SYNCHRONIZATION OF PARKING STAND, GATE, AND FLIGHT INFORMATION DISPLAY SYSTEM (FIDS) ALLOCATION AT JUANDA INTERNATIONAL AIRPORT SURABAYA

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ABSTRACT
Since it was stopped due to the Covid 19 pandemic, the growth of air transportation services has now increased again. One of them is Surabaya Juanda International Airport, which is an airport under the auspices of PT Angkasa Pura 1. Currently, Surabaya Juanda International Airport shows an increase in the number of passengers and flights since it had decreased due to the Covid-19 phenomenon, which was 63,806 flights and 8,690,051 arrivals and departures in 2022. Based on the phenomenon in the field, it was found that there was a 15-35% discrepancy in gate information listed on the Boarding Pass and the Flight Information Display System (FIDS) screen every day. This does not always pose a danger but it has the risk of clash boarding or passengers entering the wrong plane until passengers miss it. Service-related problems are basic but must be considered for the comfort and quality of service for passengers at Surabaya Juanda International Airport. This study uses qualitative methods and the data used is the author's direct observation in the field, namely in the form of boarding gate differences between what has been planned and what will be used in a flight. The conclusion of this study is the occurrence of non-compliance by airlines with the allocation of gates, the allocation of parking stands by AMC units that are not appropriate, and the use of supporting facilities that are not optimal resulting in mismatches in information about this boarding gate. By conducting research on this problem in order to reduce or even eliminate the desynchronization of information about the boarding gate that each flight will use. It is expected that each related party can evaluate the implementation of boarding activities and allocation of aircraft parking stands and then take appropriate mitigation steps and have a positional impact on the provision of service quality at Surabaya Juanda International Airport.

Keywords: *Boarding Gate, Flight Information Display System (FIDS), Parking Stand.*

1. INTRODUCTION

Air transportation is a priority given the geographical condition of Indonesia, which is an archipelago. This is because air transportation is able to connect inter-island areas to inland areas that are difficult to reach using other transportation [1]. In addition, air transportation is also an effective and efficient means of connecting countries, so it is necessary to make improvements in all fields to improve services. At Juanda International Airport Surabaya has returned to show an increase since it had decreased due to the Covid 19 phenomenon [2]. This is supported by the ease of the departure process and of course the ease of air transportation modes. It can be seen from the passenger movement data in recent years that has increased again.

In a passenger departure flow, prospective passengers are required to *check in* as a form of self-reporting to get a *boarding pass*. In accordance with KM 211 of 2020 concerning the National Aviation Security Program chapter 1 point 1.4.30 related to sterile areas [3] *Boarding Pass* is a requirement for passengers to be able to enter the sterile area, namely the waiting room. The *Boarding Pass* contains several important information related to the flight, from the passenger's name, flight number, and departure time, to the *boarding gate to* be used.

Based on the current condition of Juanda Surabaya International Airport, there are several discrepancies related to *gate* information listed on the *Boarding Pass* and on the *Flight Information Display System* (FIDS) screen display. This condition certainly affects the comfort of prospective departure passengers and has an impact on increasing the list of complaints from airport service users [4]. This situation shows that there is non-compliance by the airline in following the *gate* planning set by the *Terminal service officer*. For example, the *Terminal service officer* unit has planned *gate* 8 for a flight that will be displayed on the Flight Information

Display System (FIDS) screen, but the *Airline* changes the *gate* to *gate* 9 which will be printed on the *boarding pass*. So that there is a discrepancy in the information listed on the *boarding pass* and displayed on the Flight Information Display System (FIDS) screen. In addition, Surabaya Juanda International Airport AMC personnel are expected to allocate *parking stands* in accordance with existing Work Instructions. Precisely AMC is planning *parking stands* according to the waiting room that has been published. Thus the flow of *boarding* implementation can run smoothly based on the plan that has been set.

This problem is raised in order to answer the question raised in the form of what efforts will be made so that the mismatch of *gate* information on the *Boarding pass* and *FIDS* can be resolved so as to improve the quality of service at Juanda International Airport Surabaya.

The purpose of this research is to find out more about the problems related to the unsynchronized *boarding gate* information listed on the *Boarding Pass* and *Flight Information Display System* (FIDS). Then contribute thoughts as input for Juanda Surabaya International Airport in an effort to improve the quality of service to passengers. Which is analyzed into :

1. To determine the level of *Airline* compliance during the *Boarding* process at Juanda International Airport Surabaya.
2. To find out the allocation of *Parking stand* by AMC unit at Juanda International Airport Surabaya.
3. To determine the readiness of supporting facilities in the *Boarding* process at Juanda International Airport Surabaya.

As one of the airports under PT Angkasa Pura I. Juanda Surabaya International Airport has high flight *traffic*. This results in the possibility of boarding gate information discrepancies in the Boarding Pass and Flight Information Display System (FIDS). Therefore, further analysis and appropriate steps are needed in solving the problems raised.

2. THEORETICAL REVIEW

Synchronization

According to the Big Indonesian Dictionary (KBBI), "Synchronization is a matter of synchronizing, or leveling in all elements applying the principles of coordination and integration." [5]. In this case, the author interprets synchronization to mean aligning the departure information that will be provided to airport service users [6].

Airport

As stated in *ICAO (International Civil Aviation Organization) Annex 14 "Aerodromes" 4th edition, July 2004, chapter 1: A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.* In translation, an airport is a certain area or waters (including buildings, installations and equipment) intended either wholly or in part for the arrival, departure and ground movement of aircraft [7].

Airport is an area on land and/or water with certain boundaries that is used as a place for aircraft to land and take off, up and down passengers, loading and unloading goods, and a place for intra and intermodal transportation movements, which are equipped with aviation safety and security facilities, as well as basic facilities and other supporting facilities [8].

Parking stand

Based on the Director General of Air Transportation Regulation No. KP 39 of 2015 concerning Technical and Operational Standards, a *parking stand* is a certain place in the airport area that is used for parking aircraft.[9]. Types of Parking Stands [10] can be divided into:

- Nose In
- Angled Nose In
- Nose Out
- Angled Nose Out
- Parallel

Boarding Gate

The boarding gate is a place or location for passengers to wait for the *boarding* process to the airplane. *Passengers* who enter the *boarding gate* are given a *pass* containing the passenger's name, destination, flight date, *gate* waiting room number, and seat in accordance with the seat that has been selected by the passenger. [11]. However, the boarding gate can also be interpreted as the endpoint in the landside area for passengers who will continue their flight using an airplane [12]

Flight Information Display System (FIDS)

Flight Information Display System (FIDS) is a system in the form of equipment used to provide actual or *real-time* flight information about the status, time, and *gate* to be used through the monitor screen inside the terminal to all airport service users [13]. In addition, the Flight Information Display System can be interpreted as a screen that displays all the information needed in a departure or arrival flight flow [14]

3. METHOD

The research method used is a qualitative method[15] The output of this research is to solve problems that occur in the field regarding differences in *gate* information on *boarding passes* and FIDS at Juanda International Airport Surabaya.

Subjects and Objects of Research

The title of this research is the synchronization of the allocation of *parking stands*, gates and *flight information display systems* (FIDS) in order to improve the quality of service to passengers at Juanda Surabaya International Airport so that the subject of the research.[16] or informants used in the study consisted of *Apron Movement Control* (AMC) personnel, *Terminal Service Officer* (TSO) personnel, and *Airlines* at Juanda International Airport Surabaya. And the object of research[17] The research object used is the condition of the flow of boarding activities at Juanda International Airport Surabaya which results in a mismatch of information about the Boarding Gate on the Boarding Pass and Flight Information Display System (FIDS).

Data Collection Technique

The data collection and analysis technique is a step that is considered strategic in research, because it has the main objective in obtaining the data to be used. Based on the research method book [17] The data collection techniques used are:

a. Observation, which is directly reviewing the research location at the time the author carried out *On The Job Training (OJT)* at Juanda International Airport Surabaya.
b. Literature Study, namely collecting as much data as the author needs from references related to the problem written as a theoretical basis in writing the final project.
c. Documentation, is a method used with the aim of collecting and obtaining data or information in the form of writing, numbers, and images. Documentation can also be in the form of reports and information that can support research.

4. RESULT AND DISCUSSION

Along with the increase in the number of post-Covid 19 flights at Juanda Surabaya International Airport, it has now reached 31,952 domestic aircraft movements in *arrival* and *departure* in 2022 [18]. The results of field observations found that there were discrepancies in *gate* information listed on the *boarding pass* and *Flight Information Display System* (FIDS) screen every day. Data that has been obtained from field sampling results as follows:

Table 1. *Gate* changes at Juanda International Airport Surabaya

No.	Date	Number of Departures	*Gate* Change Amount	Percentage of *Gate* Compliant	Percentage of *Gate* not compliant
1.	January 12, 2023	103	21	79,7%	20,3%
2.	January 13, 2023	104	21	79,9%	20,1%
3.	January 14, 2023	105	22	79,1%	20,9%
4.	January 15, 2023	109	35	68%	32%

(Source: Author's observation in 2023)

The percentage of *gate* changes ranges from 15-30%, which is 20-30 flights every day. Based on research cited in an article from *Passenger* Terminal World magazine through the aviavox.com website [19], states that '*passengers were increasingly annoyed by the fact that they were listening to announcements that could not be understood'* and still in the same article, other research states that missing a flight is one of the biggest fears for passengers.

Therefore, the author conducts further observation of the problem in order to find out the causal factors and gap analysis on the unsynchronized gate information on the Boarding Pass and Flight Information Display System (FIDS). Based on the results of the author's observations regarding the current condition of Juanda Surabaya International Airport, the problems can be categorized as follows:

Table 2. Author Phenomenon Data

NO	PROBLEM PHENOMENON	CURRENT CONDITION	IMPACT
1.	Lack of compliance by the Airline	The *Airline* does not comply with the *gate* planning that has been arranged by the *Terminal service officer*.	*Airline* non-compliance with regulated *gate* planning has an impact on the mismatch of *gate* information on *boarding passes* and FIDS.
2.	*Parking stand* allocation is not yet based on Ministerial Regulation Work Instruction or PM IK of AMC unit.	It was found that some *parking stand* allocations were not based on the applicable Ministerial Regulation or PM IK.	The *parking stand* allocation planning is not in accordance with the published waiting area.

3.	Facilities supporting *boarding* activities are not yet optimal	Some of the facilities that have been provided are not used, and supporting facilities for *boarding* activities are incomplete.	Departing passengers will feel confused about which *gate* to use.

(Source: Author's Observation in 2023)

Disobedient airlines of gate allocation

Airlines' level of compliance with gate planning

Based on field observations, the author found that currently the level of compliance of *Airlines* with *gate* planning that has been made by *Terminal service officer* (TSO) personnel is still low. This is evidenced by the direct or sudden *gate* changes made by the *Airlines*. Of course this will cause discrepancies regarding the *gate* information that will be used by each flight. As an example of *gate* planning on the following flight:

Figure IV.1 Boarding Pass of Batik ID 6401

(source: Author's Documentation 2023)

Figure IV.2 Boarding gate of Batik ID 6401

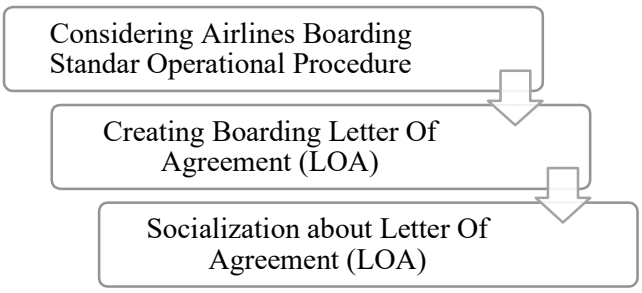
(source: Author's Documentation 2023

Figure IV.3 Boarding gate ID 6401 used by Airlines

(source: Author's Documentation 2023)

The author provides a solution to the problem by dividing it into 3 parts:

Table 3. Problem solving analysis



Referring to the Standard Operating Procedure owned by one of the *Airlines* at Juanda International Airport Surabaya. Precisely at point 4 where the *Boarding gate* or *boarding lounge* officer is required to provide information on the reasons for delays, delays, and flight cancellations, as well as information if there is a change in the flight departure *gate*. In this statement, it is not clearly written what is the maximum time for changes and cancelations of a flight.

Review of Standard Operating Procedures (SOP) by paying attention to the principles of convenience, clarity, and harmony based on the principles of the preparation and implementation of Standard Operating Procedures (SOP) of the Ministry of Transportation [20]which then considers the check-in time for flight passengers, which is 2 hours before flight departure stated in the airline service SOP. The following shows the gap analysis of the SOP Boarding fragment at point 4.1.6 page 4-8 of the Citilink *Airline* Service Standard Operating Procedure (SOP) published on June 13, 2022 [21].

Table 4. Gap analysis of *boarding* SOP

No.	Current *Airline Boarding* SOP	Analysis details	Ideal *Airlines Boarding* SOP
1.	*Boarding gate* officers are prepared at least 1 (one) person per waiting room and must be in the waiting room 1 (one) hour before departure, to convey information to passengers.	-	*Boarding gate* officers are prepared at least 1 (one) person per waiting room and must be in the waiting room 1 (one) hour before departure, to convey information to passengers.
2.	*Boarding gate* officers check physical and electronic *boarding passes*, as well as the suitability of passenger identification.	-	*Boarding gate* officers check physical and electronic *boarding passes*, as well as the suitability of passenger identification.
3.	*Boarding Gate* Officers coordinate with officers on the plane for certainty and preparation for *boarding* according to the specified schedule and help direct passengers from the waiting room to board the plane according to their flight number.	-	*Boarding Gate* Officers coordinate with officers on the plane for certainty and preparation for *boarding* according to the specified schedule and help direct passengers from the waiting room to board the plane according to their flight number.
4.	*The Boarding gate* or *Boarding Lounge* officer must provide information on the reasons for delays, delays and flight cancellations, as well as information if there is a change in the flight departure *gate*.	Making changes to the contents of the SOP based on point 4.1.4.3 stated that the Check-in counter is opened to serve passengers starting 2 hours before departure. So, this is the basis for the Boarding Gate officer not to provide information on changes after the checkin counter opens.	*Boarding gate* or *Boarding Lounge* officers are required to provide information on the reasons for delays, delays and flight cancellations, as well as provide *gate* change information a maximum of 2 hours before flight departure.
5.	*The Boarding gate* officer makes the first call and the last call to passengers who have not boarded the aircraft (*Boarding*).	-	*The Boarding gate* officer makes the first call and the last call to passengers who have not boarded the aircraft (*Boarding*).
6.	The officer informs passengers that the *Boarding* closing time limit is 10 (Ten) minutes before scheduled departure.	-	The officer informs passengers that the *Boarding* closing time limit is 10 (Ten) minutes before scheduled departure.

(Source: *Airline* at Juanda International Airport Surabaya)

In supporting the details of *Boarding* activities based on field conditions, for frequent *gate* changes that are not in accordance with the plan, it is better if the *Airport Operation Landside & Terminal* (AOLT) unit and the *Airline* make a *Letter of Agreement* (LOA) related to the *boarding gate* and waiting room usage procedures.

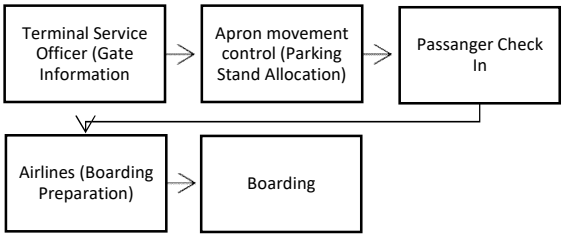
It is stated in the Minister of Transportation Regulation number 129 of 2015 concerning *Service* Level Agreement article 8 which states that in the provision of services [22] The Airport Business Entity coordinates and collaborates with airport service users who have a working relationship with the airport. This is stated in the *service* level agreement. Which is carried out in regular coordination & socialization meetings between airport operators and *airlines*. This meeting can be in the form of monthly, quarterly, semester, or annual meetings. In this case, each unit (AMC, TSO, and *Airline*) is expected to work together to conduct socialization with implementing personnel. Socialization should be carried out regularly so that the main objectives can be achieved [23] As a structured organization, the head of each unit is considered entitled to take over this activity. The implementation of this socialization is carried out by directly explaining the Work Instruction and *Letter of Agreement* (LOA) that has been determined.

Parking stand allocation by AMC unit

Based on the results of the discussion of the problem of allocating *Parking stands* by the *Apron movement control* (AMC) unit, the author analyzes PM IK,namely: Review of Point 5.2.7 in PM/SUB-OB/BD-07 / PM IK AMC [24]. After making observations and comparing *gate* plotting and *parking stands*, there are still many aircraft that are plotted not based on the point above which states that AMC plans *parking stands* according to the published waiting room.

After the review of the AMC unit Work Instruction has been carried out, the author expects an increase in coordination from these three units AMC, TSO, and the *Airline*. starting from simple things to things related to the Work Instruction owned by each unit. The following is a communication flow of the three units related to *parking stand* arrangements and the use of waitingrooms:

Table 5. The flow of Parking stand and Gate allocation at Juanda International Airport Surabaya



Facilities to support *boarding* activities are less than optimal

Looking at the conditions in the field, some *Airlines* have not optimized the use of supporting facilities for board activities because the facilities are still lacking. Therefore, it is necessary to fulfill the supporting facilities for *boarding* activities in the form of a signboard of at least 5 for each *airline* [25]. So that with this facility, it should make it easier for passengers to know where their airplane is located. This is a follow-up to the connecting hallway facility between the *gate* and the garbarata, with the aim of not needing to make changes to the *boarding gate*.

DISCUSSION AND CONCLUSION

Through the results of the analysis of the discussion in chapter 4, the authors draw the following conclusions:

1. *The Airline'*s lack of compliance with the *gate* planning that has been made by *Terminal service officer* (TSO) personnel certainly results in a mismatch of *gates* listed on the *Boarding Pass* and FIDS. This is because the FIDS is updated by the TSO based on planning, while the *boarding pass is* issued by the *Airlines*. So it is necessary to review the Standard Operating Procedures *of* the *Airlines* and then proceed with the formation of a *Letter of Agreement* (LOA) regarding *Boarding*;

2. *Parking stand* allocation by the AMC unit which is not in accordance with the existing Work Instruction at Juanda International Airport Surabaya requires an analysis of the Work Instruction and then improve the communication flow of each related unit;

3. The use of facilities supporting *Boarding* activities that have not been optimal is one of the variables for this problem, so the *Airlines* are expected to further optimize the use of existing facilities and complete supporting facilities that are deemed lacking or missing;

In order to create a good quality passenger service at Juanda Surabaya International Airport, problems related to *gate* information mismatches that occur must be resolved immediately. Therefore, the author expects follow-up by every party related to this problem to immediately make the following efforts:

1. To increase the compliance of the *Airlines*, for the order and smooth flow of *Boarding* activities, the *Airlines* should be able to improve and comply with the Standard Operating Procedures (SOP) of *Boarding* activities in order to provide the best quality of service for airport service users. Furthermore, to overcome *gate* mismatches due to *gate* changes that are not in accordance with the planning, the author suggests that the *Airport Operation Landside & Terminal* (AOLT) unit and the *airline* can make minutes or agreements related to this issue in the form of a Letter of Agreement (LOA) regarding *Boarding* activities.

2. Analyze the performance of the *Apron movement control* (AMC) unit based on the existing Work Instructions for the smooth running of aircraft and the smooth running of passengers in the terminal area when *boarding*. In terms of allocating *parking stands*, the AMC can consider the *gate* to be used and place a maximum of 2 *gates*, this is with the aim of avoiding clash *boarding* or confusion of passengers between flights.

3. Procure goods or facilities supporting *boarding* activities in the form of sign boards or road signs that are not yet owned by several *Airlines*. Then, airport operators can also optimize existing facilities such as the use of hallways that connect the waiting room and garbarata / aircraft and the re-operation of the *Airport Operation Control Center* (AOCC)room.

4. Submitting a more concrete draft regulation to the air transportation regulator regarding arrangements in the departure process, especially *boarding*.

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