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Factors Affecting Passenger Satisfaction in Using Self Check-in at Soekarno-Hatta International Airport

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Abstract: This study was conducted to determine whether customer satisfaction is influenced by the usefulness and ease of use of the technology system on the self check-in machine so that it can be optimized and reduce check-in queues at the Soekarno-Hatta airport check-in counter. This research was conducted at Soekarno-Hatta airport. The method used in this research is quantitative with structural equation model analysis, the data collected using questionnaire techniques distributed to passengers at Soekarno-Hatta airport who use self check-in machines with a sample size of 100 respondents. The results of the calculation show that there is an effect of the easy of use of the self-check-in machine on passenger satisfaction and the usefulness of the self-check-in machine has proven significant with a P value below 0.000, indicating this study confirms that the easy of use of the self-check-in machine affects passenger satisfaction and the usefulness of the self-check-in machine affects passengers satisfaction. With this research, it is hoped that it can help Soekarno-Hatta Airport to develop a self check-in machine system that is safe and easy to use.

Keyword: Self Check-In Machine, Usefulness, Ease of use, Passenger Satisfaction, Technology Acceptance Model (TAM).

INTRODUCTION

Technology is something that has been attached to our lives because technology has a huge influence in today's modern era. Technological developments have changed the way we communicate, work, learn, and live our daily lives. As we know in today's Global Era, there are more and more needs for living things, needs that cannot be fulfilled without the help of technology. So, the involvement of technology is needed in the form of a system that makes it easier to meet the necessary needs. In a situation like this, all companies are certainly competing to show the advantages possessed by the company.

Factors in the development of technology that can encourage innovation in the aviation sector, namely technology is able to 1) reduce prices in the products and services offered; 2) Increase service speed and shorten passenger time; 3) Easy to understand because it uses minimal functions with simple instructions; 4) Overcome cultural differences; 5) Provide a high level of accuracy and offer privacy; And 6) reduce waste that causes a negative impact on the environment through the provision of electronic tickets. (Lee-Anant & Monpanthong, 2021).

Based on data from Indonesia's Central Bureau of Statistics that shows the number of aircraft passengers in Indonesia has returned to normal, where people are back to their pre-pandemic activities, Soekarno-Hatta airport as Jakarta's FIR certainly has a lot of passenger movement.

The movement of passenger growth from 2020 to 2023 has increased. In 2020 there were 4,858,686 domestic passengers which increased by 50.955% in 2021, in 2022 it increased by 55.495% from the previous year and in 2023 the number of domestic passengers was 10,402,945. This increase is due to passengers who have normal activities after the pandemic (Wardhani, 2024). With the increasing number of passengers causing long queues at check-in counters, this is a complaint from passengers (Anggelina & Naipospos, 2023).Based on the data above, it shows passenger growth from 4.858.686 in 2020 to 10.402.945 in 2023.Based on these data and current technological developments, PT Angkasa Pura II at Soekarno-Hatta International Airport provides self-check-in machine facilities to optimize operations to reduce passenger time when checking in and reduce queues at check-in counters. However, not many passengers switch to using the self-check-in machine, so the researcher hypothesized that there is a lack of information regarding the use of the machine and the convenience of the self-check-in machine.

Passenger satisfaction is one of the factors that affects the success of a company, so airlines and Angkasa Pura must provide services that satisfy passengers. To attract passengers to check in with Self check-in, the airline and Angkasa Pura must provide a Self check-in machine that is easy for passengers to use and understand. According to (Bintang & Ariebowo, 2024). in his research there is a correlation between the use of self check-in machines and passenger satisfaction. Therefore, researchers are interested in researching the effect of usefulness and ease of use of the self check-in machine on passenger satisfaction.

Based on the above background, the purpose of writing this article is to formulate and test the hypothesis, namely: 1) The effect of ease of use of the Self Check-in technology system on customer satisfaction; 2) The effect of ease of use of the usefulness of the self-check-in machine; 3) The effect of the usefulness of the Self Check-in technology system on customer satisfaction; 4) The effect of ease of use on passenger satisfaction through the usefulness of the self-check-in machine.

Literature review

1. Technology Acceptance Model (TAM)

The basic concept of the Technology Acceptance Model (TAM) is a paradigm for understanding and predicting the adoption of technology by users that was first developed by (F. Davis, 1980). TAM is a model that is considered very influential and is generally used to explain individual acceptance of technology systems. According to Davis in (Wicaksono, 2022) TAM states that technology adoption is influenced by two main factors, namely perceived ease of use and perceived usefulness.

The Technology Acceptance Model (TAM) considers the perceived ease of use as a crucial factor. Perceived ease of use is a person's perception of how easy technology is to use. Perceived ease of use is influenced by factors such as ease of use of technology, availability of technical assistance, and availability of resources. User adoption of technology is heavily

influenced by perceived ease of use. A higher probability of users using the technology is associated with its ease of use. In the process of developing technology, it is crucial to ensure that users find ease of use and can benefit from it in their interests. Some of the things that are measured in perceived ease of use are ease of use, availability of technical support, and availability of resources.

Perceived usefulness is a person's opinion about how efficient technology is to achieve our goals in using the technology. Perceived usefulness is an important factor in the Technology Acceptance Model (TAM). Perceived usefulness is influenced by the usefulness of technology and the ability of technology to meet user needs and desires. Some of the things that are measured in perceived usefulness are technological effectiveness, technological benefits, technological relevance to needs, and technological relevance.

2. Self-Check-in Machine

Check-in by individual means using the self-check-in machine provided by the airport. Self-check-in is a facility that serves to complete various security and service procedures and requirements by using a machine excluding baggage drop. Self-check-in machines are classified as one of the new innovations that can facilitate and shorten service users in carrying out several flight procedures. The self-check-in system has a very easy procedure, just by scanning the barcode or entering the e-ticket number, then choosing a seat and printing the boarding pass (Ardiansyah & Ahyudanari, 2017). Only domestic flight passengers are allowed to use Self Check-In, and self-check-in machines are located in the departure area where they print boarding passes Self check-in machines work with several airlines such as Garuda Indonesia, Citilink, Batik Air, AirAsia, Lion Air, Super Air Jet, dan Pelita Air (Bintang & Ariebowo, 2024).

3. Ease of Use

(F. D. Davis, 1989) in (Mirna dan Yuliyanti, 2019), To measure ease of use, one must first understand that the system can be easily understood and used without difficulty. This is a general term for easy understanding or simple usage. From this definition it can be concluded that ease of use can reduce effort in using the system, reduce energy and time. Self-check-in machines are very helpful for the passenger check-in process, where passengers without luggage can go directly to the waiting room and passengers with luggage go to the check-in counter to drop luggage, so the time is shorter. However, self-check-in machines cannot be used by all categories of passengers (Hardianika, 2023).

4. Usefulness

(F. D. Davis, 1989) in (Frimayasa, 2022), defines usefulness as a measure of a person's confidence in using a particular system will improve their performance. According to (Arif, 2012) (Arif, 2012) Usefulness is a provision term used to describe a situation where someone who uses a technology is believed to provide benefits to the person using it. So the usefulness of a system should make it easier to complete work so that it increases performance efficiency and can achieve company goals. Based on the results of research by (Ananda et al., 2024) say that individual habits and preferences play an important role in the utilization of this technology during the check-in procedure. Certain passengers may show a greater tendency to use self-check-in technology due to their higher comfort level with the technology or their familiarity with the self-check-in procedure. However, it should be noted that certain passengers may show hesitation or lack confidence in using self-check-in technology, especially if they lack familiarity with electronic gadgets or experience technical complications during the procedure. Therefore, it is important to understand the diverse behavioral patterns of service users and the determinants that influence their inclinations and choices when utilizing self-check-in technology at airports.

5. Passenger Satisfaction

(Oliver, 1997) Product or service features that offer a satisfying level of fulfillment related to consumption, such as under- or over-fulfillment, are the basis for assessing Satisfaction. Passengers are satisfied with the quality of products, service, emotions, price, and cost. These dimensions are outlined below. The degree to which service users' feelings align with expectations is known as user satisfaction. If the results or performance do not meet expectations, then service providers will be disappointed. (Agus Setiono & Melinda, 2022). Thus, customer satisfaction is the customer's response to the mismatch between the level of prior importance and the actual performance he feels after use. Customer satisfaction is influenced by perceptions of service quality, product quality, price, and factors that are personal and momentary in nature. Passenger satisfaction has factors that influence it, in this study the researcher examines how much influence usability and convenience have on passenger satisfaction.

Framework

Below is the framework of this research which illustrates the research hypothesis:

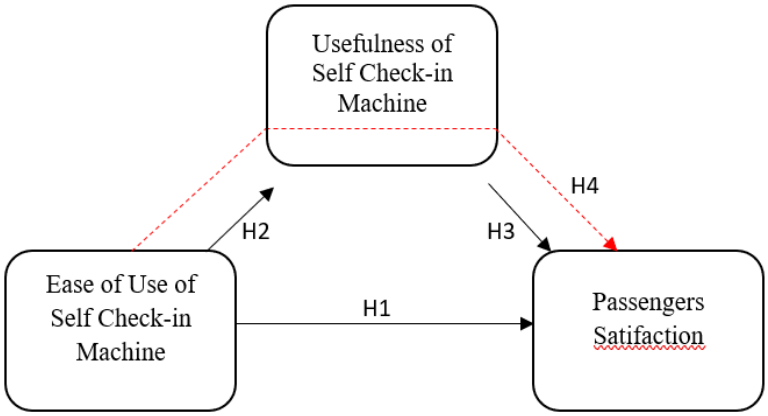

Figure 1. Framework

H1: There is an Effect of Ease of Self-Check-in Machine on Passenger Satisfaction
H2: There is an Effect of Ease of Self-Check-in Machines on the Usefulness of Self-Check-in Machines
H3: There is an Effect of Usefulness of Self Check-in Machines on Passenger Satisfaction
H4: There is an Effect of Ease of Self Check-in Machine on Passenger Satisfaction through Usefulness of Self Check-in Machine

METHOD

The method of writing this journal is a quantitative method, using primary data in the form of surveys (questionnaires) in data collection. The sample in this study used Accidental sampling technique. The population is 28,894 domestic aircraft passengers per day (Wardhani, 2024). The sample is a small part of the population Individuals taken. According to Hair, if the population is large so that the sample size is too large, the method becomes sensitive so it is difficult to get good goodness-of fit measures. So that determining the number of samples with the number of indicators multiplied by 5 to 10. The number of samples in this consider are:

Sample: Number Indicator x 10
10 x 10 = 100

From the above calculations, it can be concluded that the minimum sample uses 100 samples. This study took a sample size of 100 passengers who used the self-check-in machine. The following are the variables and indicators of this study:

Tabel 1. Measurement Indicator

Variable	Indicator	Scale	Source
Usefulness of self check-in machines	System quality	Likert	(Bintang & Ariebowo, 2024)
	Benefits of self-check-in machines		
	Speed up the self check-in process		
Ease of use of self check-in machine	Ease to use	Likert	(Tatrasandi et al., 2022)
	Easy to understand the system		
	Easy to understand instructions		
	Information acquisition		
Passenger satisfaction	As expected,	Likert	(Bintang & Ariebowo, 2024)
	Interest in reuse		
	Recommendation		

RESULTS AND DISCUSSION

Characteristics of Respondents

According to the characteristics of the respondents divided by gender, age, last education, occupation, and number of times using the Self Check-in machine in 1 year, the following data has been obtained:

a. Characteristics Based on Gender

Table 2. Distribution of Respondents Based on Gender

Gender	Frequency	Percent (%)
Female	49	49%
Male	51	51%
Total	100	100%

Source: Processed data, 2024 (SmartPLS4)

b. Characteristics Based on Age

Table 3. Distribution of Respondents Based on Age

Age	Frequency	Percent (%)
17 - 25 Years Old	65	65%
26 - 35 Years Old	20	20%
36 - 50 Years Old	14	14%
>50 Years Old	1	1%
Total	100	100%

Source: Processed data, 2024 (SmartPLS4)

c. Characteristics Based on Latest Education

Table 4. Distribution of Respondents Based on Latest Education

Latest Education	Frequency	Percent (%)
High School/Equivalent	46	46%
Diploma 1 - Diploma 3	9	9%
Bachelor's Degree	31	31%
Magister's Degree	14	14%
Total	100	100%

Source: Processed data, 2024 (SmartPLS4)

d. Characteristics Based on Occupation

Table 5. Distribution of Respondents Based on Occupation

Jobs	Frequency	Percent (%)
Students	40	40%
Civil Servants	12	12%
Private Employee	23	23%
Entrepreneur	7	7%
Others	18	18%
Total	100	100%

Source: Processed data, 2024 (SmartPLS4)

e. Characteristics Based on Use of Self Check-in Machine in 1 Year

Table 6. Distribution of Respondents Based on The Use of Self Check-in Machines

Utilisation in 1 Year	Frequency	Percent (%)
1 Time	33	33%
2 Times	22	22%
3 Times	13	13%
4 Times	5	5%
5 Times	27	27%
Total	100	100%

Source: Processed data, 2024 (SmartPLS4)

Outer Model Evaluations

1. Validity Test

Table 7. Outer Loading (Convergent Validity)

	Ease of Use of Self Check-in Machine	Usefulness of Self Check-in Machine	Passenger Satisfaction
Ease of Use of Self Check-in Machine 1	0,760		
Ease of Use of Self Check-in Machine 2	0,855		
Ease of Use of Self Check-in Machine 3	0,887		
Ease of Use of Self Check-in Machine 4	0,830		
Usefulness of Self Check-in Machine 1		0,767	
Usefulness of Self Check-in Machine 2		0,777	
Usefulness of Self Check-in Machine 3		0,829	
Usefulness of Self Check-in Machine 4		0,808	
Passenger Satisfaction 1			0,841
Passenger Satisfaction 2			0,887
Passenger Satisfaction 3			0,870
Passenger Satisfaction 4			0,890

Source: Processed data, 2024 (SmartPLS4)

An indicator is said to be valid if the loading factor value is > 0.70 and in the table above it can be seen that the loading factor value of all statement items is > 0.70, it can be concluded that all statement items are declared valid.

Table 8. Discriminant Validity (Cross Loading)

Variable	EUS	USM	PAS
EUS 1	0.760	0.509	0.466
EUS 2	0.855	0.574	0.746
EUS 3	0.887	0.545	0.730
EUS 4	0.830	0.533	0.638
USM 1	0.457	0.767	0.499
USM 2	0.428	0.777	0.491
USM 3	0.559	0.829	0.645
USM 4	0.585	0.808	0.723
PAS 1	0.597	0.675	0.841
PAS 2	0.714	0.640	0.887
PAS 3	0.711	0.648	0.870
PAS 4	0.712	0.680	0.890

Source: Processed data, 2024 (SmartPLS4)

From the cross-loading estimation results in table 5, it shows that the loading value of each indicator item is greater than the cross-loading value. Thus, it can be concluded that all constructs already have good discriminant validity, where the indicators in the construct indicator block are better than the indicators in other blocks.

2. Reliability Test

Table 9. Cronbach Alfa and Composite Reliability

	Cronbach's Alpha	Composite Reliability (Rho_C)
EUS	0.854	0.901
USM	0.809	0.873
PAS	0.895	0.927

Source: Processed data, 2024 (SmartPLS4)

A variable can be said to be reliable if the value of Cronbach's alpha and composite reliability > 0.70. From the table above, it can be said that all variables are reliable. The Cronbach alpha coefficient value ranges from 0.00 to 1.00, with a benchmark of ≥ 0.7 which is used as a reference so that a measuring instrument is declared reliable (Hair et al., 2019).

Inner Model Testing

R Square

Table 10. R Square laten variable

Variable	R-Square	R-Square Adjusted
Usability of Self Check-in Machine	0.420	0.414
Passenger Satisfaction	0.723	0.717

Source: Processed data, 2024 (SmartPLS4)

The usefulness variable of the self-check-in machine has an R-square value of 0.420, so it accounts for 42% of the total output of this variable. The usefulness variable of the self-check-in machine in this model falls into the medium category. While the R-square value of the passenger satisfaction variable is 0.723, this shows that the variable ease of use and usefulness of the self-check-in machine is able to explain the passenger satisfaction variable by 72.3%. As expected, the model is considered robust.

Hipothesis Test

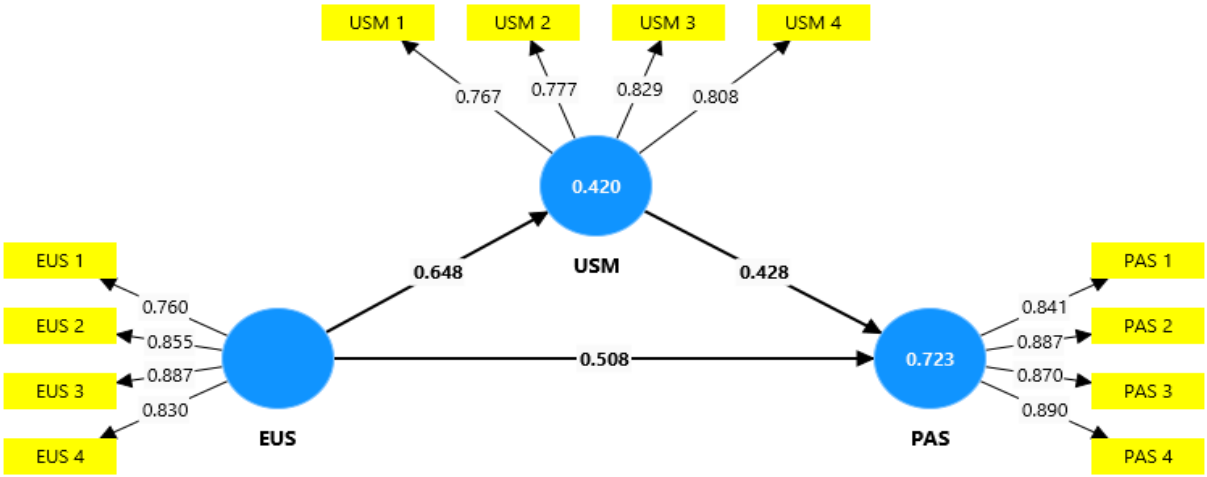

Figure 2. Path COEFFICIENT

Table 11. Direct Effect

Path	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values	Remarks
EUS -> PAS	0.508	0.505	0.068	7.448	0.000	Significant
EUS -> USM	0.648	0.649	0.059	10.942	0.000	Significant
USM -> PAS	0.428	0.433	0.070	6.143	0.000	Significant

Source: Processed data, 2024 (SmartPLS4)

1. The Effect of Ease-of-Use Self Check-in Machine on Passenger Satisfaction

The P-values in the table above of 0.000 <0.05 have a significant influence on passenger satisfaction (PAS). This indicates that H1 is accepted, where there is an effect of the easy of use of self-check-in machines (EUS) on passenger satisfaction (PAS). In accordance with previous research (Yulianto, 2024) passenger satisfaction is said to be strongly influenced by the ease of use of self-check-in machines. So that if the self-check-in machine ease of use variable increases, the passenger satisfaction variable will also increase. This indicates that H1.

2. The Effect of Ease-of-Use Self Check-in Machine on the Usefulness of Self Check-in Machine

Based on the table above, the P-values are 0.000 <0.05, which means that there is a significant influence on the usefulness of the self-check-in machine (USM), so H2 is accepted. This indicates that if the usefulness variable of the self-check-in machine increases if the ease-of-use variable increases.

3. The Effect of Usefulness of Self Check-in Machine on Passenger Satisfaction

P-values of 0.000 <0.05 which indicates that there is a significant effect of the usefulness of self-check-in machines (USM) on passenger satisfaction (PAS), which means that H0 is temporarily rejected and H3 is accepted (Bintang & Ariebowo, 2024) passenger satisfaction is said to be greatly influenced by the usefulness of self-check-in machines.

Table 12. Indirect Effect

Path	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values	Remarks
EUS -> USM -> PAS	0.277	0.281	0.054	5.155	0.000	Significant

Source: Processed data, 2024 (SmartPLS4)

4. Effect of Ease of Self Check-in Machine on Passenger Satisfaction through Usefulness of Self Check-in Machine

The results show that P-values of 0.000 <0.05 have an indirect effect on passenger satisfaction through the usefulness of self-check-in machines, so H0 is temporarily rejected and H4 is accepted.

In the results of testing the coefficient of determination (R), the result or value of the R-square of the passenger satisfaction variable is 0.723 with a very strong relationship level, this indicates that the variable ease and usefulness of the self check-in machine is able to explain the passenger satisfaction variable by 72.3%. This is very much in accordance with the fact that nowadays most people do not want to waste time doing activities and want things to be more efficient. Passengers always want something clear and easy.

CONCLUSION

This research was conducted to help Angkasa Pura II at Soekarno-Hatta International Airport to find out the factors that can affect passenger satisfaction with the use of self-check-in machines. Based on research conducted at Terminal 3 at Soekarno-Hatta International Airport, the authors draw conclusions, namely: Calculation results show that (1) Ease of use of self-check-in machines has a significant effect on passenger satisfaction; (2) Ease of use of self-check-in machines has a significant effect on the usefulness of self-check-in machines; (3) Usefulness of self-check-in machines has a significant effect on passenger satisfaction; (4) Ease of use of self-check-in machines has a significant effect on passenger satisfaction through the usefulness of self-check-in machines.

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