

## Digital Strategy in Airports

*Research in Progress*

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### Abstract

*As airports continue to become more 'customer-centric' their digital customer-facing technologies are increasingly embedded within the passenger journey. This study takes a customer-centric view of airport digital technology by exploring the ways that digital technologies are being applied within airports to improve passenger perspectives of service quality during their journey. The literature review develops a framework encompassing the themes of airport service quality (function, interaction and diversion) and digital strategy. This framework has been applied to six airports exhibiting high service quality. Currently, the findings suggest that the improvement of customer function involves the use of automated and self-service technologies providing passengers greater efficiency and effectiveness during processing points. Additionally, technology to improve experience during wait times may entail either aesthetic qualities, or provide some form of productivity to passengers. Alternatively, customer interaction is influenced by digital technology through constant passenger engagement during their journey. As the research nears completion, the influence of these themes on the framework will become more apparent.*

### Keywords

Digital strategy, airports, technology, service quality

### INTRODUCTION

Demand for air transport has doubled every 15 years since the 1970's (Airbus, 2012) and continues to be characterised by long term growth. According to the ITB World Travel Trends report, outbound trips grew by 22% from 2010-2013 and it is expected that this will grow by an additional 5.3% by 2017. Additionally, since the 1980's, airports globally are becoming increasingly deregulated. The combination of long term growth and deregulation has provided airports with the opportunity to exploit commercial activities and has led to airport management actively seeking to increase non-aeronautical revenue through focusing on passenger profits. The airport market has also been heavily influenced by the introduction of digital technologies. According to the SITA Airport IT Trends Survey (2013) airports invested \$6 billion on IT in 2013 with priority being on investment in passenger processing technology, followed by improvements in passenger services and information.

With a growing number of global airports investing in digital technologies, the determinants of an effective airport digital strategy is an important consideration for airport management. Academic literature in the area of airport digital strategy is currently lacking. With passenger experience the key driver in airport IT investment, it is becoming increasingly important to analyse the impacts of these digital technologies on passenger satisfaction.

In recent years, the structure of the airport industry has faced major changes. Historically, the airport industry was heavily subsidized and regulated by government, resulting in the need to compete with other areas of public ownership such as healthcare, education and defence (Freathy and O'Connell, 1998). Traditionally managed and regulated as public utilities, airport service offerings were fairly homogeneous across passenger groups with no particular emphasis on airport passengers as 'customers' (Liebert, 2013; Graham, 2013). In the late 1980s, however, changes began to take place in the way that airports were governed, funded and managed (Park, Kim, Seo & Shin, 2011). Issues with economic regulation, such as inefficiency and high financing costs, have caused

governments to progressively privatise airports in a bid to improve operating efficiency and place a greater focus on airport commercialisation (Freathy and O'Connell, 1998; Galeana, 2008; Hooper, 2002).

The shifting focus of airports as commercial enterprises has encouraged airport management to consider the importance of revenues and customers in reaching commercial goals (Gupta & Arif, 2013; Liebert, 2013). However, in the face of privatisation, aeronautical revenues have become significantly strained, resulting in a focus of building non-aeronautical revenue streams. Aeronautical charges, such as levies charged to airlines for facility usage, have largely remained stagnant in the last 20 years (Freathy and O'Connell, 2012). Through offering lower charges on aeronautical fees and levies, airports aim to stimulate demand from airlines, resulting in an increase in passenger traffic volumes (Starkie, 2008; Morrison, 2004). As a result, the profitability of non-aeronautical revenue streams has increased over the last two decades. Where the management of passengers and aircraft was once the sole interest of airports, the focus has now shifted to reducing revenue dependency from the aviation business cycles and diversifying income streams through a variety of other revenue items such as retail, parking, real-estate and other commercial activities (Graham, 2013). This can be witnessed by the growing value of non-aviation revenue over time. A study conducted by the Airports Council International found that 41% of airport revenue was based on non-aeronautical income streams in 1983. By 1998 non-aeronautical revenue accounted for almost 50% of total operating revenue (Graham, 2008). As the focus continues to shift towards non-aeronautical revenue, airports are no longer merely transition points for passengers between travel destinations, but rather business hubs offering a variety of products and services to targeted passenger market segments.

With the perception of airport passengers as customers, the strategic response has led to an increased focus on customer satisfaction. Research has shown that positive passenger experience correlates to eased and relaxed passengers, leading to repeat business, higher spending rates and, ultimately, increased revenues (Jarach, 2001). Airport management regularly measure passenger satisfaction in numerous functional areas including passenger processes, airport facilities and customer services (Rhoades et al. 2000). By measuring customer satisfaction and experience, airport management are better able to understand the unique requirements of the various passenger markets they serve. Airport passenger satisfaction and service quality has also become the subject of considerable academic attention. Several studies conducted on airport passenger satisfaction have identified similar issues impacting on customer satisfaction, such as speed through the airport, cleanliness, gate experience, retail availability and staff interaction (Eboli and Mazzulla, 2009). Like many other industries, airports have turned to digital technologies to improve customer experiences. Numerous airports around the world have begun investing in digital solutions such as mobile apps, self-service check-in, baggage drop, and way-finding maps as a means to improve customer experience issues.

Airports globally are implementing, or beginning to implement digital technologies to enhance customer experience. The combination of airport business goals and changing passenger expectations has resulted in an increase in the adoption of digital technologies. Passenger issues such as finding suitable car-parking, navigating within the airport, determining destination information, reducing boredom during wait times and finding baggage are being resolved through the implementation of digital technologies. Various digital solutions, such as Smartphone applications and self-service kiosks through to biometrics and augmented reality are being deployed across airports in a bid to improve airport service offerings and enhance passenger experiences.

In example, London's Heathrow Airport has introduced a Smartphone application focused on easing passenger journey to and through the airport. The mobile app offers features such as live flight updates, car park booking, interactive terminal maps, shop and restaurant listings, weather and city guides and an airport journey planner. Additionally, the airport also employs Bluetooth passenger tracking, allowing for information on passenger movements throughout the airport including queues, check-in and security areas. Through these digital applications, the airport is able to discover bottlenecks in the passenger process and reduce queue times, allowing for a more seamless passenger journey and ultimately enhancing airport experience.

Copenhagen Airport also offers a passenger Smartphone application taking the idea of interactive terminal maps a step further through the incorporation of augmented reality. The airport is the first globally to use augmented reality in an application, which will play a large step in airport way-finding of the future. This application is another example of improving customer experience through easing their journey.

Digital technology is not only being used within airports to improve passenger processing, but also the airport environment. Amsterdam's Schiphol Airport implemented an 'Airport Park', complete with interactive floor and walls. The Airport Park offers travellers not only the look of being in a park, but through sensory recognition technology, also the feel. In order to engage with customers and develop an ambient setting, Brisbane Airport has recently deployed two large LED screens in the international departures area, allowing airport visitors to display personalised text messages.

As airports continue to focus on commercial (non-aviation) pursuits, the importance of passenger engagement and experience has never been higher. Through an analysis of the uses and impacts of digital technology implemented in airports, we aim to determine the ways in which digital strategy positively influences customer perceptions of airport service quality. Specifically, this study will:

1. Integrate the concepts of digital strategy and airport service quality to explore a link between digital strategy implementation and airport value.
2. Provide an enhanced understanding of the current digital practices in leading airports. This study takes a customer-focused view of digital strategy adoption, and provides management with a practical means of integrating digital technologies and service quality aspects.

## BACKGROUND

In this section we consider the relevant literature on airport service quality and digital strategy. We structure our literature into three sections, being: airport service quality dimensions, definitions of digital business strategy and the current uses of digital technology in airports. This review will reveal the complexities of airport service quality management and the benefits that a digital strategy can provide. Upon completion of the review a framework has been developed in order to provide an understanding of the ways that digital strategy influences airport service quality, thereby providing value to airports.

### Airport Service Quality

The overall service within an airport is provided by various airport *service packages* including airlines, customs and immigration officials and handling agents. Depending on the requirements of the passenger interacting with these services, differing expectations of quality will likely exist (Jarach, 2001). As a result of these varying services offerings and a heterogeneous range of passengers, airport service quality is a multi-dimensional concept that can often be difficult to measure accurately. According to Lubbe, Douglas and Zabellis (2011) the characterisation and measurement of airport service quality must involve the passengers themselves in order to yield accurate results. However, much of the research up to now has defined and measured airport service quality through developing a list of indicators from various airport stakeholders (Fodness and Murray 2007). There are limited studies available that aim to determine passengers' perception of airport service quality and literature is lacking about conceptual and empirical work in the area of airport service quality.

Bogicevic et al. (2013) analysed over 1000 traveler comments posted on an airport review website in order to identify the most frequent variables that impact airport service quality in order to determine the key drivers of customer satisfaction or dissatisfaction. The authors found that dining options, signage and security-checks were the major dissatisfiers of customer experiences, and cleanliness was the only major satisfier. Other areas of airport service that influenced customer satisfaction or dissatisfaction included staff, shopping, accessibility and Wi-Fi. These findings show that improvement of the dissatisfiers, and enhancement of the satisfiers would lead to an improvement in overall customer satisfaction in airports. The findings of the study are consistent with those of Eboli and Mazzulla (2009) who found that certain services offered within airports, such as; helpfulness of personnel, airport appearance and signposting, availability of restrooms, and availability and frequency of bus links are not significant to customer perceptions of overall quality. These findings correlate with Bogicevic et al's (2013) in that the services analysed in this study may be attributed as dissatisfiers as they do not necessarily improve perception of quality but rather, if these services were lacking, would result in dissatisfaction. The results of these studies suggest that the effects of dissatisfiers in airport environments need to be considered and reduced in order to ensure that the effect of airport satisfiers is not moderated.

Through an analysis of existing literature and input from various stakeholders, Rhoades et al. (2000) developed a list of key quality indicators including: parking capacity, car hire services, shopping and restaurant services, restrooms, passenger departure areas, baggage retrieval systems, flight information systems and ground transportation. The study found that the greatest determinants of quality within airport services were passenger service issues, airport access, airline-airport interface and inter-terminal transport. According to Rhoades et al, these factors have the greatest influence on customer perception of airport service quality. The design of the study took in to account airport industry factors from passenger viewpoints; however, no passengers were actually interviewed as part of the study.

Chen (2002) focused on developing benchmarks of quality through identifying passenger quality requirements. The items for quality benchmarks were identified through interviews with various stakeholders including passengers, airline companies, forwarders, scholars and airport management. In support of Rhoades et al's findings, Chen found three major service quality attributes that impacted on airport service quality including: convenience of transport and accessibility to outside the airport, information services, and interior design and

layout. Similarly, Magri and Alves (2005) found these same quality attributes were most important to airport passengers, with more specific indices identified such as availability of seating, operational facilities (such as elevators, luggage trolleys, seats and signage) and aesthetics during wait times.

Magri and Alves' (2005) study also found that customers valued airport efficiency and comfort over aesthetics. The authors state that this may indicate that efficiency and effectiveness of airport function takes precedence over visual appeal and entertainment. Alternatively, Widarsyah (2013) found that although access, services and facilities, and information services were important facets to customer perception of airport service quality, the airport environment was found to have the greatest impact on passenger perception of quality. Research by Lubbe, Douglas & Zambellis (2011) found that a passenger's trip purpose and the frequency of travel can influence their perception of airport service quality. Differences in the passengers surveyed in each study may have resulted in these contrasting findings. This indicates that measurement of airport quality indicators is multi-dimensional, with many varying influences on passenger perceptions of quality.

Fodness and Murray (2007) developed a conceptual model of service quality in airports by analysing customer expectations of airport service quality. Through a thorough review of relevant literature and a qualitative exploration into customer airport experiences, the constructs of a conceptual model of airport service quality were identified, including:

- a) The functionality of airports; namely the efficiency and effectiveness of airport layout, signs and symbols.
- b) Customer interaction within the airport. This related to the accessibility of the airport and the opportunity to gain advice if required.
- c) The diversion characteristics; which relates to the ability of customers to participate in recreational activities during wait times, as well as the décor and airport maintenance.



Figure 1: Conceptual Model of Airport Service Quality (Fodness and Murray, 2007)

As the development of the model was based on qualitative passenger feedback, the study provides a useful insight into not only factors of airport service quality that are important to customers, but also a framework to understand the various aspects of airport service quality identified in literature.

It is interesting to note that many of the quality indicators identified within each dimension of airport service quality can be correlated to the findings of previous studies in airport service quality. For example, research findings of the importance of quality aspects such as access, layout and information services may be associated under the dimension of interaction in Fodness and Murray's model. Additionally, interior design and environment would fall under the dimension of diversion (Rhoades et al, 2010; Chen, 2002; Magri and Alves, 2005; Widarsyah, 2013).

### Digital Strategy

Mithas et al. (2013) define digital strategy as the extent to which a firm engages in any category of IT activity as a strategic response shaped by industry conditions. Similarly, Woodward et al. (2013) posit that digital strategy is defined as the strategic use of information technology within a firm. Traditionally, IT has been employed as a "functional level strategy that must be aligned with the firm's business strategy" (Bharadwaj et al. 2010, p. 1). However, as discussed previously, the impact of digital technologies has resulted in the strategic application of IT. Digital business strategy allows organisations to synchronise business and information technology to develop competitive advantage, particularly due to the ability of digital technology to engage with customers and gain previously unavailable information (Mithas and Lucas, 2010; Prahad and Krishnan, 2002).

Verhoef, Reinartz & Krafft (2010) present a conceptual model of customer engagement (Figure 2), which outlines that customer engagement involves behaviours such as blogging and customer-to-customer interactions, which are affected by customer characteristics, firm initiatives and the environment. Consequently, customer engagement provides marketing metrics that assists firm performance. Digital technology provides organisations with the ability to effectively engage with customers, allowing for the benefits suggested through Verhoef et al’s (2010) model.

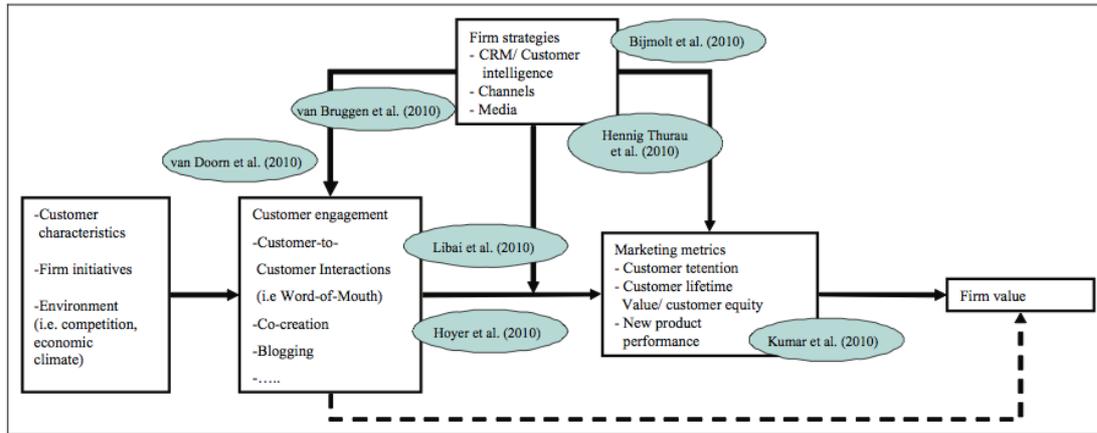


Figure 2: Conceptual Model of Customer Engagement (Verhoef, Reinartz & Krafft, 2010)

Research in the area of airport digital strategy is currently lacking. Recent literature in the determinants of airport service quality, coupled with developments in digital practices within airports has raised the need for an understanding of the interrelatedness of these two concepts. It is suggested that airport digital strategies lead to an improvement of passenger perceptions of airport service quality. Figure 3 outlines the relationships between the variables of digital technologies applied in airports and the proposed impacts of these on airport service quality. The framework is based on Verhoef, Reinartz & Krafft’s conceptual model of customer engagement (Figure 2) and Fodness and Murray’s conceptual model of airport service quality (Figure 1).

**Framework Development**

The model posits that, similar to customer engagement tactics in Verhoef, Reinartz & Krafft’s model, the development of airport digital strategies is a result of a variety of influencers, including customer characteristics, firm initiatives and the operating environment. In order for digital technologies implemented in an airport setting to effectively improve service quality, the technologies must aim to improve customer function, interaction, or diversion, consistent with Fodness and Murray’s findings. As these areas of service quality are most valued by passengers, it is anticipated that digital technologies implemented in these areas will lead to an improvement of airport service quality perceptions, subsequently leading to enhanced airport value.

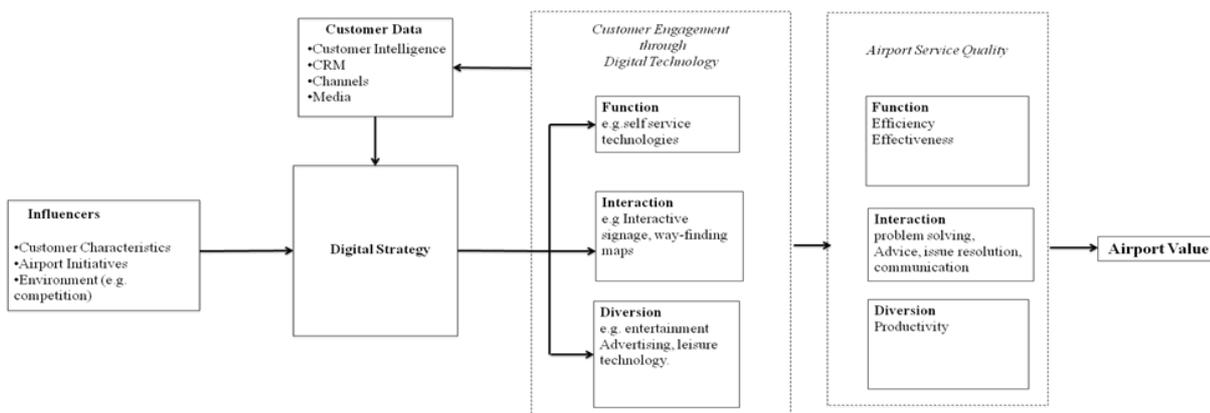


Figure 3: Airport Digital Strategy Model

## RESEARCH APPROACH

Thematic analysis will be used to examine and record the themes present in airport digital technology. A combination of the highest rated airports for passenger satisfaction, and mid-rated airports were subjects of the thematic analysis. Themes present across the data, such as the use of digital technology for customer function, interaction or diversion, will be categorised and analysed in order to gain an understanding of the current digital practices of the highest rated airports and how these differ from other airports. Additionally, the thematic analysis aims to determine whether common digital themes among technologies improve passenger perception of function, interaction or diversion.

To gain an in-depth understanding of current digital practices within airports, we classified common themes emerging from our literature review. Overall, we found two overarching themes of digital technology adoption that pertain to a) the stage of the airport journey and b) the airport service quality areas impacted. Within each theme, further dimensions emerged. These themes, presented in Table 1, were used to guide the research to ensure a thorough analysis of digital technologies applied during each stage of the passenger journey. Once we developed an initial list of technologies available within each airport across the customer journey, we then proceeded to determine whether the technology met the characteristics of function, interaction or diversion.

Table 1: Digital Strategy Themes Analysed and Corresponding Dimensions

Theme	Dimensions
<i>Airport journey stage</i>	
1 Arrival	Immigration   Customs   Baggage Claim   Arrival Services
2 Departure	Check – In   Security   Baggage Drop   Departure Services
3 Journey to/from Airport	Accessibility   Parking   Facilitation of Transport
4 Airside	Commercial   Information   Leisure
<i>Airport Service Quality Area</i>	
1 Function	Self service   Automated Processing
2 Interaction	Wayfinding   Information   Advice
3 Diversion	Commercial   Entertainment   Business   Productivity

The airports chosen for this study were selected based on the Skytrax Airport Awards for Service Quality. The Skytrax surveys evaluate traveller perceptions of service quality from over 160 countries, and assess a variety of airport service key performance indicators (World Airport Awards, 2014). As this is a research in-progress, we used only six airports in our preliminary framework development, listed in Table 2 below. We selected the three highest rating airports (A1 – A3), as well as three mid-rated airports (A4 – A6). In doing so, we were able to decipher if any particular differences were apparent between higher rated airports and their choice of digital technology. The following section presents the resulting outcome of the thematic analysis and classification of the technologies adopted based on the service quality attributes impacted.

Table 2: List of Selected Airports Utilized in Framework Development

No.	Airport	Skytrax Rating 2014
A1	Singapore Changi Airport	1
A2	Incheon Airport	2
A3	Munich Airport	3
A4	London Stansted Airport	49
A5	Gold Coast Airport	50
A6	Oslo Airport	51

## RESULTS AND ANALYSIS

Using publicly available information, including airport websites, magazine articles, annual reports and other documentation found through online resources, we initially developed a list of the technologies available at airports A1 – A6 (see Table 2). Each item of technology was then analysed for the stage of the customer journey it is used, as well as whether the technology provides travellers with enhanced function, interaction or diversion abilities. The results have been synthesised in Table 3.

Table 3: Digital Technology in Airports

Airport	Function	Interaction	Diversion
Changi Airport Rating:1	RFID Bag Tag	Social Media Pages	Digital Tree Sculpture
	Immigration Clearance System	Mobile Application	Xperience Zone
	Self-service Check-In	Digital Wayfinder	WiFi
	Self-Service Bag Drop	Digital Advertising	iConnect Lounge
	Self-Boarding Gates	Customer Feedback System	Gaming Deck
Incheon Airport Rating: 2	Self-service Check-In	Wayfinding Maps	Christie MicroTiles (Digital Displays)
	Immigration Clearance System		WiFi
	Self- Boarding Gates	Mobile Application	
Munich Airport Rating: 3	Self-service Check-In	Wayfinding Maps	WiFi
	Self- Boarding Gates	Mobile Application	MetaTwistTower (Digital Displays)
	Self-Service Bag-Drop	Social Media Pages	
	Online Booking- Car park		
London Stansted Airport Rating: 49	Self-service Check-In	Mobile Application	Digital Screens
	Smart access security gates	Social Media Pages	WiFi
	Immigration Clearance System		
	Online Booking- Car park		
Gold Coast Airport Rating: 50	Immigration Clearance System	Social Media Pages	WiFi
	Self-service Check-In		
	Online Booking- Car park		
Oslo Airport Rating: 51	Immigration Clearance System	Way finding kiosks	Digital Screens
	Self- service Check-in	Social Media Pages	WiFi
	Self-service bag-drop		
	Online Booking- Car park		
	Self-Boarding Gates		

### Function – Seamless Passenger Processing

The airport service quality area of function relates to the efficiency and effectiveness of airport customer processes. The analysis has shown that technologies that provide improved function for passengers are largely adopted amongst all airports analysed. These include a higher adoption of self-service technologies, as well as the automation of previously manual, staff-led processes, such as immigration clearance and baggage drop. Technologies that improve function are available at almost all points of passenger processing, including check-in, bag-drop, security, boarding and immigration. Improvements in biometric and radio-frequency technology have allowed for airports to increase the efficiency of passenger processing without compromising security issues.

### Interaction – Service Enhancement

The area of interaction within airport service quality relates to the communication of information between the passenger and the airport. Digital technologies applied to this area have allowed for a two-way communication process between the airport and the passenger. Through the use of social media and interactive digital screens,

airports are now able to gain valuable customer information that was previously unavailable. Additionally, the airport passenger is constantly engaged with the airport throughout the entire passenger journey. Many of the mobile applications offered by airport provide 'push notifications' ensuring that passengers are constantly up-to-date, and social media pages provide the airport with a tool to build upon customer relationships. The benefit of enhanced interaction through digital technology is two-fold: passengers are able to find customised, detailed information efficiently and in return airport management are able gain valuable insight in to customer behaviour and needs. It is interesting to note that Changi Airport offers customers a direct customer feedback system allowing customers a clear channel of interaction. This digital technology provides real-time customer data in a simple user friendly method.

### **Diversion – Enhancement of Brand Perception**

The area of diversion relates to the general airport environment, including aesthetics and productivity provided to customers. WiFi was common amongst all airports analysed, and in many cases the use of digital screens and signage has become common. These screens are used to display information to passengers including airport updates and commercial advertising. Although these may be considered as an interaction technology, the use of these screens largely remains to be aesthetic, and so were categorised as diversion. Incheon Airport and Munich Airport offer more advanced digital screens, which present more as architecturally designed displays. This may suggest that certain digital technology is also used by airports to create a sense of place in order to enhance passenger perceptions of the airport. Of the six airports analysed, it can be seen that Changi Airport offers the largest array of diversion technologies used for entertainment purposes. The Digital Tree Sculpture, gaming deck and Xperience Zone provide passengers with an entertainment utility during wait-time within the airport. Changi Airport's iConnect lounge offers free internet terminals, laptop access area, a gaming zone, as well as an interactive content display screen allowing passengers to choose what to view on the TV screens.

## **DISCUSSION AND CONCLUSION**

The need for digital strategy research in the airport industry is evidenced by the increasing trend of digital technology adoption within airports. Academic researchers are yet to explore the strategic use of digital technologies in an airport setting, and its impact on customer experience. As deregulation and privatization continues, airports will increasingly strive to improve customer experience to gain competitive advantages. Trends in digital technologies cannot be ignored, as airports globally are investing in a variety of technologies with the aim of improving customer satisfaction.

As per the model, technology used to enhance function related service quality areas were mainly self-service processing technologies. Digital technologies that offer automated processing provide passengers with increased efficiency and effectiveness during tasks involved in their journey. Additionally, those technologies that enhance passenger services provide a direct benefit to passenger interaction with the airport. These technologies are focused on improving communications with customers and providing information services resulting in the reduction of issues with navigation, access and way-finding. Finally, digital technologies that are focused on providing travellers with some form of diversion during wait times assist in creating an ambient environment and enhancing the passenger experience. As a result of the thematic analysis, we found three major themes across airport digital technology.

The first of these, and perhaps the most prominent among all airports, is the improvement of function through *seamless passenger processing*. Self service technologies have become the norm for many airports, and are continuing to become available within various aspects of the passenger processing journey. These technologies allow passengers to not only take control of processes within their journey, but also enhance the efficiency of processing points

Secondly, improved interaction through digital technologies provided passengers with *service enhancement*. A majority of the airports analysed have a social media presence, allowing for a constant two-way interaction between the customer and the airport. Additionally, interactive assistance, in the form of way-finding screens, kiosks and other virtual technologies are gaining prominence amongst the airports analysed. It is interesting to note that interaction is available across the entire passenger journey, from the journey to the airport through to post-travel, allowing for constant engagement and service enhancement.

Lastly, technology used to provide diversion during wait-times was found to consist of either tools for customers (whether they be business, commercial or entertainment), or for aesthetic purposes, allowing for the *enhancement of brand perception*. In terms of passenger tools, WiFi availability is a norm amongst airports, allowing passengers to be constantly connected. It is interesting to note that of the six airports analysed, only Changi Airport, the highest rated, also provided the greatest level of customer focused diversion technologies. In addition, Incheon Airport and Munich Airport, rated second and third respectively and were the only airports to

provide architecturally designed digital displays. The remaining airports, which were rated 49-51 did not necessarily offer any uniqueness through their digital signage, nor provide the same level of passenger interaction through their digital technology offerings. Due to the mixed technologies adopted in this area, it may suggest that the diversion technologies offered to passengers are what allows airports to differentiate amongst competitors. These technologies are strategically used to engage with customers and enhance their experience.

Currently, the findings indicate that airport digital technologies are used to improve the passenger experience through the three themes identified, including Seamless Passenger Processing, Service Enhancement and Enhancement of Brand Perception. This suggests that airports incorporating these three themes in to a digital strategy are able to enhance the airport service quality areas of function, interaction and diversion through their digital technology offerings. The comparison of technologies adopted between higher, and mid-rated airports also shows that function-related technologies are the 'norm' among all airports, however higher rated airports are continuing to drive further automation and self-processing technologies for passengers. Additionally, in the area of interaction, Changi Airport, the highest rated in the Skytrax surveys, offers a large amount of interaction technologies, showing that the airport has a higher number of communication channels between passengers and the airport. Finally, technology adopted within airports for diversion is predominately an offering of WiFi connectivity, however higher rated airports are offering a larger number of diversion technologies, which also include those that enhance the airport aesthetics.

It is important to note however, that the alignment of digital technology and service quality is a multifaceted notion consisting of numerous aspects that impact customer satisfaction. Berkley and Gupta (1994) developed an Information Technology alignment model that claims that IT can be used to influence service quality through improving factors such as tangibility, responsiveness and reliability. Furthermore, the link between service quality and customer satisfaction has also shown a strong correlation. Woodside's model (1989) suggests that overall customer satisfaction is a function of service quality, and is impacted by various service encounters throughout the customers journey. Oh (1999) found that satisfaction is influenced by a combination of perceived customer value and price.

The present model developed on the impact of Digital Strategy on airport service quality and satisfaction is currently misaligned with various service quality models in literature. As the research continues, service quality models will be further explored in order to align the current framework on Airport Digital Strategy with service quality and satisfaction models. Furthermore, the effect of the technologies adopted by airports will be further analysed and the influence of these themes on an Airport Digital Strategy Framework will become more apparent.

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