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Adoption of Self Check-In Services at Terminal 1A of Soekarno-Hatta International Airport

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Abstract: The provision of Self-service Check -in facilities at Terminal 1A is expected to improve operational smoothness, especially to automate the Check -in process using technology so that it can be more effective and efficient. This study was conducted to highlight the adoption of the use of Self-service Check -in facilities, using qualitative descriptive methods and analysis using the Delphi method. The purpose of the study is in line with the formulation of the problem and research questions, with the conclusion that Self-service Check -in facilities can improve service quality because they can be used easily, practically and save time in the Check -in process. Data were obtained through direct observation, interviews, documentation, and literature studies. The findings show that Self-Check -in facilities can also reduce the burden on officers and queues in carrying out the Check -in process at manual counters, but these facilities are not optimal because there are still network constraints or paper that does not come out to print boarding passes, and has not been integrated with Self-baggage drop. Several efforts have been made to overcome these obstacles, such as conducting periodic maintenance on Self-service Check -in machines, providing usage information through social media, and making efforts so that Self-service Check -in can be integrated with Self-baggage drop so that it can facilitate passengers in carrying out the Check -in process along with handling passenger baggage.

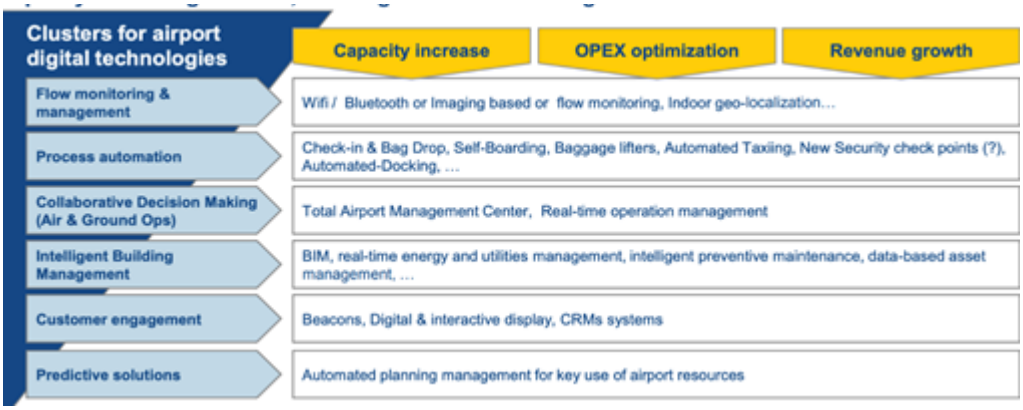
Keywords: Self Service Check in, Counter Check in, Self Baggage Drop

INTRODUCTION

Currently, international airports have undergone a revolution in terms of facilities and technology. It began with Airport 1.0, a traditional international airport where all processes were still manual. The Airport 2.0 era marked the beginning of the application of digital technology to international airport operations and services, such as check-in systems. This was followed by Airport 3.0, when several passenger service processes at the airport were

automated, based on technology and information systems. The next revolution in international airports is Airport 4.0, where almost all technology is based on the Internet of Things (IoT) and minimizes passenger-staff interaction (Self-Service Technology).

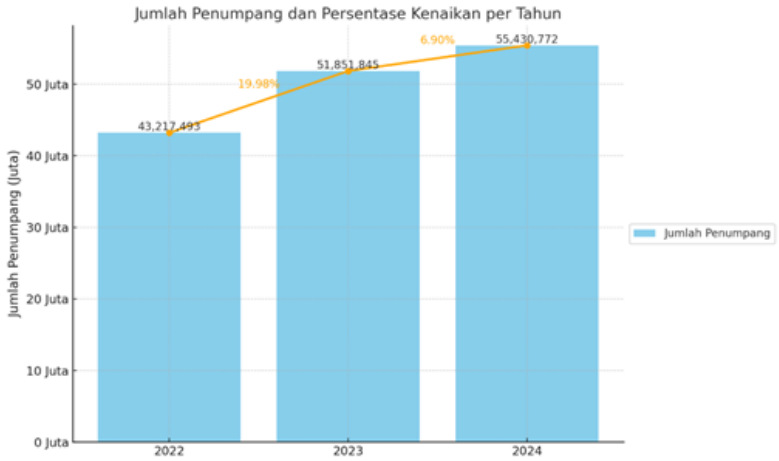
The availability of these digital facilities is one indicator of digital transformation in service for PT. Angkasa Pura Indonesia. Airport 4.0 digital facilities are included in the Process Automation Cluster, which prioritizes Self-Service Technology in passenger service processes.



Source: Athur D.Little, 2015

Figure 1. Clustering Airport 4.0

Soekarno-Hatta International Airport, managed by PT Angkasa Pura Indonesia, has the largest passenger capacity in Indonesia, with approximately 46 million passengers passing through it annually. This can be seen in the passenger data for Soekarno-Hatta International Airport in Figure 2.



Source: Analytics dashboard PT Angkasa Pura II

Figure 2. Soekarno-Hatta International Airport Passenger Number Graph

In Figure 2 above, it can be seen that the number of passengers in 2022 - 2024 has increased significantly. With the large number of service users, in this case passengers passing through Soekarno-Hatta International Airport, this also has an impact on the availability of service facilities at the airport. Therefore, in order to maintain the performance of service quality at Soekarno-Hatta International Airport, the management changed the nature of the service from conventional to digital with the aim of accelerating the service process for passenger comfort while providing a unique experience for departing passengers. This research will only focus on Terminal 1A of Soekarno-Hatta International Airport, and the facilities studied are only the Self-check-in facilities at Terminal 1A.

The check-in process at the airport is one of the important initial stages in the passenger travel experience. This conventional check-in system is carried out through the check-in counter desk operated by the passage officer at the International Airport, this conventional check-in system has shortcomings such as causing long queues at the check-in counter area. With the development of current technology, the check-in process can be done independently using the self-check-in machine which is expected to make it easier for passengers and can reduce queues in the conventional check-in system. However, in fact in the field, many passengers still choose to check-in at the conventional counter. This is a problem and will be used as research material to determine what factors cause passengers not to use the self-check-in machine facility at Terminal 1A.

The number of users of self-check-in kiosks at Departure Terminal 1A is very small. On average, the use of self-check-in kiosks in 2022 was around 10.73%, in 2023 only around 9.08%, and in 2024 it was 6.88%. This is what the author will later examine and analyze what factors cause passengers not to use the self-check-in kiosk facility.

The Technology Acceptance Model (TAM) is a theory proposed by Davis in 1986 to explain the behavior of computer-based technology users. TAM consists of two main components: perceived usefulness and ease of use (Davis, 1989). The TAM concept, developed by Davis (1989), offers a theory as a foundation for studying and understanding user behavior in accepting and using an information system. The expansion of the TAM concept is expected to help predict a person's attitude and acceptance of technology and can provide the necessary basic information regarding the factors that drive that individual's attitude.

Service quality is a model that describes consumer conditions in terms of service expectations based on past experiences (Kotler and Keller, 2016). To improve service quality at airports, careful planning and the implementation of appropriate methodologies are required to measure and evaluate the extent to which Self-Service Check-In contributes to passengers' experiences and decisions regarding their use of the facility (Akbar et al., 2022).

Based on the description above, the author is interested in analyzing the condition of the Self-service check-in machine facilities at Terminal 1A of Soekarno-Hatta International Airport, in addition, the author wants to conduct a comprehensive analysis to determine the quality of service that can influence passenger decisions in using the Self-service check-in facility. Furthermore, based on these things, the author is expected to provide input in the form of strategies that can be used by Angkasa Pura Indonesia management in order to increase passenger decisions to use the Self-service check-in facility at Terminal 1A of Soekarno-Hatta International Airport. In this case, the author will present research in the form of a thesis with the title "Adoption of Self-Check-In Users at Terminal 1A of Soekarno-Hatta International Airport".

METHOD

The research stages used in qualitative research are the process of data collection, analysis, and measurement in order to answer the empirical questions carried out by the author (Sekaran and Bougie, 2020). Miles & Huberman's (1994) interactive analysis model consists of five stages, namely: problem definition, information collection, data filtering, data presentation, and drawing conclusions.

The study will be conducted in the commercial area of Soekarno-Hatta International Airport, specifically on domestic airline passengers in the area. The study will run from April 2025 until the trial date.

The population in this study were passengers at Terminal 1A of Soekarno-Hatta International Airport. According to Ahyar et al. (2020), determining the sample size and limiting the generalizability of the population is the purpose of population sampling. This study used a purposive sampling method, which intentionally selects participants according to the established requirements or criteria and is a complete reflection of the entire study. The sample

or participants in this study consisted of 3 airline representatives, 7 self-check-in users, and 5 check-in counter users.

Table 1. Manual Check-In Counter Officer Interview Guidelines

No	Research Focus	Question Points
1	Self Check-in technology service at Terminal 1A Soekarno-Hatta Airport	a) How was your experience serving passengers at the manual check-in counter? b) What obstacles do you often encounter when serving passengers? c) What do you think are the reasons why passengers prefer using the manual service over self-check-in? d) Have you noticed a change in the number of passengers using self-check-in? Is the number greater or increasing compared to using the manual check-in counter?
2	The process of using Self Check-in technology	a) How would you rate the accuracy and speed of Self Check-in technology in processing passenger check-in? b) Does the use of Self Check-in technology reduce the burden on manual check-in counter staff? How does this impact your performance? c) How would you compare the passenger experience of using Self Check-in with manual check-in content?
3	Obstacles/constraints in using Self Check-in technology	a) What obstacles/difficulties do passengers frequently report when using self-check-in technology? b) What is the problem-solving process used by officers when handling complaints about self-check-in technology?
4	Suggestions or improvements	a) What are your expectations regarding the technological developments in the Self Check-in facility at Terminal 1A of Soekarno-Hatta Airport? b) In your opinion, what improvements need to be made to enhance the passenger experience using the Self Check-in facility? c) In your opinion, what strategies should check-in counter staff implement to increase the effectiveness of the Self Check-in facility?

Source: Data has been processed by the author (2024)

Next, the author will conduct interviews with passengers at the manual check-in counter to find out their views and experiences on the check-in process at Terminal 1A of Soekarno-Hatta International Airport with the following interview guide:

Table 2. Manual Counter Check-In Passenger Interview Guidelines

No	Research Focus	Question Points
1	Passenger Experience	a) How was your experience using manual check-in counter technology at the airport? b) What did you like and dislike about using manual check-in counters? c) Did you find the manual check-in process more time-consuming than other methods? Why?
2	Obstacles Faced	a) Have you ever experienced technical problems when using the manual check-in counter at the airport? If so, what problems did you encounter? b) What do you think needs to be improved about the manual check-in counter service?
3	Counter Clerk Service	a) Did the staff at the check-in counter provide the assistance you needed? b) How did you rate the staff's friendliness and speed during the check-in process?

No	Research Focus	Question Points
		c) Were you comfortable with the amount of information the staff requested during manual check-in?
4	Improvements and Suggestions	a) What are the main factors that might influence your decision to use manual check-in counters? b) What are your suggestions for making manual check-in counters at airports more effective in providing services to passengers?

Source: Data has been processed by the author (2024)

Finally, the author will conduct interviews with passengers who use the self-service check-in facility to find out their experiences while using the facility, as well as to compare the advantages of self-service check-in with manual check-in counters.

Table 3. Interview Guidelines for Passengers Using Self Service Check-In

No	Research Focus	Question Points
1	User Experience	a) How was your experience using self-check-in technology at the airport? b) How would you rate the ease of using self-check-in technology at the airport?
2	Perception of Technology	a) How safe and convenient is it to use self-check-in technology at the airport? b) Do you feel that checking in with this technology is more efficient?
3	Obstacles Faced	a) Have you ever experienced technical issues using self-check-in technology at the airport? If so, what issues did you encounter? b) What do you think needs to be improved to make this technology more accessible and usable?
4	Comparison With Manual Counter	a) In your opinion, how does the use of self-check-in technology compare to manual check-in counters involving officers at the airport? b) Are there any specific situations in which you would prefer manual check-in counters over self-service?
5	Improvements and Suggestions	a) What are your hopes for the future development of self-check-in technology? b) What suggestions do you have for making self-check-in technology at airports more beneficial for passengers?

Source: Data has been processed by the author (2024)

This research used the Delphi method, a technique for gathering expert views in a group on a specific topic. This technique is applied to reach a common consensus on future projections through a structured approach. When historical data is unavailable or less relevant, qualitative or assessment methods are appropriate. The process begins by sending interview guidelines to the experts, who then provide answers to the questions posed. The answers from each round will be collected and analyzed by the author.

In this study, triangulation was conducted by ensuring consistency between what was observed during field observations and information obtained from interviews with key informants. Additionally, data from literature studies, such as journals, previous research, and relevant theories, were used to strengthen the findings from the observations and interviews.

RESULTS AND DISCUSSION

Description of Research Objects

In 1984, the Indonesian government established Perum Bandar Udara Jakarta Cengkareng to handle the operations of Soekarno-Hatta International Airport. Subsequently, in 1986, this company changed its name to Perum Angkasa Pura II. At the same time, Perum Angkasa Pura changed its name to Perum Angkasa Pura I and was given responsibility for managing international airports in eastern Indonesia.

On September 1, 2024, PT Angkasa Pura Indonesia was officially formed through the merger of Angkasa Pura I and Angkasa Pura II under the coordination of InJourney. This merger is a strategic step to strengthen the efficiency and effectiveness of air connectivity, while also supporting the development of the tourism ecosystem to drive national economic growth and equity.

PT Angkasa Pura Indonesia manages Soekarno-Hatta International Airport, located in regional area 1, specifically in Tangerang, Banten. This international airport is the main hub for flight services for the Greater Jakarta area and is equipped with three main terminals with varying passenger capacities. Terminal 1 is designed to accommodate 36 million passengers, Terminal 2 has a capacity of 21 million passengers, while Terminal 3 can serve up to 51 million passengers.

Soekarno-Hatta International Airport has two runways, namely runway 1 and 2, each with a length of 3,660 meters, and runway 3, which is 3,000 meters long. All three are 60 meters wide, making this International Airport the only one in Indonesia with three active runways and acting as the main gateway for international flights. This International Airport is also equipped with special cargo terminal facilities to serve domestic and international cargo shipments, with a capacity of up to 20,065 tons per year.

Research Findings

The Self-Service Check-in facility at Terminal 1A of Soekarno-Hatta International Airport was introduced as part of efforts to support the digitalization of aviation services. This facility aims to improve the efficiency of the check-in process, reduce queues at manual counters, and provide a faster and more convenient experience for passengers. Furthermore, this system helps ease the workload of staff, particularly in terminal areas with limited queue space.

Passengers can check in independently by simply entering their last name and booking code without the need to show their ID, making the process more convenient and secure. This also reflects adaptation to technological advancements and changing consumer behavior in the digital age. Given that Terminal 1A serves numerous domestic flights with low-cost carriers, this system is essential, especially during peak passenger traffic times or during the holiday season.

However, despite its significant benefits, utilization of this facility remains suboptimal. Based on observations and interviews, several technical and non-technical obstacles were identified that hamper its effectiveness. These include machines running out of paper, preventing them from printing boarding passes, the inability to select seats during check-in, and the system not being integrated with the Self Bag Drop service. Furthermore, network disruptions, limited integration between airlines, and a lack of promotion and attractive design contribute to the low utilization of this facility.

Overall, the introduction of Self-Service Check-in is a positive step towards improving the quality of airport services. However, to maximize its utilization, technical improvements, system integration, and communication and outreach strategies are needed.

The author examines how service quality influences passengers' decisions in choosing Self-Service Check-in. This service is considered efficient and practical because it simplifies the process without the need to show physical identification. However, obstacles such as technical issues, lack of assistance from officers, and limited features make some passengers reluctant to use it. Aspects of reliability, responsiveness, security assurance, empathy, and the

physical appearance of the facility are primary considerations. Meanwhile, manual check-in counters remain popular because they provide direct interaction with officers who are ready to assist, especially when problems arise. This demonstrates that while technology offers convenience, the role of human service remains crucial for passenger comfort.

Based on interviews with officers and service users at Terminal 1A of Soekarno-Hatta Airport, the author formulated several strategies to increase the use of Self-Service Check-in facilities. First, an automated monitoring system is needed to check the availability of paper in the machines, directly connected to the control center, accompanied by a regular refill schedule by officers. Second, a seat selection feature needs to be added and directly connected to the airline system, including a paid option if necessary. Third, integration with Self-Bag Drop is important so passengers don't have to queue again at manual counters. Fourth, system and network maintenance must be carried out regularly by the IT team to ensure stable machine performance. Fifth, promotion of the Self-Service Check-in machines can be increased through social media, digital banners, and the assistance of temporary promotional officers in the terminal. Finally, to assist passengers when problems arise, the machines can display a QR code that leads to live chat or WhatsApp Business, and provide a 24/7 chatbot feature. These strategies aim to increase passenger convenience, efficiency, and confidence in using self-service services.

CONCLUSION

Research shows that the use of Self-Service Check-in facilities at Soekarno-Hatta Airport is still low, at 6.88% in 2024 and 9.08% in 2023, so efforts are needed to increase its adoption. This facility has met passenger expectations by speeding up the check-in process and maintaining data security, but still experiences obstacles such as boarding pass printing failures, network issues, and lack of integration with Self-Baggage Drop. To address this, it is recommended to implement an automatic paper monitoring system, add a paid seat selection feature, integrate with self-service baggage services, routine system and network maintenance, increase promotions, and provide QR codes and live chat services to assist passengers when they encounter problems.

Based on the research results, the author recommends that Angkasa Pura Indonesia Management provide dedicated officers to monitor and assist Self Service Check-in users through live chat and chatbots, as well as equipping the facility with Self Baggage Drop and a more modern interface design to improve convenience and efficiency. For further research, it is recommended to delve deeper into user constraints, analyze the effectiveness of facilities at Terminal 1A, and collect more detailed respondent data based on gender and age 18–55 years to examine differences in usage and satisfaction. In addition, further research can examine passenger preferences in choosing various check-in methods available at the airport.

Based on the research results and recommendations, Angkasa Pura Indonesia Management needs to establish a periodic maintenance policy to ensure optimal performance of the Self-Service Check-in facility and improve passenger services by focusing on the effectiveness of the use of these facilities at Terminal 1A of Soekarno-Hatta Airport.

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