) and the flow diagram is presented in Figure 1. The initial search used the keywords, "Service Quality" with "Airline" or "Airport" appeared in the titles, keywords or abstracts and this resulted in 750 journal articles that were published in 2010 and beyond. The first screening process involved limiting subject areas to: Business, Management and Accounting, Social Science, Economics, Econometrics and Finance as these are more aligned to the Field of Research on service quality of air transport industry for their primary customers. Also, journal articles not written in English were excluded. The first screening reduced the total number of journal articles to 642. The second screening process involved removing journals that published less than 10 articles on the focus of the present study, followed by selecting the journals of high quality (mainly Scimago Q1 and Q2 ranking journals in transport, tourism and service quality). This resulted in 207 journal articles. The third screening process includes reading titles and abstracts to exclude journal articles that are clearly outside the focus of this study. The geographical representation of journal articles was also considered. A total of 153 journal articles remained after the series of screening processes and these were shared among the authors and were read at their entirety. Thirty articles were further removed as they were outside the scope of the current study that focuses on service quality of air transportation system. This resulted in a total of 123 journal articles that are reviewed at their entirety and summarised in the result section. The only literature review paper on airport service quality in our sample is Bakir et al. (2022). This paper offers an overview of the existing studies on airport service quality using a bibliometric analysis. A few other literature survey papers on air transport service quality (not included in our sample) include: Zidarova and Zografos (2011) and Usman et al. (2011) on the measures of airport service quality, and Ginieis et al. (2012), Bellizzi et al. (2020) and Eboli et al. (2022) on air transport service quality factors.
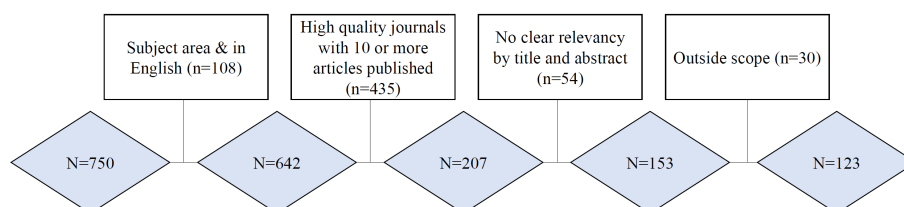

Figure 1: Article selection process as per the PRISMA guidelines.

Figure 2: Word frequency cloud.

3. Results

3.1. The keywords

There are a variety of attributes, variables and/or factors that have moderating or mediating effects on service quality and its impact on customer satisfaction as well as adopting different research approaches and research frameworks. Therefore, a word cloud, using NVivo, was generated by combining all abstracts and keywords from 123 journal articles into a single document to conduct a visual inspection to frequently used words (Figure 2).

3.2. Location of study

According to the United Nations (2022), countries worldwide are geographically grouped into six major regions where the largest number of studies were conducted in the Asia region with the majority of countries in the East Asia region[1] (Table 1). This disparity in different concentration of studies by regions/sub-regions can be explained due to differences in national culture compounded with different age categories and their effects on the perceived service quality and customer satisfaction (e.g., Kim et al., 2017).

Table 1: Location of study by region.

Region (*n* = 123)	Countries (Number of studies)
Africa (*n* = 2)	Ghana (1), South Africa (1)
Asia (*n* = 54)	Bangladesh (1), China[2] (11), India (3), Iran (1), Japan (1), Malaysia (4), Pakistan (1), South Korea (8), Taiwan (12), Thailand (3), Turkey (6), UAE (2), Vietnam (1)
Europe (*n* = 14)	Germany (1), Greece (1), Italy (5), Norway (1), Portugal (2), Spain (3), United Kingdom (1)
Latin America and the Caribbean (*n* = 7)	Brazil (6), Colombia (1),
Northern America (*n* = 12)	United States (12),
Oceania (*n* = 3)	Australia (3),
Multiple countries/regions	17 Studies
Not specified	14 Studies

3.3. Types of air transport sectors

As presented in Table 2 below, there was a greater focus on customer service evaluations in the airline sector and the majority of journal articles were published in the Journal of Air Transport Management (*n* = 80). The lack of field journals in air transport may have resulted in this concentration, which justifies the need to launch the Journal of Air Transport Research Society as a timely complement and an alternative publication outlet for air transport service quality research.

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[1]East Asia includes China, Japan, South Korea and Taiwan.

Table 2: Publication types.

Airport (*n* = 37)	Airline (*n* = 82)[3]
Journal of Air Transport Management (*n* = 24)	Journal of Air Transport Management (*n* = 56)

3.4. Leading authors in air transport service quality research

A total of 326 authors are listed on the 123 journal articles, with 24 authors being featured in more than one publication either as lead or co-authors. The list of authors in alphabetical order and their affiliations when their latest journal articles were published are presented in Table 3.

Table 3: Leading authors and affiliations.

Surname, initial(s)	|Pubs|	Yr of pubs	Affiliation(s)
Bellizzi, M. G.	3	2022, 2020 & 2020	University of Calabria, Italy
Bezerra, G. C. L.	4	2020, 2018, 2016 & 2015	University of Coimbra, Portugal
Bubalo, B.	2	2021 & 2015	University of Hamburg, Germany
Buyukozkah, G.	2	2021 & 2020	Galatasaray University, Turkey
Chow, C. K. W.	2	2015 & 2014	Lingnan University, Hong Kong
Dresner, M. E.	2	2017 & 2016	University of Maryland, United States
Eboli, L.	3	2022, 2020 & 2020	University of Calabria, Italy
Feyzioglu, O.	2	2021 & 2020	Galatasaray University, Turkey
Gomes, C. F.	4	2020, 2018, 2016 & 2015	University of Coimbra, Portugal
Gaggero, A. A.	2	2021 & 2015	University of Pavia, Italy
Havle, C. A.	2	2021 & 2020	Ozyegin University, Turkey
Jiang, H.	4	2022, 2016, 2016 & 2013	Royal Melbourne Institute of Technology, Australia
Liu, C-H.	3	2019, 2016 & 2016	Ming Chuan University, Taiwan
Liou, J. J. H.	2	2011 & 2011	National Taipei University of Technology, Taiwan
Lin, R-H	2	2011 & 2011	National Taipei University of Technology, Taiwan
Mazzulla, G.	3	2022, 2020 & 2020	University of Calabria, Italy
Martin-Domingo, L.	2	2021 & 2019	Ozyegin University, Turkey
Martin, J. C.	3	2020, 2019 & 2011	University of Las Palmas de Gran Canaria, Spain
Prentice, C.	3	2019, 2019 & 2017	Griffith University, Australia
Pan, J. Y.	2	2020 & 2018	Embry-Riddle Aeronautical University, United States
Park, J-W.	4	2018, 2016, 2015 & 2010	Korea Aerospace University, South Korea
Pantouvakis, A.	2	2018 & 2016	University of Piraeus, Greece
Truong, D.	2	2020 & 2018	Embry-Riddle Aeronautical University, United States
Zhang, Y.	3	2016, 2016 & 2012	University of Southern Queensland, Australia

3.5. Citations

Within a research community, while quality of research and its outputs is a multi-dimensional concept that encompasses certain characteristics such as plausibility, scientific and societal values and originality, it is often assumed that the number of citations reflects the quality and impact of research (Aksnes et al., 2019). Using Google Scholar, Table 4 below lists the top 10 most cited journal articles. It appears that air transport service quality studies tend to receive more citations than other research topics published in Journal of Air Transport Management.

3.6. Research frameworks

A framework in research is a set of concepts and theories that scaffolds a study (Varpio et al., 2020). There are a variety of different theoretical frameworks that underpinned the journal articles: Service quality and brand equity theories (e.g., Chen et al., 2019), expectancy-performance theory (e.g., Woo, 2019), fuzzy set theory (e.g., Percin, 2018), SERVQUAL (e.g., Rezaei et al., 2018), cognitive network theory (e.g., Dirsehan & Kurtulus, 2018), important performance analysis (e.g., Lin & Vlachos, 2018), psychological capital and service behaviour (e.g., Cheng et al., 2018), AIRQUAL (e.g., Shen & Yahya,

Table 4: Citation numbers by author(s), title and Journal name.

Author(s), Year	Title	Journal	Citations
Hussain, R., Al Nasser, A., & Hussain, Y. K. (2015)	Service quality and customer satisfaction of a UAE-based airline: An empirical investigation	Journal of Air Transport Management	611
Farooq, M. S., Salam, M., Fayolle, A., Jaafar, N., & Ayupp, K. (2018)	Impact of service quality on customer satisfaction in Malaysia airlines: A PLS-SEM approach	Journal of Air Transport Management	410
Jiang, H., & Zhang, Y. (2016)	An investigation of service quality, customer satisfaction and loyalty in China's airline market	Journal of Air Transport Management	370
Liu, C-H., & Lee, T. (2016)	Service quality and price perception of service: Influence on word-of-mouth and revisit intention	Journal of Air Transport Management	322
Gupta, H. (2018)	Evaluating service quality of airline industry using hybrid best worst method and VIKOR	Journal of Air Transport Management	291
Rezaei, J., Kothadiya, O., Tavasszy, L., & Kroesen, M. (2018)	Quality assessment of airline baggage handling systems using SERVQUAL and BWM	Tourism Management	265
Liou, J. H., Tsai, C-Y, Lin, R-H., & Tzeng, G-H. (2011)	A modified VIKOR multiple-criteria decision method for improving domestic airlines service quality	Journal of Air Transport Management	264
Basfirinci, C., & Mitra, A. (2015)	A cross cultural investigation of airline service quality through integration of SERVEQUAL and the Kano model	Journal of Air Transport Management	261
Prentice, C., Wgan, X., & Loureiro, S. M. C. (2019)	The influence of brand experience and service quality on customer engagement	Journal of Retailing and Consumer Services	238
Rajaguru, R. (2016)	Role of value for money and service quality on behavioural intention: A study of full service and low-cost airlines	Journal of Air Transport Management	219

2021), theory of planned behaviour (e.g., Pan & Truong, 2018), complexity theory (e.g., Prentice & Correia-Loureiro, 2017), and choice theory (e.g., Cho et al., 2017). Table 5 provides a list of top three research frameworks adopted in the journal articles. While several studies did not provide the specific framework, the majority appeared to be primarily basing the extended literature review of multiple journal articles on their research focus and questions (e.g., Kurtulmusoglu et al., 2018).

Table 5: Top three research frameworks used.

Research framework	Author(s)
SERVQUAL	Mahapatra & Bellamkonda (2023); Chonsalasin et al. (2022); Kavus et al. (2022); Shiwakoti et al. (2022); Suk et al. (2021); Buyukozkan et al. (2020); Shah et al., (2020); Tahanisaz & Shokuhyar (2020); Leon & Martin (2020); Razaei et al. (2018); Lee et al. (2018); Gupta (2018); Li (2017); Jeeradist et al. (2016); Jiang & Zhang (2016b); Hussain et al. (2015); Basfirinci & Mitra (2015); Koo & Jou (2014); Suki (2014); Han et al. (2012); Liou et al. (2011a); Liou et al. (2011b); Mikulic & Prebezac (2011)
ACI Airport Service Quality (ASQ)	Halpern & Mwesiumo (2021); Barakat et al. (2021); Bezerra & Gomes (2020); Hong et al. (2020); Isa et al. (2020); Prentice & Kadan (2019); Martin-Domingo et al. (2019); Jiang & Zhang (2016a); Bezerra & Gomes (2016); Bezerra & Gomes (2015); Waguespack & Rhoades (2014); Lubbe et al. (2011);
AIRQUAL	Shen & Yahya (2021); Samanci et al. (2021); Leon & Martin (2020); Farooq et al. (2018)

3.7. Data collection methods

A little over half of the studies collected required data utilising a face-to-face technique and the majority of studies adopted convenient sampling while only a small number of studies applied specific criteria for their target participants: leisure and tourists vs. business travellers (e.g., Chiu et al., 2016), airline full-time employees or flight attendant (e.g., Cheng et al., 2018), certain travel experiences such as certain geographic areas, airports, airlines and flight time (e.g., Prentice et al., 2019), disabilities (e.g., Major & Hubbard, 2019), and tour leaders (Ghorabaee et al., 2017). A number of studies collected more than one set of data that includes an interrogation of multiple databases (e.g., Stamolampros & Korfiatis, 2019). Also, several studies adopted mixed methods as their preferred methodology (e.g., Go & Kim, 2018). This is an encouraging finding as given the complex nature of service quality evaluations, the use of a triangulation approach to answer research questions is important to minimise the weakness of a single method/methodology while maximising the synergy from using multiple methods/methodologies.

4. Discussion and future directions

We acknowledge that there have been a few air transport service quality survey papers that have had a good summary of the research topics and empirical research methods in air service quality research. This section will focus on the new research trends and research gaps we have identified through a review of relevant articles.

4.1. Increasing use of online survey software for data collection

Although the vast majority of the articles use a face-to-face data collection approach, in the last five years or so, more and more authors conducted online surveys to collect their data with the assistance of various online survey technologies. Covid-19 was one of primary reasons for such trend as during the pandemic, it was almost impossible to meet the respondents or interviewees in person. However, the most important reason behind this trend might be that today's online survey software has been well designed with sophisticated functions (Batterha, 2014), which can produce accurate, valid and representative data needed for research (Change & Krosnick, 2009). In addition, there is a substantial cost saving for online survey compared with the traditional face-to-face approach. The online technology has also allowed researchers to reach the respondents who are not physically reachable due to geographical constraints (Samanci et al., 2021). For example, researchers have argued that Amazon Mechanical Turk (MTurk) as a research medium can generate large samples of motivated respondents at least as representative of the population as those using the traditional survey approach (Leon & Martin, 2020; Paolacci et al., 2010). In particular, most of the online survey technologies can generate a Quick Response (QR) code from the survey link, which can be posted at the airport for passengers to scan and complete the online survey at a later time (Antwi et al., 2020).

4.2. Using social media for data collection

User-generated content (UGC) on the social media has become an important data source to understand customer preferences, needs and demands (Chau & Xu, 2012; Lucini et al., 2020), thanks to the diffusion of Web 2.0 technologies (Guo et al., 2017; Lucini et al., 2020), which enhances the experience sharing between customers and strengthens the interactions between customers and airline businesses. Researchers can access and collect consumers' opinions, reviews and comments, known as online customer reviews (OCR) from the social media such as twitter, Facebook as well as many online customer reviews websites for free or at a very low cost (Guo et al., 2017; Yao et al., 2015). For example, Lucini et al. (2020) extracted their OCR data form the website Air Travel Review (ATR), i.e., airlinequality.com, which is an independent customer forum where air travellers post their reviews on airport, airline and air travel experiences. Twitter has been frequently used to recruit survey participants because of its large and diverse client base as a popular microblogging platform (Gu et al., 2016; Samanci et al., 2021). Liau and Tan (2014) collected 10,895 tweets of Malaysian low-cost airlines' passengers and found that they tend to discuss four topics on Twitter: customer service, ticket promotions, flight cancellations and delays, and post-booking management. Park et al. (2020) collected consumer reviews at TripAdvisor to examine the relationship between airline service attributes and overall satisfaction. The authors claimed that compared with the traditional survey data, the review data on TripAdvisor can be more truthful in representing passengers' experiences of airline services (i.e., the data are more objective with less bias).

4.3. The research framework

There is no doubt that SERVQUAL was the most popular model adopted in studying airline service quality, and it will remain to be a powerful tool for future research. Parasuraman et al. (1985) first developed the SERVQUAL model which was later used by air transport researchers. The air service attributes were grouped into this model's five dimensions by researchers such as Tsaur et al. (2002, p109):

- **Tangibility**: seat comfort and cleanliness, food and beverage, in-flight entertainment, and staff appearance;

- **Reliability**: staff professionalism, timeliness, and safety;

- **Responsiveness**: courtesy and responsiveness of staff;

- **Assurance**: on-time departure and arrival, foreign language command of crew, and active service offering; and

- **Empathy**: customer complaint handling, convenient ticketing service, and extended in-flight service.

Air transport researchers pointed out that the lack of flexibility of the SERVQUAL model makes it difficult to assess the attributes of the airport and airline services. To address the need to evaluate service quality in the airline industry, Bari et al. (2001) created a measurement scale tailored to the industry's specific needs. This scale, called Airline Service Quality (AIRQUAL), consists of five dimensions: airline tangibles, terminal tangibles, personnel, empathy, and image. Other extensions or modifications were also made to the SERVQUAL model to make it suitable for various research purposes. For example, Gilbert and Wong (2003) contended that the dimension 'tangibles' is too general and should be further broken into facilities, employees, and flight patterns. For a similar reason, the dimension 'empathy 'was renamed as 'customisation'. As a result, the original five dimensions of the SERVQUAL model became seven, namely: reliability, assurance, facilities, employees, flight patterns, customisation and responsive. Similarly, Ekiz et al. (2006) expanded the AIRQUAL scale by adding perceived service quality and customer satisfaction dimensions. Wu and Cheng (2013) developed a hierarchical model of service quality, which contains four dimensions: iteration quality, psychical environment quality, outcome quality, and access quality. Hussain et al. (2015) adapted the SERVQUAL scale and divided service quality into six dimensions: reliability, responsiveness, assurance, tangibles, security and safety, and communication.

For airport service quality, the Airports Council International (ACI) introduced its Airport Service Quality (ASQ) Survey program in 2007 to measure airport passengers' satisfaction at its participating airports. ASQ since then has become a leading airport passenger satisfaction program and is highly regarded by both industry and academics. The ASQ Departures Survey considers 34 service items in 18 segmentation fields while the Arrival Survey examines 37 service items across seven segmentation fields. The ASQ Commercial Survey investigates airport services that generate non-aeronautical revenues (ACI, 2023). Roughly, these service items can be put under eight dimensions: access, check-in, passport control, security, finding your way, airport facilities, airport environment, and arrival services. The ACI's ASQ attributes are airport process based where they depict and capture the process of a passenger's travel journey from departure until he or she arrives at the destination airport. Most of the studies on airport service quality in the last decade is based on the ACI ASQ attributes with some modifications and extensions (Chonsalasin et al., 2022; Mahapatra & Bellamkonda, 2023; Martin-Domingo et al., 2019). Numerous studies have shown that this process-based framework is consistent with the SERVQUAL model (e.g., Isa et al., 2020; Jiang & Zhang, 2016b).

Therefore, it is safe to claim that the research frameworks of most studies examining air transport services are derived from the SERVQUAL or AIRQUAL model (e.g., Kankaew et al., 2022). In the basic AIRQUAL model proposed by Bari et al. (2001), the first dimension, airline tangible, pertains to the tangible aspects of the aircraft, including the quality of the cabin interiors, in-flight food and beverages, cleanliness of toilets, seating comfort, and air-conditioning (Farooq et al., 2018; Henderson et al., 2019; Koklic et al., 2017; Tsafarakis et al., 2018). The second dimension, terminal tangibles, concerns the tangible elements inside the airport terminal such as the cleanliness of the toilets, availability of shops, parking space, and waiting area comfort (Ali et al., 2015; Farooq et al., 2018; Tsafarakis et al., 2018). The third dimension evaluates the airline's personnel service, such as staff's willingness and promptness in offering help to passengers. It takes into account the staff's attitude, knowledge, experience, level of education, personal care towards customers, and work ethic (Farooq et al., 2018; Hussain et al., 2015). The fourth dimension measures empathy with a focus on airlines' capacity in offering individualised care and attention to passengers by providing hassle free services (Badrillah et al., 2022; Farooq et al., 2018; Leong et al., 2015). This dimension can also include the on-time performance of the airline and sufficient flight frequency that meets the consumers' needs (Kankaew et al., 2022). Finally, the fifth dimension examines the reputation and image of the airline, looking at factors such as value for money in terms of the airfares offered compared with the service level provided, frequent flyer programs and the overall reputation of the airline company (Ekiz et al., 2006; Farooq et al., 2018).

Having reviewed the details of the basic SERVQUAL and AIRQUAL models, we can now turn to the discussion of the flaws and insufficiency of the existing air transport service quality research using these models.

4.4. The lack of digital and technology-enabled service dimension

Airline services are presented by a chain of services from flight booking to baggage claim at the destination airport, which can be broken into two components: ground services, and in-flight services (Mahapatra & Bellamkonda, 2023). The ground services include airport services, and pre and post-airport services such as flight booking, flight change communications, etc.Traditionally, a typical study on airline service quality such as Jiang and Hong (2016b) would examine each service item from booking to the completion of the travel journey, although it should be acknowledged that which service item is put into which AIRQUAL dimension can be arguable and is dependent on individual researchers' interpretation and preferences. The recent airline service literature starts to address some emerging service items or dimensions that are not included in the AIRQUAL or SERVQUAL model. For example, the wide spread of technology requires modifying the conventional SERVQUAL model by including the digital dimensions in evaluating airline service quality (Büyüközkan et al., 2020; Kavus et al., 2022). Büyüközkan et al. (2020) proposed a digital service quality model that includes digital tangibles

(e.g., interoperability and functionality & efficiency), digital interaction (e.g., digital readiness, agility, and gamification), and digital trust (cybersecurity, online integrity and privacy, transparency & accountability). They claimed that consumers had been digitalised, and as a response, airlines need to offer digital products and services. Therefore, technology should be included as one of the airline service quality dimensions (Kokkinou & Cranage, 2013). Wang et al. (2017) examined the impact of technology readiness on air passengers' perceived importance of airline technology-enabled services such as self-check-in facilities, mobile boarding passes and booking systems. Passengers' technology readiness refers to their intention to accept and use new technologies which includes optimism, innovativeness, discomfort and insecurity. Optimism and innovativeness are found to have a significant and positive influence on the perceived importance of technology-enabled services (Wang et al., 2017). This is particularly so when they travel with low-cost carriers. However, it is found that digital technology is less important than other dimensions. Mahapatra and Bellamkonda (2023) reported that the availability of accessible services, food and beverages, and staff services consecutively are core services that should come ahead of updated technology services. Also, aged passengers tend to prefer staff service over technology-enabled services. Compared with the large body of literature examining traditional airline services, digital and technology-enabled services have been largely ignored and under-researched.

4.5. The lack of privacy and cybersecurity consideration

The technology-enabled services and their associated concerns of privacy and cybersecurity have been largely omitted in the existing airline service quality literature. In 2022 and 2023, a number of Australian companies were hacked and millions of customers' personal information including contact details was stolen and leaked. The cyberattack on the telecommunications Optus was classified as one the worst in Australian history. Other victims include the customers of the credit card company, Latitude, and insurance company, Medibank. This implies that almost every Australian household has been exposed to the cybersecurity risk. Air travellers share similar concerns about their privacy and personal information in the online environment for flight booking and for accessing the website and Apps of relevant airlines. This is especially so with the application and dissemination of new technologies in aviation such as Internet of Things, big data, cloud computing and storage, and artificial intelligence. In addition, air travellers' mobile and laptop can now be connected to the airlines' Wi-Fi on the ground and in the air, which again increases their exposure to the risk of personal information leak. Surprisingly, little research on airline or airport service quality has included privacy and cybersecurity as a service quality dimension despite that they are becoming increasingly newsworthy, and that airlines have started to put resources to implement cybersecurity (Kagalwalla, et al., 2019). This constitutes a significant research gap and opportunity in future air transport studies.

4.6. The lack of environmental, economic and social responsibility dimensions

In various industries, including air travel, the level of service quality is now affected by environmental awareness, which can impact how customers perceive quality (Kavus et al., 2022). The rapid growth of air travel demand has had an adverse effect on the climate and environment because of greenhouse gas emissions and noise pollution, which must be addressed to maintain customer satisfaction. In fact, airlines are placing greater emphasis on environmental issues by developing policies and strategies such as offering carbon offset options, reducing in-flight waste, and using sustainable aviation fuel consumption (Ma et al., 2021). To measure the impact of environmental concerns on service quality, the conventional SERVQUAL scale needed to be adapted to reflect the growing importance of environmental and sustainability concerns. Kavus et al. (2022) added an environmental dimension to the SERVQUAL scale with three sub-dimensions: general eco-efficiency, operational eco-efficiency, and ground eco-efficiency, aiming to provide a comprehensive and versatile way of examining environmental impacts. Passengers do appreciate airline companies' implementation of environmentally friendly and sustainable measures and these efforts should be seen as one of the service dimensions, which, unfortunately, has not drawn enough attention to air transport service quality researchers.

A related issue is the corporate social responsibility (CSR) of airline companies, which includes environmental, social and economic responsibilities (Kuo et al., 2016). The CSR activities can enhance a firm's reputation and increase employees' career satisfaction, thereby resulting in a positive behavioural outcome at workplace (Panagopoulos et al., 2016; Lee et al., 2020). An airline's economic, legal, ethical and philanthropic practices influence the customer's perception of the service quality received, which can, in turn, lead to increased consumer loyalty and retention (Dijkmans et al., 2015; Kuo et al., 2016; Lee et al., 2020). Airline literature on CSR practices mainly focuses on the environmental issues with little discussion on the social, legal, and economic aspects of CSR responsibilities (Park, 2019; Lee et al., 2022). Also, there is a clear lack of studies examining the link between the three CSR dimensions and perceived service quality and customer satisfaction.

4.7. The significance of hygiene as a service dimension post-Covid

With the onset of Covid-19, cleanliness and hygiene became the top priority and bore a high value to consumers. For example, the effort of an airport on a safe and clean environment with automated processes had a positive impact on passenger satisfaction in Spain (Lopez-Valpuesta & Casas-Albala, 2023). Kavus et al. (2022) show that the pandemic dimension has become the most important one in evaluating an airline's service quality. Therefore, in-flight hygiene should be the main focus of an airline in maintaining its service quality level in the post-covid period. To evaluate the service quality during the pandemic period, Samanci (2021) extended the AIRQUAL by including additional dimensions such as "social

distance and hygiene during flight", "information awareness and concern", and "infection alert procedure". Although the positive impact on satisfaction due to the hygiene measures may gradually disappear, due to the fatigue brought about by the ongoing campaigns and measures used to contain Covid-19 (Lopez-Valpuesta and Casas-Albala, 2023), it will remain to be a significant consideration in future research on airline service quality, given that hygiene was regarded as an important factor in deciding a carrier to fly with for almost 60% of Americans in 2022 (Ha & Park, 2022).

4.8. In-depth studies into a single service dimension

Some studies focus on a single air transport service dimension. Bubalo and Gaggero (2021) found that network carriers operating a hub-and-spoke system are better at managing flight delays than airlines that operate a point-to-point model, suggesting that airlines dominating a hub can internalise congestion into their own operations. Kim and Park (2016) studied the impact of air transport service delay on customer repurchase intention. The authors found that the amount of time that passengers needed to wait for an airline service is positively associated with negative word-of-mouth, and eventually influences purchase intention.

The world's population is ageing. The proportion of the population over 60 is rapidly increasing. Therefore, the number of passengers with reduced mobility is increasing, necessitating the assistance of motorised mobility aids and other technologies. A small number of studies have examined air service for special needs passengers (e.g., Ancell & Graham, 2016; Chang & Chen, 2012; Major & Hubbard, 2019). Budd and Ison (2020) claimed that passengers with special needs are one of the fastest growing demographics in the aviation sector worldwide. Unfortunately, there is a lack of global standards for air services for disabled air passengers. Major and Hubbard (2019) reported that in the US, the number and rate of disability complaints are significantly higher than those of general air passengers for air service. The complaints concentrate around wheelchair loss or damage, long wait times, and accessibility. Again, this is an overlooked research niche in the current research. Research into government legislation, airport planning and airport and airline services to accommodate the requirements of special needs passengers is much needed and most welcomed in the coming decade.

Finally, studying air transport service quality and passenger satisfaction is not the end goal. Also, there is no lack of research on passenger retention, repurchase and loyalty (Chonsalasin et al., 2022; Jiang & Zhang, 2016b; Mikulić & Prebežac, 2011). However, we should realise that the ultimate goal of achieving passenger satisfaction is to improve the aviation businesses' efficiency and profitability. Unfortunately, apart from a handful studies such as Merkert and Assaf (2015), little attention has been given to the question that whether passenger satisfaction will eventually translate into improved efficiency and profitability in the long run. We hope more research in the future can help us understand if such a long-run relationship exists. This is of particular interest in the post-Covid-19 era when many airlines are cutting back on frills to save costs.

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