

The Effect of Smart Airport Service Facilities on Passenger Satisfaction at Soekarno Hatta International Airport

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Abstract: Aviation is a very important part of transportation in every country, in 2020 it dropped dramatically due to the impact of the COVID 19 pandemic. In terms of maintaining the sustainability of the air transportation sector during and after this pandemic, it is necessary to innovate to respond to the crisis in the aviation industry. The Smart Airport Concept strategy contributes to intelligent transportation building security systems, providing better passenger services and experiences. This study found that smart airport service facilities have a significant role in increasing passenger satisfaction at Soekarno-Hatta International Airport. With a mediation R-square value of 0.574, the Mediation Analysis shows that accessibility, or mediator variables, play an important role in explaining the relationship. These results show that smart airport facilities affect passenger satisfaction directly and through the behavioral and psychological mechanisms mediated by them. These findings improve our understanding of how smart airport facilities correlate with passenger satisfaction.

Keywords: *Service Facilities, Accessibility, Service Quality, Passenger Satisfaction, Soekarno Hatta International Airport*

Introduction

Airports are one of the largest supporting infrastructures for air transportation facilities, all facilities that allow the economic process to run smoothly so that it makes it easier for humans to be able to meet their needs. Air transportation has become a popular choice to connect people and goods in many places, both between islands and countries, in a shorter time than other methods.

Soekarno-Hatta International Airport is abbreviated as SHIA or Soetta, with IATA code: CGK, ICAO: WIII formerly legally called Cengkareng Airport Tangerang Banten is the main gateway airport serving flights for domestic and international flights in Indonesia.

Companies that manage airport services and air traffic must prioritize the services provided to airport service users. COVID-19 emerged in early 2020 and had a major impact on the airport industry. In Indonesia, the adjustment of airport services is influenced by the emergence of “New Normal” or new habits. This research discusses how the Airport is addressing the development of innovations to respond to the crisis in aviation. Smart Airport technology is one way to improve innovation services and encourage employees to accept change.

According to (Faisal et al., 2020) and (Alabsi dan Gill, 2021) in the journal (Waris et al., 2023) that The strategy to improve services for service users is through the digital transformation of the Smart Airport concept which comes with the creation of collaboration between airport facilities, data facilities, and applications that facilitate the level of service at the airport.

This study aims to determine the influence of Smart Airport service facilities on passenger satisfaction at Soekarno Hatta International Airport in the era of the digital revolution 4.0 phenomenon in Indonesia as a rapid development of technology and information that

combines cyber technology and automation without involving human workers in the application process for passenger needs in an overall way. This will certainly increase efficiency in the work environment where time management is considered important and is needed by industry players through the Smart Airport concept approach in supporting the tourism strategic area at Soekarno Hatta International Airport.

Literature Review

Service Facilities (X1)

According to (Srijani, 2017) in the journal (Fakhrudin, 2021) Facilities are one of the measuring instruments of a service, which affects customer satisfaction. Because with the facilities, it can help customers in their activities and feel comfortable.

According to (Moenir, 2010) in the journal (Fakhrudin, 2021) related to services quoted in the book public service management is a process of meeting needs where the focus is on services provided to consumers to get satisfaction in fulfilling requests, as for the services discussed :

1. Airport Digital Lounge

According to (Putra, 2022) The Airport Digital Lounge is an integrated service center that combines airport information services with the most modern digital technology. This location has advanced digital technology and computer systems. The Airport Digital Lounge replaces the current information counter, the facility becomes an information center, which is a digital service to make it easier for service users to travel, as well as other supporting activities. The Airport Digital Lounge was opened on August 11, 2018 by the Minister of SOEs Rini Sumarno and the Minister of Correlation Budi Karya Sumadi at a seminar and exhibition organized by PT. Angkasa Pura II.

2. Self Check-In

According to (Andrian & Aldelweis, 2017) in the journal (Bintang & Ariebowo, 2024) Self Check-In is a machine or information system facility because of technological advances that aim to handle security requirements, procedures and assistance from the service of a machine and can be done independently, especially for passengers who do not carry luggage.

Quality of service (X2)

According to (Tjiptono, 2011) in the journal (Caniago, 2022) conveying that service quality is a highly expected level of excellence and control over the level of excellence, as to meet customer needs and desires.

Accessibility (Z)

According to (Prajalani, 2017) in the journal (Prawira & Pranitasari, 2020) accessibility has a definition, namely facilitating the convenience of which the procurement is shown for people with disabilities by applying it optimally so that equal opportunities in accessing various activities are achieved so that equal distribution of services in aspects of life following facilities and accessibility for people with disabilities is realized.

1. Skytrain

A mode of transportation to transfer passengers between Soekarno Hatta International Airport terminals 1, 2 and 3 and to the Airport Train Station. According to (Alkalah, 2016) skytrain is a type of transportation similar to LRT (Light Rail Transit), but in its operation this train is run automatically or without the use of a driver. The system used on this Skytrain is Automated Guideway Transit (AGT) with rubber tires equipped with guides and automatic drivers. The speed of this Skytrain can reach 60 km/h. In the case of this study, Skytrain is one of the facilities provided by PT. Angkasa Pura II at Soekarno-Hatta Airport to improve service to consumers.

Passenger satisfaction (X3)

According to (Supranto, 2011) in the journal (Putra, 2022) customers can generate a number of positive outcomes, including a harmonious relationship between the company and consumers, increased customer loyalty, positive word-of-mouth recommendations for the company, and a positive company reputation in the eyes of customers.

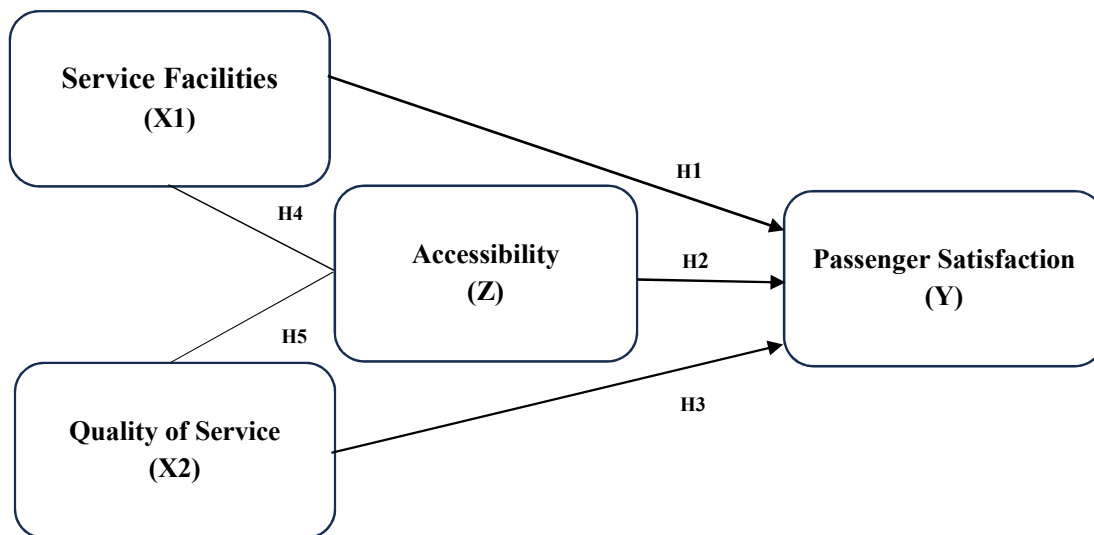
Hypothesis

Figure 1.1 Thought Framework

Hypothesis 1 : Service Facilities for Passenger Satisfaction

Hypothesis 2 : Accessibility to Passenger Satisfaction

Hypothesis 3 : Quality of Service to Passenger Satisfaction

Hypothesis 4 : Service Facilities for Passenger Satisfaction through Accessibility

Hypothesis 5 : Quality of Service to Passenger Satisfaction through Accessibility

H1 Service Facilities (X1) have a significant effect on Passenger Satisfaction (Y)

Service Facility (X1) shows that there is a suspected positive significant influence on Passenger Satisfaction (Y). This shows that better service facilities at Smart Airport at Soekarno Hatta International Airport can increase passenger satisfaction. Service facilities that are perceived based on aircraft passengers who will travel at domestic and international terminals through airport operations such as Smart Airport service facility technology, namely Self Check-In Service, a machine or passenger system facility to carry out self-check-in which is already based on 4.0 technology provided at Soekarno Hatta International Airport. Then the Airport Digital Lounge combines airport information services with sophisticated digital technology and computer systems and replaces the current counter information to facilitate the travel of service users at Soekarno Hatta International Airport.

H2 Accessibility (Z) has a significant effect on Passenger Satisfaction (Y)

Accessibility (Z) shows a significant positive influence on Passenger Satisfaction (Y). This means that the better and more accessibility at the Smart Airport, namely the Skytrain at Soekarno Hatta

International Airport, can increase Passenger Satisfaction. The perceived accessibility based on the transportation of this train operation is carried out automatically or Automated Guideway Transit (AGT) to involve passengers to move between terminals, namely terminal 1, terminal 2, and terminal 3 and also in the Integrated Building which is connected to the Airport Railway Station.

H3 Quality of Service (X2) has a significant effect on Passenger Satisfaction (Y) Service Quality (X2) shows a significant positive influence on Passenger Satisfaction (Y). This means that the better and improved the Quality of Service at the Smart Airport at Soekarno Hatta International Airport, the better it can increase passenger satisfaction. The perceived quality of service is based on the presence of aircraft passengers who will travel at domestic and international terminals through airport operations such as Smart Airport service quality technology to meet the needs and desires of passengers.

H4 Service Facilities (X1) have an indirect positive effect on Passenger Satisfaction (Y) through Accessibility (Z) Service Facilities (X1) do not have a direct significant effect on Passenger Satisfaction (Y) through Accessibility (Z). Based on the results of the study, the fourth hypothesis is unacceptable, from the results of the study it shows that service facilities do not have a direct effect on passenger satisfaction through accessibility with a recorded value of 0.351. So that accessibility cannot mediate the relationship between service facilities and passenger satisfaction.

H5 Quality of Service (X2) has an indirect positive effect on Passenger Satisfaction (Y) through Accessibility (Z) Service Quality (X2) does not have a significant direct effect on Passenger Satisfaction (Y) through Accessibility (Z). Based on the results of the study, the fifth hypothesis is unacceptable, from the results of the study it shows that Service Quality does not directly affect passenger satisfaction through accessibility with a value of -0.043. So that accessibility cannot mediate the relationship between Service Quality and passenger satisfaction.

Research Method

The research method is through a quantitative approach. The number of samples taken was 100 respondents taken from the passenger experience in using smart airport facilities at Soekarno Hatta International Airport which were used as samples in the study. In this study, data collection used a questionnaire by giving written questions to respondents who were distributed via social media such as Whatsapp, Instagram, and others. The results of data collection through questionnaires were measured and analyzed using SEM PLS. According to Ghozali and Latan in the journal (Prapitasari et al., 2019) PLS-SEM analysis usually consists of two sub-chapter models, namely the measurement model called the outer model and the structural model called the inner model. This research strategy aims to explain the relationship between variables that can help researchers test the influence of the influence set out in the hypothesis.

Tabel 1.1 Measurement of variables

Variabel	Operational Definition	Dimensions	Source
Service Facilities	Facilities are important objects to increase the level of satisfaction such as customer comfort.	- Spatial Planning - Space planning - Equipment - Lighting	According to (William dan Purba, 2020) in the journal (Fakhrudin, 2021)
Quality of Service	Quality of Service is a highly expected level of excellence and control over the level of excellence, as to meet the needs and desires of customers.	- Tangible - Reliability - Responsiveness - Guarantee or certainty - Empathy.	According to Tjiptono (2011) in the journal (Caniago, 2022)
Accessibility	Accessibility to the extent to which customers can easily acquire and use the product.	- Distance - Access to Location venues - Transportation Traffic flow	According to Sheth dan Sisodia (2012: 15) in the journal (Fakhrudin, 2021)
Passenger Satisfaction	Passenger satisfaction conveys the level of a person's feelings after comparing the performance results he feels with his expectations.	- Expectation Suitability - Interest in Visiting Availability Recommend	According to Kotler & Keller dalam Fandy Tjiptono, (2014) in the journal (Caniago, 2022)

Results and Discussion

Cross Loading

Table 2.1 Cross Loading Value Test Results of all Indicators

	Accessibility	Service Facilities	Passenger Satisfaction	Quality of Service
X1.1		0,786		
X1.2		0,771		
X1.3		0,710		
X1.4		0,748		
X2.1		0,734		
X2.2		0,777		
X2.3		0,716		
X2.4				0,839
X3.1				0,816
X3.2				0,848
X3.3				0,852
X3.4			0,809	
Y1			0,834	
Y2			0,847	

Y3			0,812	
Y4	0,786			
Z1	0,860			
Z2	0,824			
Z3	0,822			
Z4				

Source : Processed using Smart PLS

At the cross-loading value of the discriminatory validity indicator exceeding 0.7, the indicator is considered satisfactory. based on the results of data processing from Smart PLS listed in table 2.1 Cross-Loading, it shows that the values of some indicators have lower values than other construct variable indicators, and indicators with low values Compared to others, it is said that they do not have a strong bond of validity of discrimination.

SEM PLS Algorithm

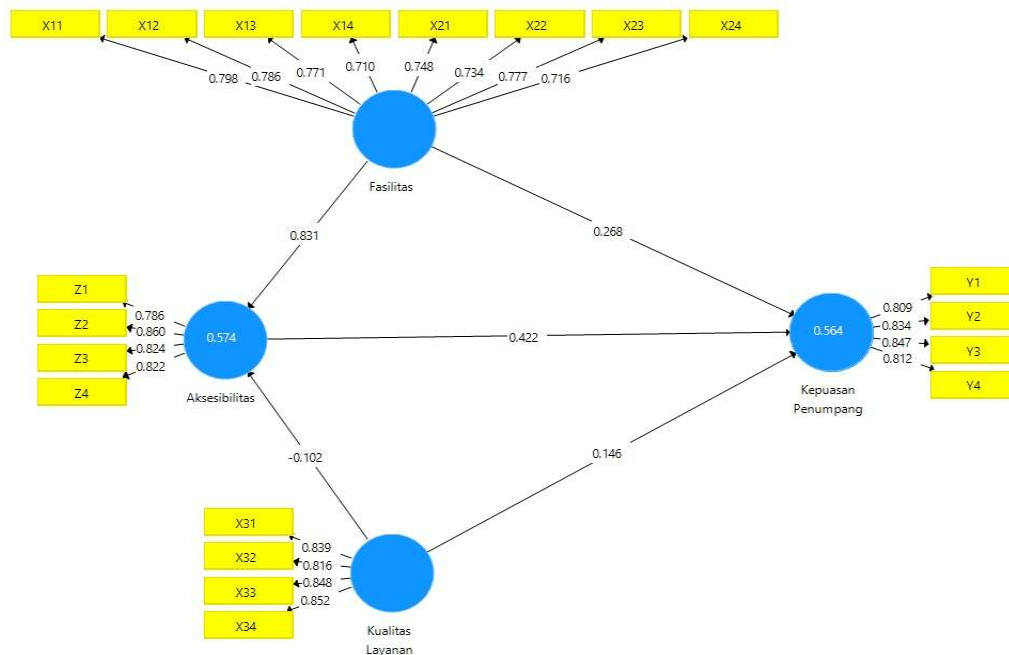


Figure 1.2 Processed using Smart PLS

Reability and Validity**Table 2.2** Composite Realiability

	Cronbach's Alpha	rho_A	Reliabilitas Komposit	Rata-rata Varians Diekstrak (AVE)
Accessibility	0,841	0,842	0,894	0,678
Service Facilities	0,893	0,897	0,914	0,571
Passenger Satisfaction	0,844	0,846	0,895	0,682
Quality of Service	0,860	0,862	0,905	0,704

Source : Processed using Smart PLS

To assess Reality, Cronbach's alpha values of reliability and Composite Validity are used. Reliability is considered quite satisfactory when Cronbach's alpha (Cr A) value has a good consistency value of >0.7 , Composite Reliability (Rho-A). Table 2.2 shows that the >0.7 indicates a reliable variable, which means that the composite reliability of the indicators shows that the relationship with the indicator shows that it is well consistent. AVE (Average Variance Extracted) to find out how large the proportion of variants explained by each variable in each indicator with a value of 0.5 shows 50% of the indicators that explain variables. This study shows that it matches the criteria, which is that the results are very valid and reliable.

HTMT**Table 2.3** Results of the HTMT Validity Test 4 Variable

	Accessibility	Service Facilities	Passenger Satisfaction	Quality of Service
Accessibility	0,857			
Service Facilities	0,828	0,781		
Passenger Satisfaction	0,610	0,874	0,660	
Quality of Service				

Source : Processed using Smart PLS

HTMT (Heteroit – Monotrait Ratio) can be said to have good discriminant validity and can measure different concepts if it has a value of <0.90 . Based on table 2.3 the variable-varibael shows a significant but not very high relationship, which means that there is no problem with discrimination between the variables being measured.

R-square**Table 2.4** R-square value

	R Square	Adjusted R Square
Accessibility	0,574	0,565
Passenger Satisfaction	0,564	0,551

Source : Processed using Smart PLS

The R-Square analysis was carried out to determine how much influence the independent variable had on the dependent variable, using the calculation results in table 2.4

as can be seen from the results of the R-Square value, which showed that the Accessibility and Passenger Satisfaction variables had great potential to influence and explain the R-Square value of 0.75 Strong Model, 0.50 Medium Model, and 0.25 Weak Model.

F-square

Table 2.5 F-square value

	Accessibility	Service Facilities	Passenger Satisfaction	Quality of Service
Accessibility	0,715		0,042	
Service Facilities				
Passenger Satisfaction	0,011		0,021	
Quality of Service				

Source : Processed using Smart PLS

The F-Square test was carried out to determine how much influence independent variables have on dependent variables in the context of structure; In table 2.5, the results also help determine whether the influence of independent variables on dependent variables is significant or not. In general, F-Square can be said to have an influence if the value shows a number of 0.02 which has a small or low influence, 0.15 has a moderate effect, and 0.35 has a high value in measuring size.

Conclusion

Based on the results of research that has been carried out on the data as described in the previous chapter, the conclusions of this study can be drawn. That states the effect of facilities and service quality, through accessibility as intervening / mediation on passenger satisfaction has a positive or significant effect. From the results of the research, the researcher concluded that with the implementation of Smart Airport, Soekarno Hatta International Airport entered the digital era 4.0 which made one form of improving operational activities at the airport. Researchers can also interpret Smart Airport as a type of digital technology consisting of a set of automated systems. It can be expected that Smart Airport can provide more value to airport service users so as to increase passenger satisfaction.

Implications

Based on the results of the research that has been carried out, there are several important suggestion findings for smart airport users at Soekarno Hatta International Airport. For further researchers, they can conduct surveys or observations through direct interviews with smart airport users or passengers to see how much service quality is about their experience using accessibility facilities. There is a fairly small value of the service quality variable on accessibility.

Research Limitation

This research has limitations, so there are several things that are not researched in this study and can be a reference for future research. These limitations are as follows:

1. Venue Restrictions

In this study, the researcher has a limited place, namely the researcher only focuses on Soekarno Hatta International Airport. Thus, the results of this study cannot be generalized to other airports in Indonesia.

2. Sample Limitation

In addition, this study has limitations in the number of sample passengers who fill out the questionnaire. The number of samples collected for this study is so small that it may not be generalized to all passengers at Soekarno Hatta International Airport.

3. Time Constraints

In this study, the researcher has limited time. The researcher only focuses on 2023-2024. This means that the data and findings produced only describe the situation and conditions that occurred in that year. Therefore, this study cannot measure the long-term effect of smart airport service facilities on passenger satisfaction due to the limitation of research time and does not depend on the period before and after the research period.

Given the various limitations described, the researcher hopes that in future studies can use this journal as a reference to expand the scope of his research. This can be achieved by expanding a new variable, the survey year, to cover all airport locations in Indonesia. By examining this as a research subject that is different from previous research, it can lead to more in-depth research than previous research.

Reference

- Alkalah, C. (2016). *Analisis Tingkat Kepuasan Pengguna Fasilitas Skytrain di Bandara Internasional Soekarno-Hatta*. 19(5), 1–23.
- Bintang, A. I., & Ariebowo, T. (2024). *Pengaruh Efektivitas Penggunaan Mesin Self Check-In Terhadap Kepuasan Penumpang Maskapai Citilink Di Yogyakarta International Airport Adelia Irvana Bintang*. 1, 311–323.
- Caniago, A. (2022). *ANALISIS KEPERCAYAAN DAN KUALITAS PELAYANAN*. 11(September), 219–231. <https://doi.org/10.34127/jrlab.v11i3.652>
- Fakhrudin, A. (2021). Kualitas Pelayanan dan Fasilitas Mempengaruhi Kepuasan Konsumen di Bandar Udara Notohadi Negoro Jember. *Jurnal Manajemen Dan Keuangan*, 10(1), 97–107. <https://doi.org/10.33059/jmk.v10i1.2611>
- Prapitasari, I., Utami, K., Setyarini, R., ... S. A.-J. K., 2017, U., Pandiana, L., Komunitas, S. N.-J. K., & 2018, U. (2019). *Bab Iii Metodologi Penelitian*. 62–76.
- Prawira, S. A., & Pranitasari, D. (2020). Pengaruh Aksesibilitas, Inovasi dan Kualitas Pelayanan Fasilitas Publik Terhadap Kepuasan Penumpang Disabilitas di Kereta Rel Listrik Jakarta. *Jurnal Sekolah Tinggi Ilmu Ekonomi Indonesia*, 1–15. <http://repository.stei.ac.id/id/eprint/1195>
- Putra, B. P. (2022). *Pengaruh Fasilitas Airport Digital Lounge terhadap Kepuasan Penumpang Pesawat Terbang di Bandar Udara Internasional Soekarno Hatta*. 1(5), 1129–1138.
- Waris, M., Teknik, F., Hasanuddin, U., Adisasmita, S. A., Teknik, F., Hasanuddin, U., Rauf, S., Teknik, F., Hasanuddin, U., Teknik, F., & Hasanuddin, U. (2023). *SMART AIRPORT TERHADAP KEPUASAN PENGUNJUNG*. 1(1), 1–10.