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Table of Contents

Introduction	3
Part 1 – Literature review.....	5
Conceptualisation and hypotheses	5
Service quality.....	5
Airport service quality	6
Customer satisfaction.....	8
Airport service quality and passenger satisfaction.....	9
Epistemology	10
Current research gap	11
Lack of passenger-centric research on airport service quality.....	11
Importance of understanding service quality from the customers’ perspectives	13
Part 2 – Methodology	15
Article abstract	15
Sampling.....	15
Ethical issues	16
Respondents’ consent	16
Confidentiality and data protection	17
Avoiding deception	18
Clarity of instructions	18
Reliability	19
Reliability across items – Internal consistency.....	19
Validity	20
Content Validity	20
Convergent and Discriminant validity.....	20
Conclusion.....	20
References	37

The impact of airport service quality on passenger satisfaction

Introduction

In the most primitive form, airports are in essence a piece of land for aircraft take-off and landing. However, the role of airports has evolved dramatically over the years. A few decades ago, an airport operated almost like a bus terminal, purely a mega-sized transportation facility where passengers could catch their planes. Nonetheless, as air transportation become more prevalent and accessible, passengers' needs and expectations continue to rise. Traditional functions have turned into standard provisions and airports strive to remain competitive through expanding its scope of service to not only meet, but to exceed their customers' expectations.

As a result, airports have grown into some of the most complex and diverse facilities in the world today, which can be analogised to a "small city with all of the associated functions from receiving aircraft to providing chapels" (Pitt, 2001, p.150). Given the pace of aviation development, it is crucial that airport operators remain sensitive to market changes and are able to adapt to the rapidly changing industry climate. Consequently, the changing nature and scope of airports require a prompt review of the airport operator's strategies to ensure that the provision of services are consistent with the future market trends.

Furthermore, the robust growth in the number of global air passengers also has profound impact on airport operations both in terms of increased efficiency demand as well as the ever more diversified customer needs to cater to. According to the International Air Transport Association ("IATA"), a globally recognised worldwide airline trade association, the number of annual air travellers proliferated by 170% in 20 years' time since 1998 to reach 4 billion in 2017 (Garcia, 2018). Moreover, over the next 20 years, 44% of increase in passenger volume will come from China and India (IATA, 2019).

Given that Hong Kong is a major gateway and transit hub connecting mainland China with the rest of the world, it could be reasonably expected that HKIA would experience strong associated growth. Passenger traffic at HKIA has increased by 50% in the past 10 years and is expected to surge from 75 million in 2018 to 102 million in 2030, according to a consultancy report (Airport Authority, 2018). The ever-increasing traffic volume poses major challenges to operations efficiency. But an even more challenging disruption to the traditional airport services is the diversity created by the variety of passenger users, who vary from travel characteristics, travel purposes to consumer preferences. Therefore, amidst the increasing standards and expectations as well as proliferating passenger throughput, the way that airport services are evaluated also needs to be critically reviewed. In this

regard, this research aims to examine the impact of airport service quality on passenger satisfaction by conducting a case study on Hong Kong International Airport.

Part 1 – Literature review

Conceptualisation and hypotheses

Service quality

Service quality can be defined as “a consumer's judgment about the overall superiority of a product or service” (Zeithaml, Bitner, & Gremler, 2009, cited in Suhartanto and Noor, 2012, pp. 3). It is commonly acknowledged as one of the most pivotal determinants in any business organisation. For this reason, this subject has attracted a great deal of research across different industries over the years in an attempt to conceptualise the notion of service quality and to examine its effect on other business components in order to optimise organisational performance and strategies. Although there is no absolute consensus on the dimensions or measurements of service quality despite a number of studies on this subject, the SERVQUAL model could be seen as a valid and authoritative seminal work in this domain, providing a solid foundation that could be adapted for evaluation of service quality in various industries.

The SERVQUAL scale was developed by Parasuraman et al. (1988) in an attempt to provide a more systematic measurement in light of the intricate and complex process involved in service quality. The scale is essentially founded upon the expectancy-disconfirmation theory (Oliver, 1980), which will be further elaborated in the following sections. In essence, the theory acknowledges that there could be a gap between a customer's perceived performance of a product or service and their expectations formed prior to consumption. Where there is a gap, disconfirmation occurs. Based on this concept, the dimensions of SERVQUAL were developed so as to reveal the criteria used by customers in assessing service quality. Through exploratory research, the original dimensions identified included reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the consumer, and tangibles. However, some of these dimensions were found to be overlapping and thus they were refined and finally boiled down to five, namely tangibility, reliability, responsiveness, assurance and empathy.

In a nutshell, tangibility refers to the appearance of physical facilities, artefacts, personnel or equipment related to the service; reliability means to the ability to deliver the pledges and undertaken services; responsiveness refers to the willingness and readiness of the service personnel to promptly provide the service to the customers; assurance refers to the knowledge and competence of the service personnel in executing the service in a confident way; and empathy means the capability to provide individualised attention and care for the customer.

However, despite the general consensus that the dimensions of SERVQUAL are a good instrument commonly used to measure service quality from the perspective of a consumer, this model has

nevertheless attracted criticism over time. One of the most well-known adaption of the SERVQUAL model is SERVPERF, developed by Cronin and Taylor (1992) having cast doubt on the conceptual basis of the former model especially for its unclear distinction with the concept of service satisfaction. The SERVPERF model proposes in addition to the five components, the ‘performance’ of a service should also be used to measure its quality which is in fact a core element of the consumers’ evaluation of a service. The argument was that technical attributes, namely what is delivered in the service, and functional attributes, such as how and when the service is delivered, are both integral to the customers’ perception of the service quality. In other words, Cronin and Taylor deemed that SERVQUAL focused too narrowly on the process of service delivery but neglected important attributes in the actual outcome and performance of the service (Ravichandran et al. 2010). Advocates of SERVPERF therefore argues that this model produces better results of reliability, validity, and predictive power than using SERVQUAL, though to date there has not been a conclusive decision on the superiority of these models in evaluating service quality (Jain and Gupta, 2004).

Airport service quality

As air travel became more prevalent in the past few decades, academic research on the service quality of relevant service providers also gained momentum. Specifically, services provided at airports have attracted researchers’ interest for the multifaceted service dimensions and the fact that airports are the central conduits that allow air travel. The preliminary conceptual model of the present study proposed below is mainly built upon the final model postulated by Fodness and Murray (2007), which is developed by qualitative research with passengers and then refined after exploratory and confirmatory factor analyses. It is proposed that airport service quality has three core dimensions, namely function, interaction and diversion. In short, ‘function’ refers to the capacity of an airport to facilitate effective and efficient movement of the passengers, through e.g. spatial layout, facilities and signage, etc.; ‘interaction’ refers to the quality of interaction between customers and the service provider; while ‘diversion’ refers to the airport’s ability to divert the passengers’ attention from the dull and stressful processing activities to an environment that offers aesthetic, cognitive and sensory satisfaction. Therefore, the components of ‘function’ and ‘diversion’ well demonstrate the core attributes of the SERVPERF model by reflecting on the technical and functional aspects in airport services; whereas the items in ‘interaction’ largely relate to service quality process dimensions in the SERVQUAL model.

Dimension 1: Function

Airport passengers are often time-pressed. Thus, the capacity of an airport to facilitate effective and efficient movement of the passengers within the terminal is fundamental. The importance of

“servicescape” to service business where customers are physically present to experience the service within a “factory”, namely the physical facility provided by the firm, is theorised by Bitner (1992). Servicescape is comprised of a wide array of environmental features which covers three main constructs, including spatial layout, signs and symbols, ambient conditions. In this study, the first dimension focuses on the first two functional aspects in servicescape. In an airport setting, these include wayfinding signage that directs passengers’ movement, flight information, physical layout of the airport terminal in relation to the ease of access to relevant facilities, location of various facilities such as baggage carts and toilets, etc. (Bezerra and Gomes, 2016a; Widarsyah, 2013). Furthermore, the timeliness of the provision of service such as baggage delivery and check-in processes is a recurrent theme in almost all literature that attempts to conceptualise airport service quality (e.g. Bezerra and Gomes, 2016a; Fodness and Murray, 2007; Humphrey, Francis and Fry, 2002; Mirghafoori, Izadi and Daei, 2018).

In regard to efficiency, this research has included a new aspect to the ‘function’ dimension, which is the use of self-service facilities in delivering timely terminal services. Self-service facilities commonly include check-in kiosks, bag-drop, immigration gates and boarding gates. Research finds that passengers use self-service facilities to save time and avoid long queues (Gelderman, Ghijsen and van Diemen, 2011; Meuter et al. 2000), and that those who have shorter dwell time in the airport are more likely to use self-service facilities (Castillo-Manzano and López-Valpuesta, 2013). These research suggest that such facilities are perceived by passengers to have a positive impact on increasing their efficient movement at the airport, and Bogicevic et al. (2017) suggest that the use of airport self-service technologies have a positive impact on passengers’ overall satisfaction. Thus, as passengers perceive such technologies to be a prevalent and integral part of airport service, self-service facilities ought to be included as an important function delivered by an airport. In this regard, it is hypothesised that:

H1: Airport service quality is positively influenced by the basic functions delivered by the airport.

Dimension 2: Interaction

In the service sector, the impact of the quality of interaction between customers and the service provider is well-established. Although it is contended that the airport setting is more complex than ordinary service businesses, the SERVQUAL scale introduced by Parasuraman et al. (1988) which is widely adopted in service industries nevertheless sheds light on airport services qualities, particularly regarding the interaction with customers. The model proposed by Fodness and Murray (2007) supports a number of SERVQUAL dimensions, for example the appearance of the airport staff are tangibles, while the attitude of employees relate to empathy and assurance. These items are duly

included in the present study. In addition, knowledge and expertise of the staff are also important factors that customers take into account when evaluating the interaction with the service provider (Brady and Cronin, 2001). Overall, it is postulated that passengers' perceptions of the airport's service quality are influenced by interaction with the personnel who deliver the service.

H2: Airport service quality is positively influenced by the interaction between airport personnel and passengers.

Dimension 3: Diversion

Recall that the first dimension deals with that effectiveness and efficiency in delivery various airport functions. However, apart from in-terminal movement and processing activities, the in-between time and discretionary time are of equal importance to passengers, especially to business travellers (Darko, 1999, cited in Fodness and Murray, 2007) and transit passengers who comparatively spend more time waiting in the terminal. Furthermore, since passengers are often stressed during processing activities, it is important that the service provider manage passengers' discretionary time in a way that alleviates anxiety and brings positive experiences to the travellers (Livingstone et al. 2012). Popovic, Kraal and Kirk (2009) identify two main types of activities on which travellers spend their discretionary time, namely necessary activities that are travel-related and informal activities such as shopping and dining. Thus, airports must be able to divert their attention from processing activities to an environment that offers "aesthetic, cognitive and sensory satisfaction" (Fodness and Murray, 2007, p.501). All in all, the extent to which an airport can facilitate passengers in spending their dwell time could have a significant impact on its service quality.

H3: Airport service quality is positively influenced by diversion activities and facilities offered by the airport during passengers' discretionary time.

Customer satisfaction

Customer satisfaction is a well-established topic in the academic field which has been critically examined over the years by various researchers. Its importance lies fundamentally in the general consensus that satisfaction has a pivotal role in influencing repurchase behaviour and development of customer loyalty towards the product or service (Ravichandran et al. 2010). One of the most grounded and influential seminal works on this concept is the expectancy-disconfirmation paradigm postulated by Oliver (1980), arguably the most widely-accepted amongst this field (Ekinci, Massey and Dawes, 2008). The expectancy theory developed by Vroom (1964) seeks to explain the cognitive processes regarding motivation, which in simple terms depends on an individual's assessment on

“how much we want something and on how likely we are to get it” (Zehrer, Crotts and Magnini, 2011, pp. 108).

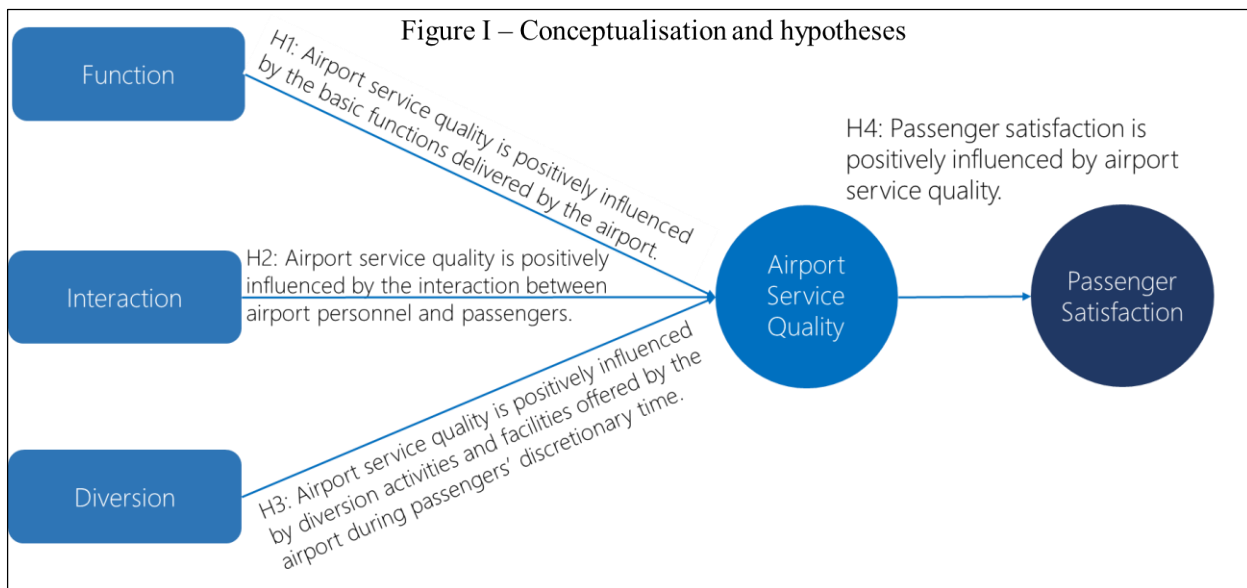
In essence, the expectancy-disconfirmation theory views customer satisfaction as an affective state of mind or emotion that the customer has towards the product or service. According to this theory, satisfaction can be measured through comparison between a customer’s expectation on the goods or service prior to consumption and their perception on the performance of the goods or service post-consumption. If there is no discrepancy between the prior anticipation and the perceived performance, congruence occurs. If the performance exceeds expectations, positive disconfirmation occurs, which translates into higher customer satisfaction. Conversely, negative disconfirmation or dissatisfaction occurs if the customer finds that the performance does not live up to their expectations. In other words, the prior expectations held by the customers become a standard against which the performance of the goods or services would be compared. This concept of disconfirmation lies at the heart of Oliver’s expectancy-disconfirmation paradigm (Gale, 1994, cited in Suhartanto and Noor, 2012).

Airport service quality and passenger satisfaction

Although customer satisfaction and service quality are often discussed concurrently, literature consistently characterises them as two distinct constructs despite their close relationship (Taylor and Baker, 1994). Customer satisfaction is postulated as a process and could be affected by a number of ‘non-quality’ issues (Oliver, 1993), whereas service quality’s underlying dimensions are more specific and are based on perceptions of excellence (Taylor and Baker, 1994). As regard the way that these two constructs are specifically related, various seminal works suggest that perceived service quality is positively related to customer satisfaction (e.g. Monroe and Chapman, 1987 cited in Oh, 1999). Woodside et al. (1989, cited in Oh, 1999), in investigating customers’ purchase intentions, also recognises that satisfaction is a mediating variable between service quality and purchase intention. The expectancy-disconfirmation theory has been widely applied particularly in research in the tourism industry since the 1990s and has remained an authoritative and valid framework that is used to determine customer satisfaction (e.g. Barksy, 1992; Weber, 1997; Zehrer, Crotts and Magnini, 2011). In more recent empirical studies, Ravichandran et al. (2010) also recognises the correlation between service quality and customer satisfaction, though the study particularly aimed at evaluating the banking industry. In the airline industry, while acknowledging such correlation, Suhartanto and Noor (2012) find that the perceptions of service attributes differ from full-service airlines and low-cost airlines, such that the same level of service provided by different types of airlines could lead to varying degree of satisfaction. Nevertheless, the core findings are that service quality does impact customer satisfaction. In this light, the present research proposes that:

H4: Passenger satisfaction is positively influenced by airport service quality.

The overall proposed model is illustrated in Figure I as follows:



Epistemology

Parasuraman et al. (1988)	Developed the SERVQUAL model to measure service quality from the customer's perspective, consisting of tangibility, reliability, responsiveness, assurance and empathy.
Cronin and Taylor (1992)	Challenged the comprehensiveness of SERVQUAL and proposed the SERVPERF model that places more emphasis on the technical and functional attributes of the service provided.
Bitner (1992)	Recognised the importance of 'servicescape' in the service industry, which is comprised of a wide array of environmental features which covers three main constructs, including spatial layout, signs and symbols, ambient conditions..
Darko (1999)	Apart from in-terminal movement and processing activities, the in-between time and discretionary time are of equal importance to passengers, especially to business travellers
Brady and Cronin (2001)	Knowledge and expertise of the staff are also important factors that customers take into account when evaluating the interaction with the service provider
Humphrey, Francis and Fry (2002)	Highlighted the importance of the timeliness of the provision of service at airports, such as prompt baggage delivery and efficient check-in processes.

Fodness and Murray (2007)	Evaluated service quality specifically for airport services and proposed an airport service quality model consisting three dimensions, namely function, interaction and diversion, comprising elements of both the SERVPERF and SERVQUAL models.
Popovic, Kraal and Kirk (2009)	Identified two main types of activities on which travellers spend their discretionary time at the airport, which are (i) necessary activities that are travel-related and (ii) informal activities such as shopping and dining.
Gelderman, Ghijsen and van Diemen, (2011)	Empirical research found that passengers use self-service facilities to save time and avoid long queues.
Livingstone et al. (2012)	Recognised the importance for service providers to manage passengers' discretionary time in a way that alleviates anxiety and brings positive experiences to the travellers.
Castillo-Manzano and López-Valpuesta (2013)	those who have shorter dwell time in the airport are more likely to use self-service facilities.
Widarsyah, (2013); Bezerra and Gomes, (2016a)	Elucidated the different components of 'function' in an airport setting, which included wayfinding signage, physical layout, ease of access to facilities and availability of flight information, etc.
Bogicevic et al. (2017)	Empirical research found a positive relationship between airport self-service technologies and travellers' confidence benefits and enjoyment, which results in positive effects on overall traveller satisfaction.

Current research gap

Lack of passenger-centric research on airport service quality

In a comprehensive literature review that comprises 380 documents regarding airport performance, Bezerra and Gomes (2016b) highlights the persistent emphasis of objective 'benchmarking' in the majority of previous studies. Due to the weak competition amongst airports in the earlier days, research had been scarce and interest in airport performance had been largely limited to the measurement of operational efficiency. It is not until the millennial era that researchers begin to recognise that benchmarking based solely on efficiency yields limited value as it undermines the multidisciplinary nature of airport business (e.g. Bazargan and Vasigh, 2003, cited in Bezerra and

Gomes, 2016b). In particular, Fodness and Murray (2007) addresses to the lack of attention given to passengers' perspectives in evaluating airport services, as objective indicators per se are insufficient to conceptualise the qualities of a *service* industry.

Despite the gain in momentum in a passenger-centric approach and the introduction of various under-explored dimensions, the traditional benchmarking approach remains deep-rooted in the industry. Even when the service quality is examined under a broader perspective that encompasses diverse service qualities, the concept remains superficial seeing as the service attributes are mostly developed through discussions with experts and professionals rather than with passengers. For example, the research of Rhoades, Waguespack and Young (2000) identifies four key quality factors including (1) passenger services such as dining, toilets, and shopping, (2) access and transportation, (3) flight related services such as baggage claim, boarding areas and information displays and (4) inter-terminal transportation. Nevertheless, these attributes are developed by a questionnaire filled out by airport operators and consultants, who first rate the importance of the pre-identified factors in their own capacities as industry professionals, and then answered the same set of questions again from the perspective of passengers. This limitation is in fact acknowledged by the authors who point out that experts were targeted for the ease of accessibility, but that they might fail to recognise or understand the service attributes that matter to the passengers. In other words, the fact that passengers are not involved at all in the data collection hampers the objective of this research, which is to design an index of quality factors "from the perspectives of all airport service customers". Notwithstanding the apparent limitations, the research remains an authoritative and frequently cited piece of work in the realm of airport service quality.

In a more recent study by Fernandes and Pacheco (2010) conducted on six international airports in Brazil, passengers are again not included in the data collection process, as both the generation of primary indicators and the subsequent weighting of the same are developed through discussion with experts in the airport industry only. Similarly, Yeh and Kuo (2002), another frequently cited research in defining airport service quality, does not include any passengers in forming the key service categories, although the research is one of the few studies that has moved away from simple benchmarking and opens up to qualitative measures of airport services.

Bearing in mind the abovementioned phenomenon, the service quality attributes proposed in this present study are based on selected research that have taken into account passengers' perspectives, so as to ensure that the indicators present passenger-centric qualities. The preliminary conceptual model of the present study is mainly built upon the final model postulated by Fodness and Murray (2007), which is developed by qualitative research with passengers and then refined after exploratory and confirmatory factor analyses. However, since this research is based on a US airport, other

research is also used to supplement the item pool to offer a more holistic, global view in the contemporary landscape. Furthermore, as air traffic volume continues to proliferate at a phenomenal speed in the recent decade, coupled with the rapid development in technological applications at airports, it is inevitable that passengers have developed new perspectives towards what an airport ought to deliver in its services. In a business setting that increasingly emphasises customer experience in addition to the traditional service scope, more research on airport service quality ought to be conducted in order to portray a more complete, contemporary picture on this concept.

Importance of understanding service quality from the customers' perspectives

Steve Jobs once remarked, "You've got to start with the customer experience and work backwards to the technology. You cannot start with the technology and try to figure out where you are going to sell it" (Hansen, 2013). Put in other words, good products cater to the customers' needs, which requires a detailed understanding of the product users. This step-by-step approach is essential in developing the appropriate business strategies. By the same token, airport operators must strive to step into their customers' shoes as they cannot provide services and facilities that satisfy airport users unless they have a thorough understanding of these customers expect from the services.

In this respect, Kirk (2013) summarised the main three reasons that airports, as with any other company, must strive to understand their customers and ensure good customer experience:

(i) Win and maintain customer loyalty in a competitive environment

At first sight, customer loyalty might not strike us as the most important target for an airport as it might appear that passengers do not generally have a lot of choices on which airport to fly at. However, through time, more airports have developed better downtown connectivity, more partnering airlines and more flight routes, continuously expanding the choice of airports for passengers. In this increasingly competitive environment, developing customer loyalty could enable airports to effectively retain and attract more passengers.

(ii) Provide a differentiator to set them apart from their competitors

Since the airport industry is growing more competitive, only airports that could offer great value propositions would be able to stand out. The fact that passenger satisfaction is integral to an airport's success is also reflected in a number of international awards and recognitions which are founded upon passengers' opinions and experience. No doubt, passenger satisfaction is not the only component of a good airport, but it is indisputably an important factor that could set you apart from your competitors.

(iii) Increase profits and provide greater shareholder value

Retaining and attracting more passengers could increase an airport's aeronautical revenue, but it could also have a significant impact on non-aeronautical revenue and increase the airport's profits. Airport Council International's report (ACI, 2016) finds not only a positive relationship but also a strong one between passenger satisfaction and an airport's revenue, showing that "an increase of 1% in the global passenger satisfaction generates an average growth of 1.5% in non-aeronautical revenue", which significantly out-performs the impact achieved through passenger traffic increase and expansion of retail space.

Part 2 – Methodology

Bogicevic, V. et al. (2017) 'The impact of traveler-focused airport technology on traveler satisfaction', *Technological Forecasting and Social Change*, 123(1), pp. 351-361.

Article abstract

This research stems from the rapid evolution of the air travel industry in which airport service providers strive to meet and exceed passengers' changing needs. Operations and efficiency in the airport terminals are no longer the only focus of air travellers, who now have increasing demand on having quick solutions and information readily available online, as well as self-service options that expedite the travel processes while giving the travellers a sense of autonomy (Forgas-Coll et al. 2013; Noronen-Juhola, 2012, cited in Bogicevic et al. 2017). As such, modern airport operations benefit from technological advances through the adoption of a number of travel-related technologies. Time-pressed passengers could shorten their processing time by using self-service facilities such as check-in kiosks, bag drop facilities, e-information counters and smartphone apps (Abdelaziz et al. 2010, cited in Bogicevic et al. 2017). Nonetheless, despite the rapid adoption of such travel-related technologies, the use of such self-service facilities at airports only boomed in the recent decade and the interaction between passengers and airport technologies have not been fully explored. Therefore, the objective of this research is to critically examine the effect that different types of traveller-focused airport technologies has on passengers' confidence, enjoyment, and satisfaction. In essence, the research found a positive relationship between airport self-service technologies and travellers' confidence benefits and enjoyment, which results in positive effects on overall traveller satisfaction.

The model proposed in this research reflects a number of the components found in the SERVPERF model, in that the technical and functional attributes of the self-service technologies are important determinants in the research. However, the model has also incorporated SERVQUAL elements to an extent, seeing that some respondents deemed the use of such technologies as a way to increase the reliability of the airport service and to provide more assurance and confidence during their travel. Therefore, the findings reflect that interaction between the service provider and the customers is no longer restricted to the service personnel, but could instead be found via other channels, such as interaction, communication and provision of information through the use of technologies.

Sampling

This research consists of two parts, the first part being an exploratory pilot study (Study 1) and the second a main survey (Study 2). Study 1 aimed at exploring the different technologies that are most commonly used by airport passengers so as to further refine the instrument for the main survey. The study was a quantitative study that involved the use of a questionnaire that employed a 7-point Likert

scale. The respondents had to confirm that they (1) were aged 18 or above and (2) had a layover at an airport in the past six months, and they were recruited through two channels. Firstly, the questionnaire was distributed through a purposive sampling method to a group of alumni who graduated from a south-eastern US university. These alumni differed in demographics characteristics, such as age, income and gender, etc. Purposive sampling in quantitative research is typically used in cases where researchers need to collect information that can only be provided by a specific population group with certain characteristics, for example a topic that relates to a specific field of expertise. In this study, however, although there were pre-conditions to qualify for the study, the conditions required were not so specific that justified a purposive sample. Therefore, it appears that this sampling method was used for the first study mainly for the ease of accessibility rather than for optimising a desired sample. Secondly, other respondents were recruited through criterion-based snowball sampling, by asking undergraduate students from a university to recruit friends and family who were frequent travellers to participate in the survey. Again, this non-probability sampling method limits the generalisability of the study findings. However, the researchers tried to mitigate these limitations by, e.g. recruiting alumni who differed in demographics and ensuring that the undergraduate recruiters did not participate in the surveys themselves. Therefore, although ideally a probability sampling method should have been used, given the time constraints of the pilot test and its exploratory nature, it could be said that the sampling sufficed the purpose of the first study. A number of tests were also run to check its reliability and validity, which will be discussed below.

In the main survey, random sampling method was used and the questionnaire was distributed through an online platform, Amazon Mechanical Turk, and financial incentive was offered to respondents to motivate their participation. Even though it is said that random sampling was used, it was not entirely random in a sense that the sample was limited to people who were exposed to this particular online platform. Considering the criteria set by the researchers, a more ideal method would be to conduct the survey physically, or to use systematic sampling, for example targeting every 3rd passenger queuing up for check-in at the departures hall at an airport. However, given that the research did not aim to limit the passengers' experience to one particular airport, it might be practically difficult to conduct the survey at different airports physically. The researchers could nevertheless consider

Ethical issues

Respondents' consent

Informed consent is an essential component that researchers must obtain and a process which must be observed in any research that is targeted at human subjects. The purpose of obtaining consent is principally related to research ethics, ensuring that the respondents' participation in a research study is entirely voluntary. Not only is consent required, it must also be given by the participant in a fully

informed state of mind. To achieve this end, researchers ought to disclose all important information about the study and the rights of the participants, including but not limited to the research objective, duration, confidentiality and data protection, research procedures, etc. (Nijhawan et al. 2013). In sum, informed consent is a cornerstone of research ethics and researchers must behave towards the subjects with integrity (Spiker, 2007).

In this research, the authors have not made clear whether a consent form or letter had been distributed to the respondents. In the first study, some of the respondents were alumni who were given the questionnaire selectively while some were friends and family recruited by undergraduate students based on set criteria. In both cases, respondents' consent is especially important given the position of the alumni and students, as they might feel obliged to complete the task given by the university completing the questionnaire either by themselves or finding recruits. Similarly, in the main survey, the article's methodology does not explicitly mention whether or not, or how consent was obtained from the respondents who completed the survey through an online recruitment platform. Thus, the research ought to have indicated more clearly the way through which consent was obtained and that the objective and procedures had been thoroughly explained to participants at the beginning of the questionnaire, regardless of whether the questionnaire was for the first study or the main survey.

Another element of consent is the inclusion of the option to withdraw. Not only should respondents accept to participate in a research study voluntarily at the beginning, researchers must also ensure that the respondents' participation remains just as voluntary throughout the whole process. Therefore, it must be clearly communicated that participants are free to withdraw at any point of the study should they feel like doing so. In both surveys, option to withdraw had not been explicitly mentioned, though there were some measures that allowed withdrawal to an extent. For example, screening questions were asked at the beginning of the questionnaire, such that participants could withdraw if they felt that the conditions were not met. In addition, a 'not applicable' (N/A) response option was provided in case the specific airport technology was not available at the airport that the participant visited, or in case the participant did not feel comfortable evaluating that technology based on their recalled experience. Thus, for further improvement, the researchers could state the option to withdraw in the instructions of the questionnaire and emphasise that this option could be exercised by the participants at any point of the process. This way, participants would be fully informed and the consent given would be consistent not only at the start of the survey but throughout the research process.

Confidentiality and data protection

Confidentiality is an important part of research ethics as the disclosure of participants' identity could affect the way they respond, and disclosure without the participants' prior consent could jeopardise their personal and work lives. Thus, identity ought to be fully protected, or else the degree of any

such disclosure must be clearly communicated to and agreed by the respondents. In this research, the names of the respondents are not revealed in the article although it is not clear to what extent personal information was collected during the surveys. Analysis of respondents' demographics also respects confidentiality, as the presentation of data is not too specific to a degree that the respondents' identities could be inferred or revealed. However, the article should add information regarding the handling, custody and disposal of data, which have not been explicitly mentioned. This would include stating the personnel who had access to the data, the measures taken to control such access, as well as how and when the data was disposed after completion of the research.

Avoiding deception

Deception is an issue typically caused by the instructions given to the respondents or the way that questions are phrased in interviews and surveys. In the article examined, no leading questions were asked in the survey per se, and a Likert scale with "N/A" option was used. For instance, the statement "The self check-in kiosks were appropriately designed" might appear to have assumed that self check-in kiosks were available. However, since a Likert scale with an "N/A" option was used, a participant who did not encounter any self check-in kiosk in their stay at the particular airport could opt for "N/A", instead of giving an inaccurate answer. Nevertheless, the questionnaire did contain a problematic question, which states that, "The airport provided free tour guide application". This is a Yes/No question which is unable to be rated on a spectrum using the Likert scale provided. As such, respondents might have given their answer based on their own assumptions or interpretation on the statement.

Clarity of instructions

Since this is a quantitative research, no briefing sessions were given to the participants face-to-face. Instead, instructions were given at the beginning of the questionnaire before the respondents started to answer the questions. For example, in order to facilitate respondents in answering the questions, the questionnaire first instructs them to answer several questions about their most recent airport experience, including the airline that they flew with, the airport location, travel purposes, etc. In addition, the scale of the survey instrument and the "N/A" option were explained and respondents were instructed to select the N/A option if the listed technology was not available at the airport they visited.

Nonetheless, the questionnaire contained some ambiguous wordings, for instance the meaning of the phrase "*layover* at the airport" is rather colloquial and might not be entirely clear to respondents who did not speak English as a first language. Instead, the word "layover" could simply be replaced with a more direct word "stay", which has the same meaning, so as to keep the expression as straightforward as possible.

Moreover, the phrasing of the screening question in the questionnaire could also be further improved. The instructions require respondents to be “U.S. residents aged 18 or older who traveled at least once in the past six months and had a transfer flight with a short or long layover at an airport”. Clearly, the expression “short or long” is puzzling and in fact unnecessary in this statement. It might have caused confusion to the respondents and prompted them to think whether the duration of their stay at the airport is long enough to qualify for participating in this study. In fact, the authors could have simply used “any” or “a” stay at the airport, or if necessary, stated the minimum duration of the stay in order to provide more clarity. All in all, clarity of the instructions is given is vital and ought not to be overlooked, as it would directly influence the answers given by the respondents.

Reliability

Reliability across items – Internal consistency

Internal consistency refers to the consistency of the answers given by the respondents when a multi-item survey instrument is used. Related items scored by the same person should typically be correlated as the items are reflecting the same underlying construct. The use of Cronbach’s alpha is arguably the most common method in measuring internal consistency. A Cronbach alpha of 0.7 or above is generally considered satisfactory. In this article, the alpha for both the first study and main survey in the second study is over 0.8 for all the constructs, indicating high internal consistency. It appears that the categorisation of the constructs is relevant and distinct, credit of which could be given to the robust literature review and the factor analysis conducted after the first study.

Nevertheless, common method bias might be a potential concern in this research which would cause false internal consistency, since the questionnaires were self-administrated and answered during the same period of time. To prevent such variance, the researchers could have asked different groups of respondents to rate different variables. Furthermore, the questionnaires could have been given out during different points in time, for example by having first and second waves of survey. Though these had not been done in the research, the authors acknowledged the potential problem in common method bias and ran a two-step procedure to examine whether such bias affected the results of this study. Firstly, Harman’s one factor test was conducted by loading all the items into one principal common factor. The assumption is that if there was common method variance, the majority of the total variance would be accounted by one single factor. In this study, no single factor represented over 50% of the covariance, hence indicating that common method bias did not substantially affect the data. Secondly, the bivariate correlation between the constructs were not extremely high as r was below 0.90. Overall, common method bias did not pose a substantial problem in this study, though it ought to be borne in mind that these tests could only check for any such common method variance, but not to prevent or control it. Therefore, ideally the methodology of the study should be adjusted

through the methods mentioned above so as to reduce the risk of producing data that is contaminated by common method bias.

Validity

Content Validity

Content validity refers to the extent to which the instrument is able to cover the constructs of the research interest depending on the way these constructs are conceptually defined by the researchers. In this research, the initial item pool was developed based on extensive and contemporary literature review, ranging from seminal works to recent literature. The three researchers then independently assessed the item pool after which refinements were made in order to increase the content validity. It was important that the researchers each conducted a review of the overall questionnaire on their own so as to ensure that the instrument, which was likely to have been drafted by more than one person, read cohesively as a whole. Furthermore, experts were invited to review the instrument to further verify the comprehensiveness and relevance of the items and constructs.

Convergent and Discriminant validity

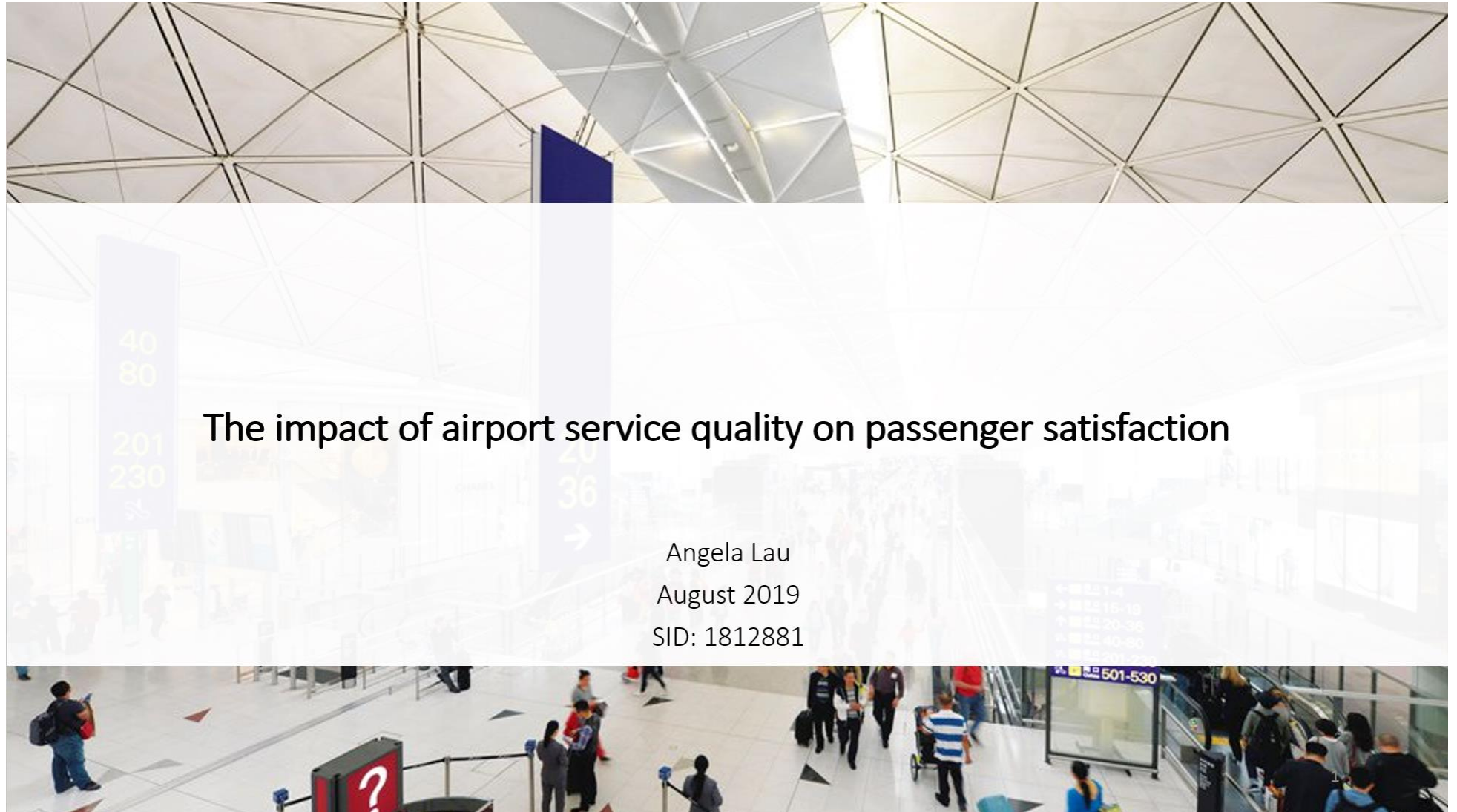
Convergent validity refers the extent to which scores on a measure *should* correlate with measures of variables that are conceptually similar; whereas discriminant validity refers to the extent to which scores on a measure *should not* correlate with measures of variables that are conceptually distinct. In this regard, a confirmatory factor analysis (CFA) was conducted to verify the factor structure. The values of average variance extracted (AVE) and maximum shared variance (MSV) demonstrated good convergent and discriminant validity for all the constructs.

The article also indicated that the researchers have checked for bivariate correlations between constructs and did not find extremely high correlations ($r > 0.90$). However, the analysis did not go on to explain whether the correlations were checking for convergent validity or conversely, discriminant validity. The exact r values are not listed out in the analysis and there was a lack of explanation on which measures should or should not be correlated. Hence, the article could further elucidate on the correlations between different constructs, for example that constructs “self-service technologies” such as check-in kiosks and bag drop facilities and “supporting technologies” such as USB chargers and business centre are conceptually different in this study, thus these two constructs should show low correlation between each other.

Conclusion

No doubt, passenger satisfaction is not the only indicator of a good airport, but customer orientation is indisputably an important factor that could set an airport apart from its competitors in this day and age. However, even though there is abundant literature on the topics of service quality and customer

satisfaction, research that is specifically directed at airport services nevertheless remains an under-explored discipline. Additionally, literature review also reveals the issue that despite its close relationship with passenger satisfaction, service quality has often been studied without adequate participation from the end users of airports, namely the passengers. Hence, the aim of the proposed study is fill in these research gaps by addressing the multi-faceted airport setting through a passenger-oriented approach. Through grasping the factors of airport service quality and their relationship with passenger satisfaction, it is envisioned that airport managers could better map the route towards their ultimate corporate goals.



Research significance



The increasing standards and expectations as well as proliferating passenger throughput give rise to a need to critically examine the way that airport service quality is perceived and its impact on passenger satisfaction.





Service Quality

Service quality

- a consumer's judgment about the overall superiority of a product or service

Models

- SERVQUAL (Parasuraman et al. 1988)
 - 5 dimensions: tangibility, reliability, responsiveness, assurance and empathy
- SERVPERF (the perceived service in SERVQUAL)
 - Uses service quality performance
 - More emphasis on technical attribute and functional attribute
 - Arguably produces better results of reliability, validity, and predictive power than using SERVQUAL
- Though SERVQUAL is still an authoritative model in the domain; frequently adopted by researchers to measure service quality.

Airport Service Quality

Function: the capacity of an airport to facilitate effective and efficient movement of the passengers, through e.g. spatial layout, facilities and signage, etc.

- Check-in processing time
- Arrivals baggage waiting time
- Availability of self-service facilities
- Availability of baggage trolleys
- Clarity of flight information display

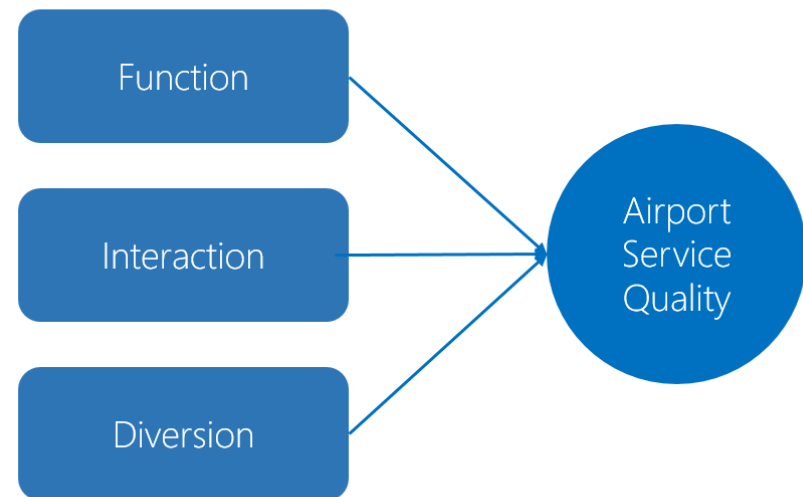
Interaction: quality of interaction between customers and the service provider.

The proposed item pool supports a number of SERVQUAL dimensions.

- Employees politeness (empathy)
- Employees attentiveness (responsiveness, empathy)
- Employees appearance (tangibility, reliability)
- Identification of employees (tangibility, reliability)
- Employees competence (reliability)

Diversion: Airports should be able to divert the passengers attention from processing activities to an environment that offers aesthetic, cognitive and sensory satisfaction

- Availability of business facilities
- Facilities cleanliness
- Availability of seating
- Ambience and décor
- Variety of food and beverages
- Variety of retail outlets



A decorative header banner with a light blue horizontal band. The background of the banner features a complex, low-poly geometric pattern in shades of beige and light brown.

Customer Satisfaction

Customer satisfaction

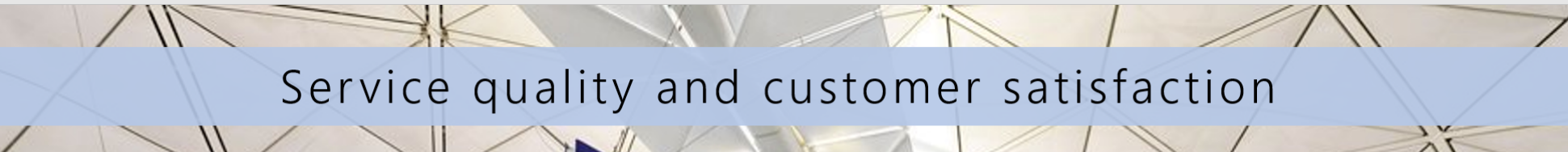
- An affective state of mind or emotion that the customer has towards the product or service

Models

- Expectancy-disconfirmation theory

Satisfaction = post-consumption performance perception - pre-consumption expectation

- The customer's expectations of the product/service become a standard against which its performance would be compared.



Service quality and customer satisfaction

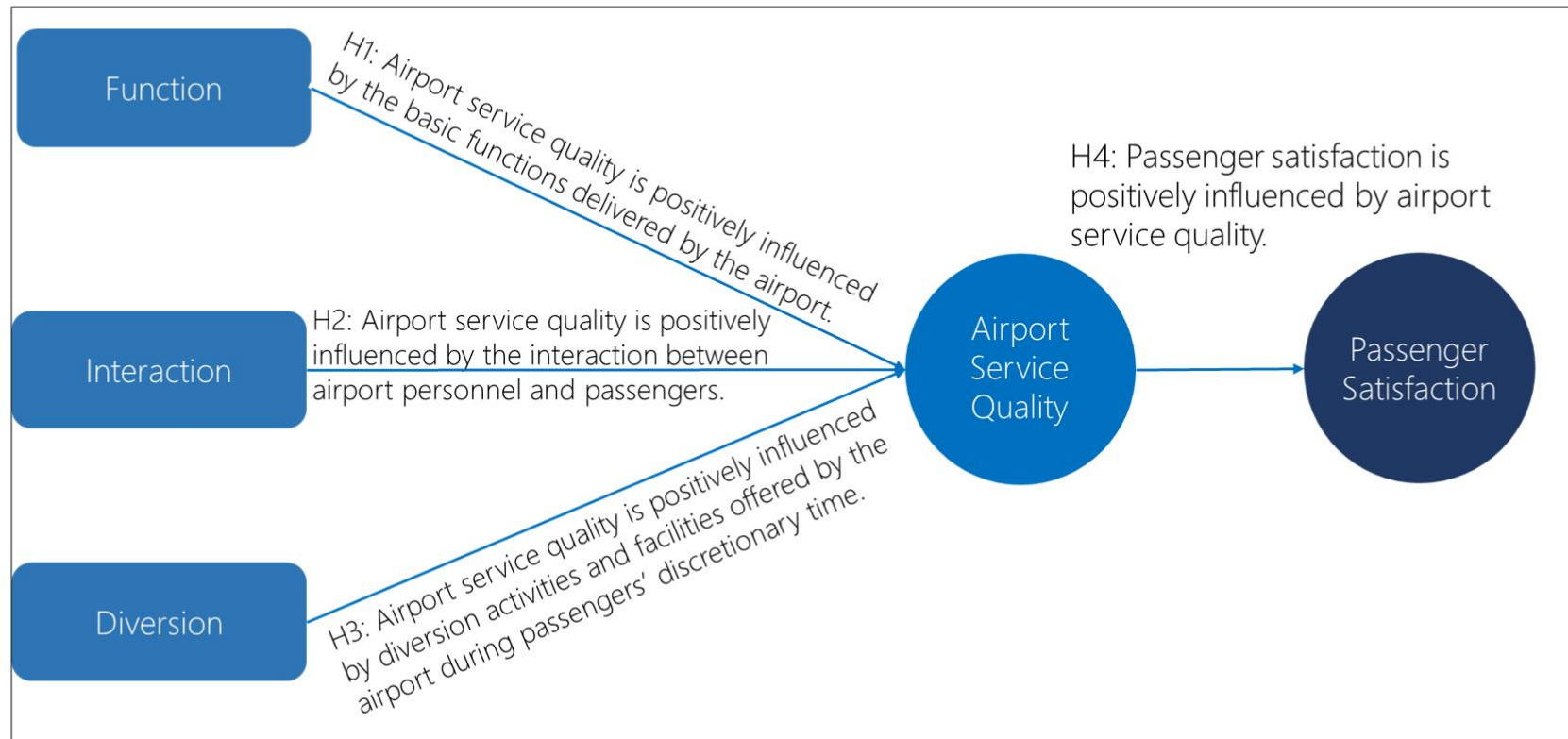
Two distinct constructs

- Although customer satisfaction and service quality are often discussed concurrently, literature consistently characterises them as two distinct constructs despite their close relationship.

Correlation

- However, research does point to a correlation between service quality and customer satisfaction
- Positive correlation
- i.e. The higher the service quality, the higher the customer satisfaction

Proposed model

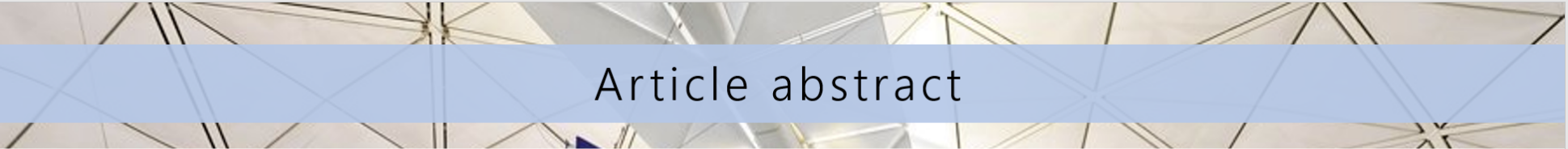




Research gaps

Lack of passenger-centric research on airport service quality





Article abstract

Bogicevic, V. et al. (2017) 'The impact of traveler-focused airport technology on traveler satisfaction', *Technological Forecasting and Social Change*, 123(1), pp. 351-361.

Background

- the air transportation industry is undergoing a period of rapid evolution
- airport service providers are increasingly trying to improve travellers' experiences
- a wide range of technologies could be used to do so

Objective

- examines the relationship among different types of airport technologies and travellers' confidence, enjoyment, and satisfaction

Findings

- a positive relationship between airport self-service technologies and travellers' confidence benefits and enjoyment — which results in positive effects on overall traveller satisfaction



Ethical issues

Respondents' consent

- Consent letter
 - Not mentioned
 - Financial incentive
- Withdrawal
 - Not explicitly mentioned
 - Screening questions – participants could withdraw if conditions are not met.
 - A 'not applicable' (N/A) response option was provided for participants who did not feel comfortable evaluating airport technologies based on their recalled experience.

Confidentiality and data protection

- Confidentiality in the handling/custody/disposal of data not explicitly mentioned
- But no names were revealed
- Analysis of respondents' demographics is appropriate (not too specific to a degree that respondents' identities would be revealed)



Ethical issues

Avoiding deception

- No leading questions were asked in the survey per se. Likert scale with “N/A” option was used.
 - “The self check-in kiosks were appropriately designed”
 - “The airport provided free tour guide application” – Yes/No question, unable to rate on a spectrum.

Clarity of instructions

- Quantitative study – no briefing sessions
- But instructions were given at the start of the survey, e.g.
 - first instructed to answer several questions that refreshed their memory about their most recent airport experience (e.g. the airline company, airport location, reason for travel)
 - instructed to select the N/A option if the listed technology was not available at the airport they visited
- Some ambiguous wordings, e.g.
 - “layover” – colloquial
 - “U.S. residents aged 18 or older who traveled at least once in the past six months and had a transfer flight with a short/long layover at an airport” – “short/long” is unclear and unnecessary



Reliability

Reliability across items – Internal consistency

- Items should reflect the same underlying construct
- In both pilot study and main survey, Cronbach's alpha is > 0.7 for all constructs
- Internal consistency amongst the items within each construct is acceptable. Indicate good consistency

Validity

Content Validity

- The initial item pool was developed based on extensive and contemporary literature review
- Three researchers independently assessed the item pool
- Expert review on the instrument

Convergent and Discriminant validity

- Convergent vs Discriminant validity: The extent to which scores on a measure should or should not correlate with measures of variables that are conceptually similar or distinct.
- Checked for bivariate correlations between constructs and did not find extremely high correlations ($r > 0.90$)
 - Exact r values are not listed out
 - Not distinguish which measures should or should not be correlated
- A confirmatory factor analysis (CFA) was conducted to verify the factor structure. The values of average variance extracted (AVE) and maximum shared variance (MSV) demonstrated good convergent and discriminant validity for all the constructs.

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