

Market Forces

Volume 18, Issue 2

ISSN: 1816-8434(Print), 2309-8660 (Online)

Home Page: <https://kiet.edu.pk/marketforces/index.php/marketforces>

DOI: <https://doi.org/10.51153/mf.v18i2.635>

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Manuscript Information: Retrieved July 31, 2023. Revised, October 25 23, Accepted November 15, 2023. Available online: December 28, 2023.

Citation:

Duaa, S., Wajidi, E. Tawfik, Y. (2023). The impact of technological advancement in airports on passenger convenience At Jinnah International Airport Karachi, *Market Forces*, 18(2), 81-108

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Conflict of Interest

The author (s) declared no conflict of interest and have not received any funds for the project.

The Impact of Technological Advancement in Airports on Passenger Convenience At Jinnah International Airport Karachi

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Abstract

In the prevailing technology era, travelers prefer airports that provide self-service and other supportive technologies. These technologies increase travelers' enjoyment and satisfaction and enhance their confidence. Consequently, they develop a positive image of such airports. Given its importance, this study examined the effect of airport self-service technologies (ASSTs) on traveler confidence benefits (TCBs) and the impact of airport-supporting technologies (ASTs) on traveler enjoyment. We also examined the impact of traveler confidence benefits (TCBs) and traveler enjoyment (TE) on traveler satisfaction (TS). The study also explored the effect of traveler satisfaction (TS) on airport image (AI). The study focuses on the local and international passengers traveling from the Jinnah International Airport, Karachi. We distributed 450 questionnaires in the local and international lounges on different days and times, and we received 415 questionnaires. The study found airport self-service technologies (ASSTs) promote traveler confidence benefits (TCBs), and airport supporting technologies (ASTs) positively affect travelers enjoyment. The study also documents that traveler confidence benefits (TCBs) and traveler enjoyment stimulate traveler satisfaction (TS). The study also found traveler satisfaction (TS) positively affects airport image (AI).

Keywords: *Airport image (AI), airport self-service technologies (ASSTs), airport supporting technologies (ASTs), traveler enjoyment (TE), travelers confidence benefits (CCBs), customer*

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satisfaction (TCBs), and Jinnah International Airport.

Introduction

Airline careers in the last few decades have adversely suffered due to high operating costs, intensive competition, and low confidence and trust of air passengers (Zhang et al., 2022). Airlines' growth and sustainability profoundly depend on skilled airport staff, and reducing passengers' long waiting times (Rassu, Coni, and Maltinti, 2023). Apart from other measures, this will decrease the consumers' negative perceptions of the airlines, leading to positive trust and confidence (Rengarajan et al., 2021). Air travelers' reliance on technology has increased significantly in this technological era. Therefore, airlines must spend considerable resources on airport self-service and support technologies (Suthatorn & Charoensukmongkol, 2023; Grybauskas, Stefanini, & Ghobakhloo, 2022). Consumers often develop the region's image based on their perception of the airport (Arasli, Saydam, Jafari, & Arasli, 2023). The survival of firms in this competitive era significantly depends on adopting new technologies and implementing and aligning them with their values (Rengarajan et al., 2021; Arasli, Saydam, Jafari, & Arasli, 2023). Nene and Zheku (2023) assert that to promote tourism in a country, policymakers must spend considerable resources to improve the image and décor of the airports. Airports world over offer various services to different stakeholders. They provide many facilities without compromising passengers' safety (Lee-Anant & Monpanthong, 2021). Many researchers found that most passengers consider the airport a shopping paradise due to the availability of duty-free and trendy goods and services and the large retail markets (Sun & Zuo, 2023). Many countries, including Dubai and Hongkong, have promoted tourism in their countries by spending considerable resources on their airports. Tourists in these countries enjoy spending time in the airports famous for shopping, entertainment, and recreational facilities (Lau, 2023).

So, the airport must deliver excellent service, increase customer satisfaction, and enhance the image of the airport to remain competitive in the aviation industry (Bakir et al., 2022). Passengers demand accurate online and self-service alternatives (Pholsook et al., 2023). Besides employees at help desks, consumers also use available technologies in airports (Chonsalasin et al., 2022). Service firms like airports use supportive systems to increase service effectiveness and efficiency (Dalkiran, 2023). Additionally, it focuses on increasing modern and convenient equipments to enhance customer satisfaction and the airports' image (Pamucar, 2021). Researchers believe that all these technologies directly and indirectly affect travelers' confidence (TC), traveler enjoyment (TE), traveler satisfaction (TS), and airport image (AI). Thus, the study objectives are as follows:

- I. To ascertain the impact of airport self-service technologies (ASSTs) on traveler

confidence benefits (TCBs).

- II. To ascertain the impact of Airport-supporting technologies (ASTs) on traveler enjoyment (TE).
- III. To ascertain the effect of traveler confidence benefits (TCBs) and traveling enjoyment (TE) on traveler satisfaction (TS).
- IV. To ascertain the effect of traveler satisfaction (TS) on airport image (AI).

Literature Review

Airport Self-Service Technologies (ASSTs)

Airport self-service technologies (ASSTs) enable customers to obtain airport-related services independently without the help of airport or service carrier employees (Al-Raisi & Krishnan 2023). Some examples of airport self-service technologies (ASSTs) are "Automated teller machines (ATMs), automated hotel checkout (AHC), online banking (OB), and Internet-based services (IBs). These discussed technologies in all organizations, including airports, have changed customers' perception of interacting with the organizations (Pamucar et al., 2021). These services are also beneficial to consumers and service providers. Service providers save human resource costs, and customers benefit from efficient services (Omran, Shamsi, & Emrouznejad, 2023). Due to technological development, travelers in most airports can purchase air tickets, obtain updated information on the status of their flights, select seats, and check baggage through technological interfaces (Soonthodu, Wahab, & Hassan, 2022). Extant literature documents that most passengers enjoy and appreciate airport self-service technologies (ASSTs). As a result check-in, passenger waiting has decreased significantly (Hole et al., 2023).

Airport Supporting Technologies (ASTs)

Airport supporting technologies (STs) include technological interfaces airport operators use to satisfy their customers, resulting in increased revenue, efficiency, and achieving relevant organizational objectives (Brady & Lin, 2023). Some examples of airport-supporting technologies (AST) include mobile chargers, internet facilities, smartphone apps, tour guides, and business centers. All these facilities enhance the image of an airport and increase passengers' enjoyment (Waris, Adisasmita, & Ramli, 2022). Researchers assert that all these facilities are also important for the tourism and service sectors (Utama, 2023). For example, based on empirical research, Kim, Song, and Lee (2023) found that airport-supporting technologies (ASTs) are important

precursors of guests' behavior attitudes and purchase intentions, including satisfaction. More recent literature documents that guest-related technological amenities such as universal battery chargers (USB) in the guest rooms improve the guest experience (Verma & Thakur, 2022). Many airports provide mobile indoor navigation application that provides terminal maps for the passengers, which helps passengers locate their respective terminals conveniently (Ramesh et al., 2023).

Traveler Confidence Benefits (TCBs)

Traveler confidence benefits (TCBs) reduce passengers' perception of risk and anxiety, resulting in trust, faith, and confidence in service providers (Fakfare, Promsivapallop, & Manosuthi, 2023; Herz et al., 2022). Similarly, Liu-Lastres, Mirehie, and Cecil (2021) document that TCBS reduces customers' risk perception and enhances airline trust. Risk perception is the subjective judgment of consumers about the negative consequences of purchasing goods (Ortega-Egea & García-de-Frutos, 2021). Trust also relates to the service providers' reliability and creditability (Zhuang, Luo, X., & Riaz, 2021). Confidence and trust are important for a sustainable relationship between customers and service providers (Nikbin, Aramo, Iranmanesh, & Ghobakhloo, 2022). Relational benefits are consequences of interaction between service providers and consumers, which are more complex in service industries like airlines (Prentice, Hsiao, Wang, & Loureiro, 2023). Most service providers, including airline, has the facility of self-service technologies (SSTs). As a result, human interaction between customers and employees has decreased considerably, but still, it has not reduced the significance of interpersonal relationships (Kaur, Ali, Hassan, & Al-Emran, 2021).

Traveler Enjoyment (TE)

Air travelers' enjoyment relates to hassle-free traveling without anxiety and tension (Rostamian, Ranjbarian, Shahin, & Ansari, 2023). Researchers believe technology is an important antecedent of enjoyment (Moon & Lee, 2022; Aziza, 2023). In the same context, Gulfranz et al. (2022) assert that enjoyment promotes customer satisfaction (Miao et al., 2022). As a result, it also reduces travelers risk perception (Arpah & Nabella, 2023) and enhances perceived personal control (Han et al., 2023). Air travelers often experience prolonged waits in lounges for the next connecting flights. Therefore, they spend their leisure time using personal and other gadgets in the airport lounge (Arpah & Nabella, 2023). Many researchers believe depriving passengers of technological gadgets may adversely affect their leisure time (Sulu, Arasli, & Saydam, 2021; Moon & Lee, 2022).

Traveler Satisfaction (TS)

Given the importance of satisfaction in service and manufacturing sectors, researchers have extensively examined it in different domains using different antecedents and consequences (Douglas & Weber, 2023). Extant literature documents that consumers'

satisfaction with goods and services depends on their pleasant experience. They will be highly satisfied if their experience exceeds their expectations (Bellizzi et al., 2022). A bad experience with goods and services will result in poor satisfaction (Munoz & Laniado, 2021). Initially, researchers thought satisfaction was a cognitive aspect, but later, they believed it included cognitive and emotional components (Dughi et al., 2023). Airlines in the current era operate at low margins, and the industry is highly competitive. Therefore, besides other factors, airlines must focus on travelers' satisfaction for competitive edge and sustainability (Al-Awadh, 2023). Researchers believe even empathetically listening to customers' complaints helps reduce the impact of low satisfaction (Treen & Yu, 2022). In the present era of social media, if organizations do not amicably resolve customers' complaints, most of them would share their bad experiences in the social media forums, resulting in an adverse brand image (Anastasiei, Dospinescu, & Dospinescu, 2023).

Airport Image (AI)

An airport is a huge setup. Consumers use this setup to travel and collect luggages (Abouseada, Hassan, Saleh, & Radwan, 2023). It is a complex system that demands effective management (Hwang, Kim, Joo, & Lee, 2022), coordination (Usman, Azis, Harsanto, & Azis, 2022), communication (Abdel-Gayed et al., 2023), safety of passengers, and customers satisfaction (Abouseada, Hassan, Saleh, & Radwan, 2023). Besides other factors, these aspects significantly contribute to building airport image (Saut & Song, 2022). Researchers assert that a reputable airport image promotes its reputation, credibility, and performance. Moreover, it attracts more airlines, passengers, and other stakeholders (Hwang, Kim, Joo, & Lee, 2022). To build a strong image, an airport must have a clear mission and vision aligning with its goals, values, and identities (Hwang, Kim, Choe, & Kim, 2023). Moreover, the mission and vision of the airport helps management in strategic planning, decision-making, and communicating with all the stakeholders (Martinez et al., 2021). The mission and vision of the airports must align with the protocols of the aviation industry and customers' needs (Thomas & Scandurra, 2023).

Airport managers must communicate their vision and mission using logos, slogans, and social media (Saut & Song, 2022). Personal interaction is important for building a brand image. Therefore, airports must invest resources in employees' development since they interact with the passengers. Airport management must also develop a culture of professionalism and accountability (Abdel-Gayed et al., 2023). Moreover, the airport management must reward their staff for achievement and contribution. Management can increase staff motivation, morale, and loyalty by developing a reward and achievement policy. All these factors, directly and indirectly, enhance customers' trust, satisfaction, and image of an airport (Usman, Azis, Harsanto, & Azis, 2022).

Hypothesis Development

Airport Self Service Technologies (ASSTs) and Traveler Confidence (TC)

Due to its many advantages, most banks, retail stores, and lodgings have adopted self-service technologies (SSTs). Some of the advantages of self-service technologies (SSTs) are they reduce labor costs (Moon & Lee, 2022), reduce waiting time (Kim, Park, Uhm, & Lee, 2023), and increase the efficiency of service delivery (Antwi et al., 2021). Researchers have different opinions on the effect of self-service technologies (SSTs) on customer satisfaction (Kim, Song, & Lee, 2023). Some researchers believe that self-service technologies (SSTs) reduce interactions between customers and employees, and this dehumanization may adversely affect customer relational benefits (Moon & Lee, 2022). Extant literature suggests that customers with high anxiety towards technology do not prefer airport self-service technologies (ASSTs). Similarly, many researchers argue that technology reduces the relational benefits between customers and businesses (Hole, Mei, Engh, & Engen, 2023). Moreover, it provides different avenues for developing customer relations (Fakfare, Promsivapallop, & Manosuthi, 2023). For example, confident customers, while using airport self-service technologies (ASSTs), may feel they belong to the modern technological era, and their dependency on others may reduce significantly (Chiu & Nguyen, 2022). Frequent travelers have a complex and diversified need, which, according to many researchers, traditional service counters cannot fulfill (Moon & Lee, 2022).

In contrast, contemporary air travelers can choose their complex traveling plans based on the wide spectrum of airport self-service technologies (ASSTs) options. These options of self-service technologies (SSTs) increase customers' control perception (Kim, Song, & Lee, 2023). Human interaction with service employees is inevitable. Self-service technology (SSTs) reduces unnecessary interactions and long waiting (Antwi et al., 2021). Many past studies found that airport self-service technologies (ASSTs) make the service process more efficient. These studies also show no negative correlation between risk perception and passengers using airport self-service technologies (ASSTs) (Hole, Mei, Engh, & Engen, 2023).

H1: Air Self-service technologies (ASSTs) positively affect travelers' confidence benefits (TCBs).

Airport Supporting Technologies (ASTs) and Travel Enjoyment (H2)

Air travelers use many other airport-supporting technologies (ASTs), such as tablet applications, for accessing information related to flight schedules and the status of their flights and managing their traveling requirements (Chatterjee, Kittur, Vishwakarma, &

Dey, 2023). Researchers document that contemporary travelers enjoy using technology-related applications, including internet, mobile chargers, and television, while waiting for their flights or connecting flights. Without airport-supporting technologies (ASTs), air travelers' traveling experience may be unpleasant (Fulghum, 2022; Li, 2023). Abou-Shouk, Gad, and Abdelhakim (2021) assert that passengers use their devices for hedonic purposes such as "reading, video watching, social media, and online chats." At the same time, many passengers used supportive devices for business-related activities, including "checking emails, scheduling activities, or other official work" (Dos-Santos & Edra, 2023). Thus, many researchers argue that airport-supportive technologies (ASTs) allow passengers to perform daily official and social routines leading to enjoyment (Setiawan, Akbardin, & Permana, 2022; Li, 2023).

H2: Airport-supporting technologies (ASTs) positively affect traveler enjoyment (TE).

Traveller Confidence Benefits (TCBs), Traveler Enjoyment (TE) and Traveler Satisfaction (TS)

Many past studies have examined the association between TCBs, TE, and TS in different domains and found that they are positively correlated (Chang, Cheng, Kuo, & Cheng, 2023). Extant literature documents that consumers who enjoy shopping are more satisfied with the goods and services than those who do not (Zhou & Yu, 2022). In the context of the air industry, studies found that air travelers who experience positive emotions while traveling are more satisfied than those who experience negative emotions (Dinkoksung et al., 2023). Moreover, Setiawan, Akbardin, and Permana (2022) argue that interacting with service providers develops relational benefits that profoundly increase customer satisfaction (Montes-Guerra, Zapata-Cuervo, & Jeong, 2023). Studies document that traveler confidence benefits (TCBs) are important antecedents of traveler satisfaction (TS). Similarly, traveler enjoyment positively affects satisfaction (Lien, Hsu, Shang, & Wang, 2021).

H3: Airport traveler confidence (ATCBs) positively affects airport traveler satisfaction (ATS).

H4: Traveler enjoyment (TE) positively affects airport traveler satisfaction (ATS).

Traveler Satisfaction (TS) and Airport Image (AI)

Satisfaction is the core marketing concept. Researchers have extensively studied it in different contexts and domains (Isyana, 2023). Satisfaction is consumers' perception of what they expect in goods and services and what has been delivered to them (Saut & Song, 2022). Also, if the delivered value proposition exceeds customers' expectations, customers will be highly satisfied (Abdel-Gayed et al., 2023). Zhou and Yu (2022) argue

that satisfaction is consumers’ overall evaluation of the entire consumption process, leading to positive attitudes and purchase intentions (Isyana, 2023). From a firm perspective, customer satisfaction is important as it promotes sustainable customer relationships, leading to a large base of loyal customers and firm profitability (Grimonia, Rohman, & Suryadi, 2023).

Many past studies found a positive association between airport customer satisfaction and airport image (AI) (Rita & Odor, 2023). Traveler satisfaction (TS) is an important antecedent to the airport image (Douglas & Weber, 2023). Given its importance, airports spend considerable resources to enhance their image (Zhou & Yu, 2022). Besides other factors, airport image (AI) depends on affective and cognitive components. Both components are important for traveler satisfaction (TS) (Hlee et al., 2023).

H5: Traveler satisfaction (TS) positively affects airport image.

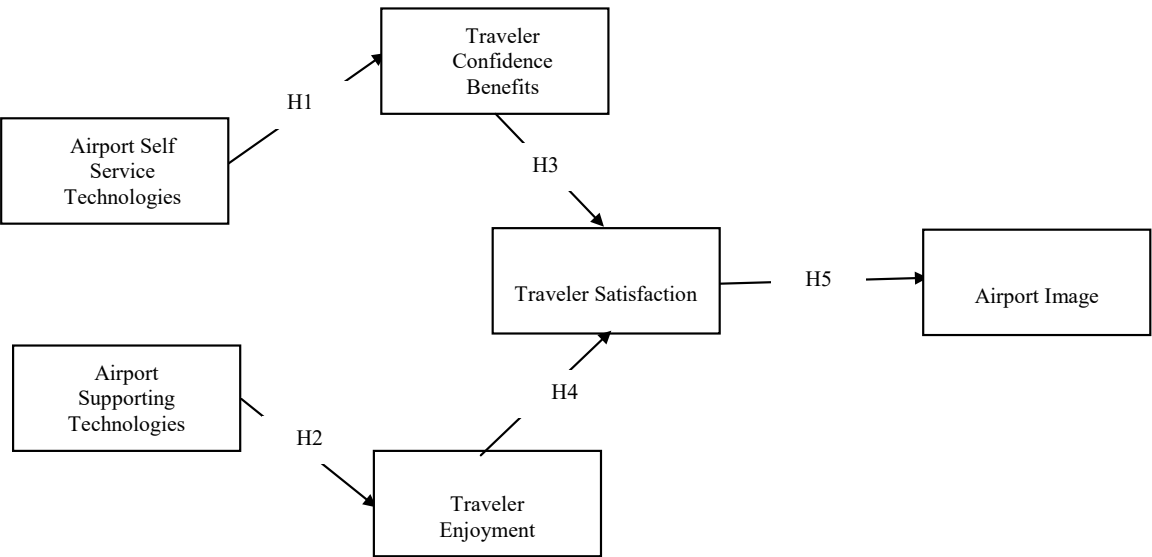


Figure 1: Conceptual Framework

Methodology

Research Design

Research is a blueprint that outlines the methods a study has adopted to collect the data and analysis used in the study. It helps researchers obtain reliable results by defining the research process without biases (Leavy, 2022). The study has adopted

quantitative research as it collected the empirical data based on the questionnaire and analyzed it to obtain the results related to the study's objectives (Cash, Isaksson, Maier, & Summers, 2022). The approach used in the study is deductive, as the study based on literature developed hypotheses that align with the objectives (Fischer, Boone, & Neumann, 2023). Subsequently, we tested the articulated hypotheses based on the data collected from the target population.

Population and Sampling

Population is the number of individuals or elements in a sample frame (Leavy, 2022). The study focuses on the local and international passengers traveling from the Jinnah International Airport, Karachi. We distributed 450 questionnaires in the local and international lounges on different days and times, and we received 415 questionnaires.

Pilot Test

As advised by many researchers, we undertook a pilot test based on 40 respondents. Before the pretest, we explained the aim and purpose of the study to the recruited respondents for the pilot test. The respondents completed the questionnaires in about thirty-five minutes. And they did not face any issues comprehending and understanding the questionnaire's content. Based on data collected through the pilot test, we ascertained the reliability and validity of the constructs and found they were within the prescribed range (Fischer, Boone, & Neumann, 2023).

Common Method Bias

Common method bias can infect the study's results. Either it will give inflated or deflated results. Besides other factors, it occurs if a researcher collects the data of independent and dependent variables from the same respondents (Bozionelos & Simmering, 2022). The study used Harman's single-factor approach to ascertain whether the data set is infected with common method bias. Using this approach, we found that the total variance for a single factor was less than 50%, suggesting the data is not infected with common method bias.

Scale and Measures

The study has adopted the entire questionnaire from different relevant studies. It has six latent variables and 21 indicators. We measured the responses using five Likert scales: five suggest high agreement, and one suggest low agreement. In Table 1, we have summarized constructs, sources, reliabilities in past studies, and items used in each construct.

Table 1: Scale and Measures

Constructs	Sources	Reliability	Items
Airport Self-Service Technologies	Bogicevic, et al. (2017).	0.753 to 0.830	3
Airport Supporting Technologies	Antwi et al. (2021).	0.756 to 0.856	3
Passengers Confidence Benefits	Hamdani et al. (2021).	0.787 to 0.845	3
Traveler Enjoyment	Bogicevic, et al. (2017).	0.772 to 0.837	4
Airport Satisfaction	Ryu and Park, (2019).	0.765 to 0.833	4
Airport Image	Ryu and Park, (2019).	0.758 to 0.812	4

Data Analysis

Researchers suggest using Smart PLS for data analysis as it has several advantages inducing it gives predictive power to the model and solves regression analysis concurrently. Following the advice of the researchers mentioned above, we have used a two-step analysis. In step one, we developed a measurement model (Memon et al., 2022) for the results related to reliability and validity, followed by generating a structural model (Cheah et al., 2020) for the results related to the hypotheses.

Respondents Profile

The respondents' profile gives readers information on the numbers and types of precipitants so that they can assess to whom the study findings apply. It also helps readers assess the generalizability of the results and find possible limitations. In Table 2, we have presented the summery of respondents' profile.

Table 2: Respondent Profile

Factors	Frequency	Percentage (%)
Genders		
Males	217	52.29%
Females	198	47.71%
Age Group		
18-24	100	24.09%
25-34	121	29.16%
35-44	110	26.51%
45-54	45	10.84%
55+	39	9.40%
Education Level		
Matric	50	12.05%
Intermediate	140	33.73%
Bachelor's	105	25.30%
Master's	103	24.82%

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PhD	17	4.10%
Gender		
Male	200	48.19%
Female	215	51.81%
Employment Status		
Employed	135	32.54%
Unemployed	160	38.55%
Student	96	23.13%
Retired	24	5.78%
Marital Status		
Single	225	54.22%
Married	190	45.78%
Household Income		
Less than 50,000	91	21.93%
50,000 - 100,000	172	41.44%
100,001 - 150,000	82	19.76%
Over 150,000	30	7.23%
Not Disclosed	40	9.64%

Results

Measurement Model

The study has adopted a two-step approach for results. Therefore, we initially developed a measurement model (Hair Jr et al., 2021) that shows the association between indicators and latent variables (Hair, 2021). Subsequent sections discuss the results related to reliability (Ahmed, Opoku, Olanipekun, & Sutrisna, 2022), validity (Hair Jr et al., 2021), and other required results. Figure 2 depicts the measurement model.

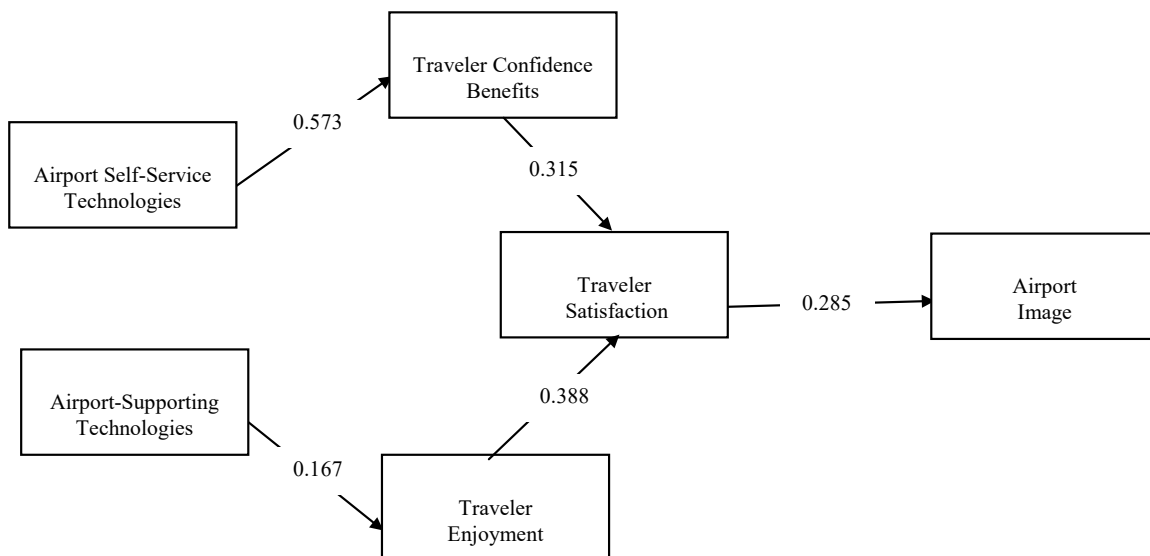


Figure 2: Measurement Model

Convergent Validity

Trivema (2022) suggests that Cronbach's Alpha values must be higher than 0.70 for internal consistency of constructs. Composite reliability values must be at least 0.70 (Davari & Rezazadeh, 2013), and AVE values must be at least 0.50 (Trivemap, 2022; Memon et al., 2021). Our results in Table 3 are within the prescribed limits, suggesting that the constructs have adequate convergent validity.

Table 3: Convergent Validity Analysis

Construct	Cronbach's Alpha	Composite Reliability	AVE
Airport Self-Service Technology (ASSTs)	0.742	0.912	0.556
Airport Supporting Technologies (ASTs)	0.775	0.805	0.815
Traveler Confidence Benefits (TCBs)	0.748	0.806	0.505
Traveler Enjoyment (TE)	0.741	0.826	0.678
Traveler Satisfaction(TS)	0.772	0.821	0.508
Airport Image (AI)	0.775	0.812	0.651

Discriminant Validity

Discriminant validity measures the empirical difference between two constructs (Voorhees, Brady, Calantone, & Ramirez, 2016). Researchers believe the constructs could be conceptually different, but analyzing whether they are empirically different is necessary. As Darwin and Umam (2020) advised, the study has assessed discriminant

validity using Fornell and Larcker’s (1981) criteria and the HTMT ratio presented in the following sections.

Discriminant Validity (Fornel & Larcker, 1981)

The results related to discriminant validity are presented in Table 4, showing that the correlations between a construct and other constructs are less than the square root of AVE, which is within the prescribed limit, suggesting the constructs are empirically different (Fornell & Larcker, 1981).

Table 4: Discriminant Validity Fornell and Larcker (1981)

Constructs	AI	ASSTs	ASTs	TCBs	TE	AS
Airport Image	0.807					
Airport Self-Service Technology	0.175	0.746				
Airport Supporting Technologies	0.422	0.282	0.846			
Traveler Confidence Benefits	0.082	0.198	0.411	0.711		
Traveler Enjoyment	0.311	0.255	0.352	0.308	0.823	
Airport Satisfaction	0.359	0.421	0.386	0.282	0.389	0.807

Discriminant Validity (HTMT)

The HTMT ratio is an advanced method for assessing the discriminant validity, and it does not have several limitations as found in Fornell and Larcker (1981) Criteria. Table 5 shows that HTMT ratios are less than 0.90, suggesting the constructs are empirically different.

Table 5: Discriminant Validity (HTMT Ratio)

Constructs	AI	ASSTs	ASTs	TCBs	TE	AS
Airport Image	-					
Airport Self-Service Technologies	0.189					
Airport Supporting Technologies	0.549	0.415				
Traveler Confidence benefit	0.137	0.388	0.553			
Traveler Enjoyment	0.366	0.330	0.563	0.549		
Airport Satisfaction	0.453	0.541	0.442	0.388	0.633	-

Hypothesis Results

The study, based on a structural model, tested five proposed hypotheses. We have presented structure model in Figure 3 and summary of results in Table 6.

Table 6: Hypotheses Results

Hypothesis	Beta	T values	P values	Results
Airport Self-Serv. Tech. -> Traveler Conf. Benefit (H1)	0.573	4.224	0.000	Accepted
Airport Supporting Technologies -> Traveler Enjoy (H2)	0.167	2.418	0.006	Accepted
Traveler Confidence Benefits -> Traveler Satisfaction (H3)	0.315	3.973	0.000	Accepted
Traveler Enjoyment -> Traveler Satisfaction (H4)	0.388	3.873	0.002	Accepted
Traveler Satisfaction -> Airport Image (H5)	0.285	2.740	0.006	Accepted

We found support for all the hypotheses. The results show that the strongest effect is between airport self-serving technologies (ASSTs) and traveler confidence benefits (TCBs) ($\beta=0.573$, $t=4.224<0.05$), followed by the association between traveler enjoyment (TE) and traveler satisfaction (TS) ($\beta=0.388$, $t=3.873<0.05$), traveler confidence benefits (TCBs) and traveler satisfaction (TS) ($\beta=0.315$, $t=3.973<0.05$), traveler satisfaction (TS) and airport image ($\beta=0.285$, $t=2.740<0.05$) and airport supporting technologies (ASTs) and traveler enjoyment (TE) ($\beta=0.167$, $t=2.418<0.05$).

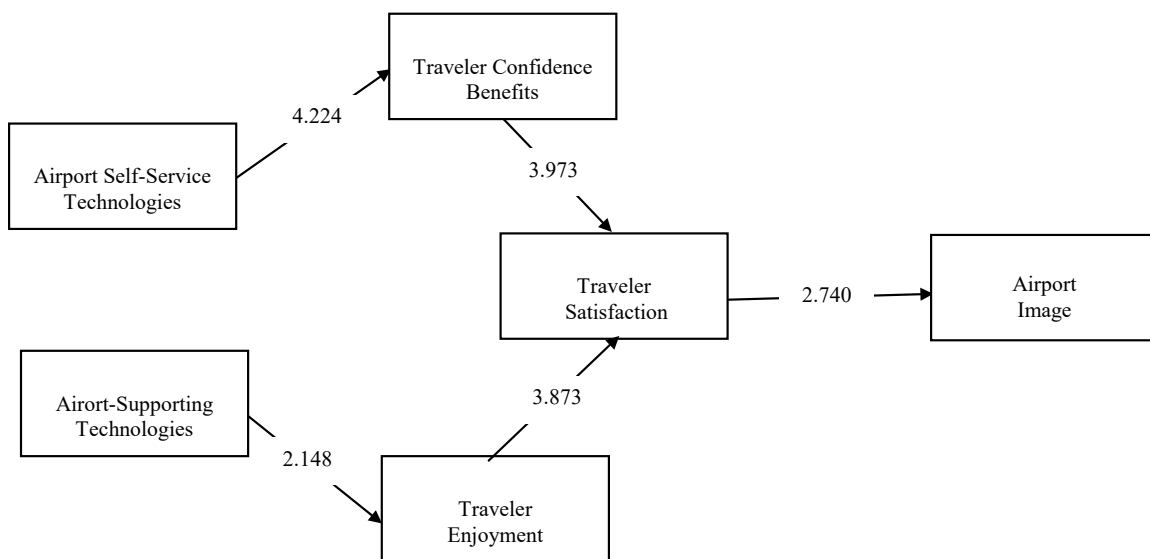


Figure 3: Structural Model

Discussion and Conclusion

Discussion

We proposed five hypotheses and failed to reject all of them. In the following paras, we have presented the results and discussed how they aligned with past literature.

We accepted Hypothesis 1 ($\beta=0.573$, $t=4.224<0.05$), stating airport self-serving technologies (ASSTs) positively affect traveler confidence benefits (TCBs). Frequent travelers have a complex and diversified need, which, according to many researchers, traditional service counters cannot fulfill (Moon & Lee, 2022). In contrast, contemporary air travelers can choose their complex traveling plans based on the wide spectrum of airport self-service technologies (ASSTs) options. This option of self-service technologies (SSTs) increases customers' feelings of control (Kim, Song, & Lee, 2023). Human interaction with service employees is inevitable. Self-service technology (SSTs) reduces unnecessary interactions, long waiting, and service backup (Antwi et al., 2021). Many past studies found that airport self-service technologies (ASSTs) make the service process more efficient. These studies also show no negative correlation between risk perception and passengers using airport self-service technologies (ASSTs) (Hole, Mei, Engh, & Engen, 2023).

Hypothesis 2 proposed that "airport supporting technologies (ASTs) affect traveler enjoyment (TE), which we failed to reject ($\beta=0.167$, $t=2.418<0.05$). Researchers document that contemporary travelers enjoy using technology-related applications, including internet, mobile chargers, and television, while waiting for their flights or connecting flights. Without airport-supporting technologies (ASTs), air travelers' traveling experience may be unpleasant (Fulghum, 2022; Li, 2023). Abou-Shouk, Gad, and Abdelhakim (2021) assert that passengers use their devices for hedonic purposes such as "reading, video watching, social media, and online chats." At the same time, many passengers used supportive devices for business-related activities, including "checking emails, scheduling activities, or other official work" (Dos-Santos & Edra, 2023). Thus, many researchers argue that airport-supportive technologies (ASTs) allow passengers to perform daily official and social routines leading to enjoyment (Setiawan, Akbardin, & Permana, 2022; Li, 2023).

Hypothesis 3 was about the "positive association between traveler confidence benefits (TCBs) and traveler satisfaction (TS)," which we accepted ($\beta=0.315$, $t=3.973<0.05$). Hypothesis 4 proposed that "traveler enjoyment (TE) positively affects traveler satisfaction (TS)," which we accepted ($\beta=0.388$, $t=3.873<0.05$). Extant literature documents that consumers who enjoy shopping are more satisfied with the goods and services than those who do not (Zhou & Yu, 2022). In the context of the air industry, studies found that air travelers who experience positive emotions are more satisfied than those who experience negative emotions while traveling (Dinkoksung et al., 2023). Setiawan, Akbardin, and Permana (2022) argue that interacting with service providers develops relational benefits that profoundly increase customer satisfaction (Montes-Guerra, Zapata-Cuervo, & Jeong, 2023). Studies document that confidence benefits (CFs)

are important antecedents of traveler satisfaction (TS). Similarly, traveler enjoyment (TE) positively affects travelers satisfaction (TS) (Lien, Hsu, Shang, & Wang, 2021).

Hypothesis 5 suggests that “traveler satisfaction (TS) positively affects airport image (AI)” which we accepted ($\beta=0.285$, $t=2.740<0.05$). Zhou and Yu (2022) argue that satisfaction is consumers’ overall evaluation of the entire consumption process, leading to positive attitudes and purchase intentions (Isyana, 2023). From a firm perspective, customer satisfaction is important as it promotes sustainable customer relationships, leading to a large base of loyal customers and firm profitability (Grimonia, Rohman, & Suryadi, 2023). Many past studies found a positive association between airport customer satisfaction and airport image (AI) (Rita & Odor, 2023). Traveler satisfaction (TS) is an important antecedent to the airport image (Douglas & Weber, 2023). Given its importance, airports spend considerable resources to enhance their image (Zhou & Yu, 2022). Besides other factors, airport image (AI) depends on affective and cognitive components. Both components are important for traveler satisfaction (TS) (Hlee et al., 2023).

Conclusion

Airline careers in the last few decades have adversely suffered due to high operating costs, intensive competition, and low confidence and trust of air passengers (Zhang et al., 2022). Airlines’ growth and sustainability profoundly depend on skilled airport staff and technologies reducing passengers’ long waiting times (Rassu, Coni, and Maltinti, 2023). Apart from other measures, this will decrease the consumers’ negative perceptions of the airlines, leading to positive trust and confidence (Rengarajan et al., 2021). Given its importance, this study has focused on Jinnah International Airport. It examined the effect of airport self-service technologies (ASSTs) on traveler confidence benefits (TCBs) and the impact of airport-supporting technologies (ASTs) on traveler enjoyment. We also examined the impact of traveler confidence benefits (TCBs) and traveler enjoyment (TE) on traveler satisfaction (TS). The study also explored the effect of traveler satisfaction (TS) on airport image (AI).

The study found airport self-service technologies (ASSTs) promote traveler confidence benefits (TCBs), and airport supporting technologies (ASTs) positively affect travelers enjoyment (TE). The study also documents that traveler confidence benefits (TCBs) and traveler enjoyment stimulate traveler satisfaction (TS). The study also found traveler satisfaction (TS) positively affects airport image (AI)

Implications

Airline travelers in the prevailing era prefer using airport self-serving technologies (ASSTs) to increase their enjoyment and confidence. They believe that these technologies are convenient and save a lot of time. Most airports have these facilities, but Jinnah International Terminal, Karachi, needs to provide more technologies for local travelers. Unlike in other countries, many local travelers are uncomfortable using these technologies. Thus, we suggest the airport depute employees to assist the passengers using airport self-service technologies (ASTs). This practice will increase the confidence of passengers who are uncomfortable using technology. Traveler satisfaction enhances the image of the airport. Therefore, the airport must focus on enhancing customer satisfaction.

Limitations and Future Research

The study has focused on Jinnah International Terminal, Karachi. Future studies may focus on other airports of other cities in Pakistan. The study used six variables in the study: traveler satisfaction (TS), traveler enjoyment (TE), traveler confidence benefits (TCBs), airport image (IA), airport self-service technologies (ASSTs) and airport supporting technologies (ASTs). In addition to the variables used in the study, other studies can also use variables such as perceived waiting time, psychological factors, emotional response, and perceived justice. Traveler satisfaction mediates (i) traveler confidence benefits (TCBs) and airport image (AI) and (ii) traveler enjoyment (TE) and airport image (AI), which other studies can use. Genders and other demographic factors have moderating effects on (i) airport self-service technologies (ASSTs) and traveler confidence and (ii) traveler enjoyment (TE) and traveler satisfaction (TS), which were beyond the scope of this study. Future studies can use them in their conceptual frameworks.

Annexure-1

Constructs and Indicators used in the questionnaire

Airport Self-Service Technologies

ASST1. The self-check-in kiosks are appropriately designed at Jinnah International Airport.

ASST2. Touch screen information kiosks were helpful to me at Jinnah International Airport.

ASST3. The self-service baggage drops were helpful to me at Jinnah International Airport.

Airport Supporting Technologies

AST1. The Terminals of Jinnah International Airport have enough business workstations.

AST2. Jinnah International Airport provides a free tour guide application.

AST3. The terminal seating zones have more than enough charging stations and USB ports.

Passengers Confidence Benefits

PCB1. There was less risk of something going wrong in Jinnah International Airport's environment.

PCB2. I trust in traveling from Jinnah International Airport.

PCB3. I know what to expect when I go to Jinnah International Airport.

Traveler Enjoyment

TE1. Spending time at Jinnah International Airport was not boring at all.

TE2. I enjoy staying at Jinnah International Airport.

TE3. I enjoy spending my leisure time at Jinnah International Airport.

TE4. Spending time at the Jinnah International Airport would be fun.

Airport Satisfaction

AS1. I am satisfied with the overall experience at the Jinnah Airport Terminal.

AST2. Jinnah International Airport was better than what I expected.

AST3. I am more satisfied with the Jinnah International Airport compared to other airports.

AST4. It was a good experience at the Jinnah International Airport.

Airport Image

AI1. Jinnah International Airport has a distinct image.

AI2. Jinnah International Airport has a reputable image.

AI3. I prefer traveling from Jinnah International Airport because of its image.

AI4. Jinnah International Airport is different than other airports.

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