The Impact of Apron Optimization in Supporting Aviation Services

Adha Dika Anggara[1], Laila Rochmawati[2*], Abdul Muti Sazali[3], Ahmad Musadek [4]

[1,2,4)] *Politeknik Penerbangan Surabaya, Surabaya, Indonesia*
[3)] *Institute for Transport Studies, University of Leeds*
[*] *Corresponding author. Email: lailarochmawati@poltekbangsby.ac.id*

ABSTRACT
Radin Inten II International Airport is an airport located on Jalan Alamsyah Ratu Perwiranegara in Branti Raya Village, Natar District, South Lampung Regency located in the northwest of Bandar Lampung City. When conducting On Job Training research at Radin Inten II International Airport, there was a lack of standard markings and surfaces on the apron. This is because a lot of marking paint has faded and the surface of the apron is uneven. The research methodology used is a quantitative research methodology, namely by describing the circumstances that are happening to the research object. Data were obtained from direct observation, literature studies, and conducting questionnaires. The results of this study show that the apron at Radin Inten II International Airport Lampung still has to be improved in order to meet the standards it should. This can be indicated by the large number of markings that have faded paint and the surface of the apron that is still uneven.

Keywords: *Marking, Surface, Apron, Standard, Aviation Services*

1. INTRODUCTION

Airports hold a central role in a nation's air transportation system, serving not only as gateways for air travel but also as economic hubs, business centers, and connectivity nodes [1]. In the context of Indonesian law, Law No. 1 of 2009 defines an airport as a designated area on land or water used for aircraft takeoffs and landings, passenger embarkation and disembarkation, cargo loading and unloading, and mode transfer activities. To achieve efficiency and effectiveness in air transportation in Indonesia, airport development is crucial. One such example is the Radin Inten II International Airport in Lampung, which serves as a vital gateway for connecting this region with others and the world [2].

Safety and flight security are non-negotiable aspects. All airport service facets must be rigorously designed and operated to international safety standards [3]. This includes facilities such as the apron, a designated area within an airport for aircraft parking, passenger handling, and cargo loading and unloading. In this context, the Radin Inten II International Airport in Lampung plays a critical role in facilitating accessibility and connectivity for the Lampung region [4].

However, maintaining airport infrastructure, particularly apron maintenance, poses real challenges. Airport operators are responsible for the periodic maintenance and inspection of flight-supporting equipment [5]. The apron, as an integral part of an airport, requires proper care to ensure operational smoothness [6]. Neglecting apron maintenance can jeopardize flight safety and efficiency [7].

The apron is a critical area within an airport facilitating various aviation activities, including passenger handling, cargo loading and unloading, and refueling [8]. Hence, maintaining an adequate and standardized apron condition is pivotal for ensuring safe and efficient flight services [9].

The Radin Inten II International Airport in Lampung boasts a total of 12 parking stands on its apron, some of which are rigid pavement while others remain flexible. The high number of daily flights, including unscheduled flights, indicates a significant air traffic intensity. Unscheduled flights, although not part of official flight schedules, still utilize apron facilities for parking. Consequently, optimal apron conditions are of paramount importance [10].

Nevertheless, constraints in maintenance and less-than-ideal apron conditions could lead to flight service issues [11]. The repercussions of an inadequate apron condition can manifest in various ways, including flight

delays and safety risks. Moreover, substandard apron conditions could also impact overall airport operational efficiency and flight services [12].

This issue is not merely theoretical; it has already become a reality in several incidents. For instance, there have been instances where a Garuda Indonesia aircraft faced an accident on the apron of the Radin Inten II International Airport due to suboptimal apron conditions [13]. This underscores the urgency of apron improvements and optimization as critical measures to ensure safety and service quality at the airport [14].

Hence, this study aims to analyze the impact of apron optimization on aviation services at the Radin Inten II International Airport in Lampung. Its objective is to comprehend the existing apron conditions, the optimization process undertaken, and whether these improvements influence overall flight service quality. By deriving insights from this research, it is anticipated that constructive input for infrastructure and service enhancements at the airport will be provided, along with a drive for better actions in maintaining flight safety and efficiency.

2. METHOD

2.1. *Research Design*

In this study, a quantitative research approach was employed. The use of the quantitative method was chosen due to its ability to yield valid and pertinent data reflective of real-world conditions. The research design adopted for this study falls within the realm of quantitative research [15]. Quantitative research is a method employed to measure accurately, commonly applied to gauge customer behavior, knowledge, opinions, and attitudes [16].

2.2. *Research Setting*

The researcher selected the airside area of Bandar Udara International Radin Inten II Lampung, located in Branti Natar, South Lampung, Lampung, Kel. Beranti/Branti Raya, Kec. Natar, Kab. Lampung Selatan, Lampung as the research location. This choice was driven by the fact that an On The Job Training was conducted there from January to March 2023, which provided an opportunity for observation of the airport. The research duration coincided with the On The Job Training period, spanning from January 2023 to March 2023.

2.3. *Population and Sample*

Population is a generalization consisting of specific objects or subjects with certain qualities and characteristics defined by the researcher for study and subsequent conclusions to be drawn [17]. Sample selection is carried out to conduct research more efficiently without involving the entire population. A sample is a subset of the population taken through specific methods, possessing distinct and comprehensive characteristics that are deemed representative of the population [18].

In this study, the researcher selected a population of personnel from Apron Movement Control (AMC), building and runway personnel, and several ground handling staff at Bandar Udara International Radin Inten II Lampung, totaling 30 individuals. The researcher then sampled personnel from Apron Movement Control (AMC), building and runway personnel, and several ground handling staff at Bandar Udara International Radin Inten II Lampung. The entire population of 30 individuals was used as the sample, primarily due to limitations in the number of personnel available at Bandar Udara International Radin Inten II Lampung.

2.4. *Data Collection Techniques*

Data collection techniques are essential steps in the research process to gather the necessary information to address research questions or achieve set objectives [19]. The chosen data collection methods aim to facilitate the researcher in collecting data on the Optimization of Apron to Support Flight Services at Bandar Udara International Radin Inten II Lampung, ensuring the safety of workers while servicing aircraft during landing or on the ground at Bandar Udara International Radin Inten II Lampung. Therefore, the researcher employs observation, interviews, questionnaires, and literature review methods.

2.4.1. *Observation*

Observation is a data collection method used to gather research data through direct observation and sensing [20]. In this study, I, as the researcher, conducted observations at the apron of Bandar Udara International Radin Inten II Lampung during the On The Job Training (OJT) activities from January 9, 2023, to March 31, 2023.

2.4.2. *Interview*

Interviewing is a form of conversation that occurs between a researcher, aiming to gather information, and an informant, considered to have important insights related to a specific object or topic. In the context of qualitative research, interviews are often referred to as in-depth interviews or intensive interviews, and they typically have an unstructured nature [21]. Interviews in qualitative research aim to obtain deep and context-rich data. In this study, the researcher conducted interviews with Apron Movement Control (AMC) personnel

regarding the optimization of the apron and its impact on supporting flight services at Bandar Udara International Radin Inten II Lampung.

2.4.3. *Questionnaire*

A questionnaire is a data collection technique conducted by providing a set of written questions or statements to respondents for their answers [17]. The questionnaire used in this study consists of statements about the Optimization of Apron in Supporting Flight Services at Bandar Udara International Radin Inten II Lampung. The questionnaire employs a Likert scale, and answer choices are categorized as SA (strongly agree), A (agree), N (neutral), DA (disagree), and SDA (strongly disagree). The Likert scale is a measurement method used to assess an individual's or group's attitudes, opinions, and perceptions about a phenomenon [17]. The Likert scale is used as a research instrument to measure the level of service from the existing apron conditions based on the questionnaire research results.

2.4.4. *Literature Review*

Literature review is an essential step where, after a researcher establishes the research topic, the next step involves a comprehensive review of theories relevant to the research topic [22]. During the search for theories, the researcher gathers as much information as possible from literature related to the topic. Sources for literature can be obtained from books, journals, magazines, research findings (theses and dissertations), and other appropriate sources (internet, newspapers, etc.). The literature review conducted by the researcher encompasses regulations and requirements to re-examine factors considered to give rise to issues, guidelines and references regarding definitions pertinent to the problem under discussion, including an elaboration of the problem's title accompanied by various expert opinions sourced from different references. In this study, literature review is utilized to address issues related to the Optimization of Apron in Supporting Flight Services at Bandar Udara International Radin Inten II Lampung.

2.5. *Data Analysis Technique*

2.5.1. *Validity*

The purpose of conducting validity testing is to assess the extent to which the measuring instrument used in the research, in this case, the questionnaire, possesses validity. Validity refers to the ability of the questions in the questionnaire to accurately measure the intended concept or variable. In this context, the validity of the questionnaire is measured by ensuring that the existing questions can accurately reflect the aspects measured by the questionnaire. For example, if the aim is to measure Employee Performance, the questions in the questionnaire should accurately capture how the employee's performance is.

Specific criteria are utilized in validity testing. This testing involves the correlation between the scores of each indicator item and the total score of the measured construct. The commonly used significance level is 0.05.

The process of validity testing is carried out as follows:

1) The null hypothesis (H1) is accepted if the computed correlation coefficient (r) is greater than the tabulated correlation coefficient (r table) from the distribution table.
2) The null hypothesis (H0) is rejected if the computed correlation coefficient (r) is less than or equal to the tabulated correlation coefficient (r table).

The value of the tabulated correlation coefficient (r table) can be determined using the degrees of freedom (df), which is obtained from the number of respondents involved in the study. For instance, if the number of respondents is 13 and the significance level used is 0.05, then the value of the tabulated correlation coefficient (r table) can be calculated using the formula for df (13-2) at a significance level of 0.05.

2.5.2. *Reliability*

Reliability is an index that measures the extent to which a measuring instrument can be trusted or relied upon. A measuring instrument is considered reliable if it can produce consistent results even when measurements are taken multiple times. The Cronbach's Alpha method is commonly used to test the reliability of research data and questionnaires. This method measures the internal consistency of a set of items or questions within a questionnaire. Using Cronbach's Alpha, researchers can assess how closely the items in the questionnaire are related to each other and measure the same concept. A higher Cronbach's Alpha value indicates a higher level of reliability for the measuring instrument.

2.5.3. *Normality Test*

The normality test is intended to assess whether, within the framework of a regression model, the distribution of the disturbance or residual variable exhibits a normal characteristic [23]. The normality test can be conducted using the Kolmogorov-Smirnov statistical method, where the null hypothesis (H1) states that the data follows a normal distribution, and the alternative hypothesis (H0) implies that the data does not follow a normal distribution. Data is considered to meet the normality assumption or to follow a normal

distribution if the significance value resulting from the Kolmogorov-Smirnov test exceeds 0.05.

2.5.4. *Simple Regression Analysis*

Regression analysis is employed to measure the strength of the relationship between two or more variables, and it also indicates the direction of the relationship between the dependent and independent variables [23]. To examine the relationship between variable x (apron optimization) and variable y (flight services) at Bandar Udara International Radin Inten II Lampung, the researcher conducted a simple linear regression test. The simple linear regression test is used to observe the linear relationship between an independent variable and a dependent variable [18]. Meanwhile, the coefficient of determination test determines the contribution made by independent variables to the dependent variable [23]. In this study, the independent variable is apron optimization, while the dependent variable is Flight Services at Bandar Udara International Radin Inten II Lampung.

3. RESULT AND DISCUSSION

This research method employs primary data as its main source of information. The data collected for this study was obtained through the distribution of questionnaires to respondents, aiming to gather information about the level of satisfaction of users at Sultan Thaha Jambi Airport regarding the facilities available in the terminal waiting area. The goal of this data collection is to enhance the services at the airport (Level of Service). A total of 43 respondents were selected as the sample for this study. The following section presents the findings obtained from the field data collection process.

3.1. *Result*

3.1.1. *Observation*

The observation was conducted by the researcher at Bandar Udara International Radin Inten II Lampung from January 9, 2023, to March 31, 2023. The researcher carried out field observations to identify the issues related to the suboptimal condition of the apron in supporting flight services at Bandar Udara International Radin Inten II Lampung. The observation took place at Bandar Udara International Radin Inten II Lampung through a walking inspection performed on the airside. During the observation, the researcher also documented several photographs for the purpose of the final project and as supporting evidence.

Figure 1. Air Side Condition

The researcher's observation was focused on the airside or apron area at Bandar Udara International Radin Inten II Lampung. It was observed that there were numerous puddles of water forming in the depressions. Figure 1 provides an example of the documentation taken by the researcher during the observation of the airside or apron conditions at Bandar Udara International Radin Inten II Lampung.

During the observation, the researcher documented aircraft movements in the apron area using Apron Movement Sheets (AMS) as secondary data. The AMS data is illustrated in Figure 2. The Apron Movement Sheets (AMS) data is essential for maintaining records related to the Apron Movement Control (AMC) personnel.

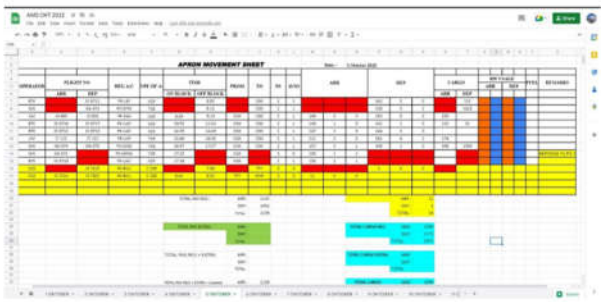

Figure 2. AMS Data

The presence of the Apron Movement Sheets (AMS) provides a record for each flight, which can be accessed whenever necessary, particularly for past flight data. The AMS data includes timestamps for both "block on" and "block off" times. This enables the Apron Movement Control (AMC) personnel to monitor the arrival and departure times of aircraft, enhancing their ability to manage aircraft movements effectively.

3.1.2. *Interview*

The researcher conducted an interview with one of the Apron Movement Control (AMC) personnel to gather information about the impact of apron optimization on supporting flight services at Bandar Udara International Radin Inten II Lampung. The researcher presented a total of 5 questions to the interviewee. Here are the questions posed to the AMC personnel regarding apron optimization and its influence on flight services at Bandar

Udara International Radin Inten II Lampung, along with their responses:

1. Researcher: How does the optimization of the apron contribute to enhancing flight services at Bandar Udara International Radin Inten II Lampung?

   AMC Personnel: The optimization of the apron has significantly improved flight services by allowing us to efficiently manage aircraft parking, passenger embarkation and disembarkation, and cargo handling. With better utilization of parking stands based on smooth surface conditions, we have observed a reduction in delays and smoother operations.

2. Researcher: What challenges were faced before the apron optimization, and how has the situation improved?

   AMC Personnel: Before optimization, we often encountered issues like uneven surfaces causing aircraft wheels to get stuck, resulting in delays. However, after optimizing the apron, we now assign parking stands based on better surface conditions, which has minimized wheel-related incidents and improved overall service quality.

3. Researcher: Could you elaborate on the impact of the optimized apron on flight punctuality and safety?

   AMC Personnel: The optimized apron has had a positive impact on both flight punctuality and safety. By allocating parking stands strategically, we have reduced turnaround times and enhanced the efficiency of ground operations. This, in turn, has contributed to improved flight punctuality. Additionally, the improved surface conditions have reduced the risk of incidents and enhanced the safety of aircraft movements.

4. Researcher: Have you noticed any specific changes in operational procedures or efficiency due to the apron optimization?

   AMC Personnel: Certainly. The optimization has led to smoother aircraft movements and more streamlined operations. Our team now has a clearer overview of aircraft positions, leading to better coordination between ground handling and flight operations. This has increased overall efficiency and improved our ability to manage traffic flow.

5. Researcher: Looking ahead, how do you anticipate the continued impact of apron optimization on flight services at this airport?

   AMC Personnel: We believe that continued apron optimization will play a crucial role in maintaining and improving flight services. As flight volumes increase, having an efficient apron will be essential to handle the demand effectively. It will further contribute to enhanced customer satisfaction and safer operations at Bandar Udara International Radin Inten II Lampung.

3.1.3. *Questionnaire*

This questionnaire is addressed to 30 respondents, randomly selected from Apron Movement Control (AMC) personnel, ground handling staff, and personnel responsible for infrastructure at Bandar Udara International Radin Inten II Lampung. The questionnaire aims to gather responses regarding apron optimization's impact on supporting flight services at Bandar Udara International Radin Inten II Lampung. The researcher provided a total of 14 statements to the 30 respondents. The results of the questionnaire validity test are as follows:

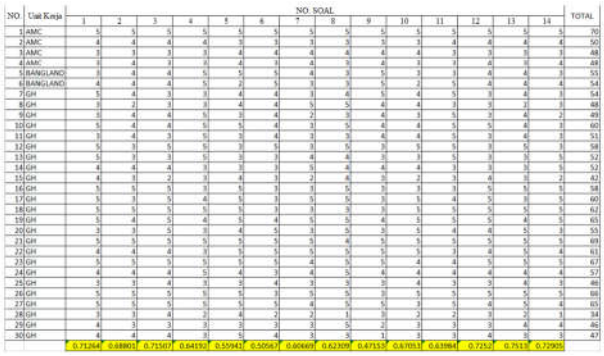

Figure 3. Validity Test

Next, a reliability test was conducted on the questionnaire. The results of the reliability test are as follows:

Reliability Statistics

Cronbach's Alpha	N of Items
0.773	7

Figure 4. Reliability of Variable X

Reliability Statistics

Cronbach's Alpha	N of Items
0.797	7

Figure 5. Reliability of Variable Y

The statements along with their results are as follows:

A. Variable X

1. Statement : 'Apron is an important facility at the airport as a place for aircraft to maneuver'.

   Result :

No	Klasifikasi	Responden
1	Sangat Setuju	13
2	Setuju	8
3	Kurang Setuju	9
4	Tidak Setuju	0
5	Sangat Tidak Setuju	0

Figure 6. Statement 1

2. Statement : 'An optimal apron can support flight services'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	7
2	Setuju	13
3	Kurang Setuju	9
4	Tidak Setuju	1
5	Sangat Tidak Setuju	0

Figure 7. Statement 2

3. Statement : 'The ideal apron can improve flight operational safety'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	11
2	Setuju	11
3	Kurang Setuju	7
4	Tidak Setuju	1
5	Sangat Tidak Setuju	0

Figure 8. Statement 3

4. Statement : 'An uneven surface on the apron can endanger aircraft and people working in the apron area'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	14
2	Setuju	3
3	Kurang Setuju	12
4	Tidak Setuju	1
5	Sangat Tidak Setuju	0

Figure 9. Statement 4

5. Statement : 'Less than ideal apron strength can cause damage to the apron which can become fodder in the apron area'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	13
2	Setuju	8
3	Kurang Setuju	8
4	Tidak Setuju	1
5	Sangat Tidak Setuju	0

Figure 10. Statement 5

6. Statement : 'Aprons with less than ideal conditions can hamper the pushback and taxiing process of aircraft'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	9
2	Setuju	9
3	Kurang Setuju	11
4	Tidak Setuju	1
5	Sangat Tidak Setuju	0

Figure 11. Statement 6

7. Statement : 'A strong apron will minimize the occurrence of peeling off the apron'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	8
2	Setuju	7
3	Kurang Setuju	12
4	Tidak Setuju	3
5	Sangat Tidak Setuju	0

Figure 12. Statement 7

B. Variabel Y

8. Statement : 'Aprons with less than ideal conditions can affect the level of flight service'.

Result :

No	Klasifikasi	Responden
1	Sangat Setuju	14
2	Setuju	6
3	Kurang Setuju	9
4	Tidak Setuju	0
5	Sangat Tidak Setuju	1

Figure 13. Statement 8

9. Statement : ‘Everyone wants to get the best service’.

   Result :

No	Klasifikasi	Responden
1	Sangat Setuju	8
2	Setuju	9
3	Kurang Setuju	11
4	Tidak Setuju	1
5	Sangat Tidak Setuju	1

Figure 14. Statement 9

10. Statement : ‘On time flight is a good service’.

    Result :

No	Klasifikasi	Responden
1	Sangat Setuju	9
2	Setuju	9
3	Kurang Setuju	9
4	Tidak Setuju	3
5	Sangat Tidak Setuju	0

Figure 15. Statement 10

11. Statement : ‘Good facilities will make good service’.

    Result :

No	Klasifikasi	Responden
1	Sangat Setuju	13
2	Setuju	5
3	Kurang Setuju	11
4	Tidak Setuju	1
5	Sangat Tidak Setuju	0

Figure 16. Statement 11

12. Statement : ‘Excellent service is needed to maintain customer loyalty’.

    Result :

No	Klasifikasi	Responden
1	Sangat Setuju	9
2	Setuju	10
3	Kurang Setuju	11
4	Tidak Setuju	0
5	Sangat Tidak Setuju	0

Figure 17. Statement 12

13. Statement : ‘Apron optimization is needed to improve flight services’.

    Result :

No	Klasifikasi	Responden
1	Sangat Setuju	10
2	Setuju	11
3	Kurang Setuju	7
4	Tidak Setuju	2
5	Sangat Tidak Setuju	0

Figure 18. Statement 13

14. Statement : ‘An optimal apron can improve flight services’

    Result :

No	Klasifikasi	Responden
1	Sangat Setuju	10
2	Setuju	7
3	Kurang Setuju	10
4	Tidak Setuju	2
5	Sangat Tidak Setuju	1

Figure 19. Statement 14

The respondent data also underwent simple linear regression analysis. A normality test was conducted prior to performing the simple linear regression analysis. The results of the normality test are as follows.

Tests of Normality

Kelompok		Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Hasil	Optimalisasi Apron	0.125	30	.200*	0.966	30	0.446
	Pelayanan Penerbangan	0.112	30	.200*	0.959	30	0.284

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Figure 20. Normality Test

The results of the simple linear regression analysis are as follows.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	490.569	1	490.569	100.045	.000[b]
	Residual	137.297	28	4.903		
	Total	627.867	29			

a. Dependent Variable: Pelayanan Penerbangan
b. Predictors: (Constant), Optimalisasi Apron

Figure 21. Regression

The results of the coefficient of determination test are as follows.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.884[a]	0.781	0.774	2.21438

a. Predictors: (Constant), Optimalisasi Apron
b. Dependent Variable: Pelayanan Penerbangan

Figure 22. Coefficient of Determination

3.1.4. *Literature Review*

Based on the literature review conducted by the researcher, it encompassed relevant regulations such as Regulation KP 326 of 2019, concerning Technical Standards and Operational Regulations for Civil Aviation Safety – Part 139 (Manual of Standard CASR – Part 139) Volume I Aerodromes. Also, it covered apron markings in accordance with Government Regulation No. 3 of 2001 on Aviation Security and Safety, which highlighted that both apron conditions and markings were not yet optimal in supporting flight services at Radin Inten II International Airport in Lampung.

It is specified that each part of the apron should be capable of withstanding the traffic of aircraft designated for service, considering that certain apron sections may receive higher traffic loads and, consequently, due to slow-moving or stopping aircraft, result in greater stresses than those experienced on the runway [24]. Airport operators are obligated to install signs and markings on both the airside and landside of the airport [5].

3.2. *Discussion*

Based on the results of the observation, it was found that the uneven and undulating condition of the apron surface at Radin Inten II International Airport in Lampung is a consequence of the high pressure generated by aircraft movements. However, the apron is not sufficiently resilient to withstand this pressure, leading to the undulating apron surface. This condition clearly disrupts flight services at the airport, impeding aircraft movements and even resulting in incidents such as wheel collapses during taxiing and pushback. In addition to the suboptimal apron condition, the researcher also discovered that many apron markings have faded. This situation makes it challenging for ground handling personnel to properly position ground support equipment (GSE) due to the difficulty in identifying the markings. The fading of apron markings is attributed to changing weather conditions, including heat, rain, and friction from GSE wheels and aircraft, causing the paint of the markings to fade.

In order to maintain safety and work comfort in the apron area and improve flight services at Radin Inten II International Airport, improvements are necessary. One of the measures is to repaint the faded markings to ensure visibility for all workers. This action is expected to contribute to an increase in operational safety in the apron area and, ultimately, support better flight services.

As a solution for apron optimization, short-term actions could involve managing parking stands. For the long-term, the consideration of transforming the apron into a rigid structure should be explored. This would provide long-term benefits by enhancing the apron's durability to withstand increasing loads in line with the growing number of flights at Radin Inten II International Airport. Regarding the issue of markings, a short-term solution could entail the installation of cones or physical barriers to indicate boundaries, aiding airside personnel in understanding limitations. As a long-term solution, proposing a repainting of airside markings at Radin Inten II International Airport could ensure prolonged visibility and clarity of markings.

The results of the interview with the Apron Movement Control (AMC) personnel at Radin Inten II International Airport provided deeper insights into the importance of timeliness in flights and the challenges that hinder achieving on-time performance. The question about the importance of flight punctuality was firmly answered, underlining its integral role in the service provided as a service provider at the airport. Customer satisfaction and service quality indicators, which include punctuality, are high-priority factors.

When facing challenges related to achieving flight punctuality, AMC personnel highlighted several obstacles they encounter. One challenge is the uneven apron surface, causing aircraft wheels to get stuck in the area. Additionally, another challenge arises from the apron's inability to withstand jet blast from aircraft, potentially causing surface peeling and triggering the appearance of Foreign Object Debris (FOD) that disrupts services. Regarding methods to maximize flight punctuality, AMC explained that they currently manage parking stand usage while considering good path conditions. This arrangement is aimed at ensuring smoother aircraft movement and reducing potential disruptions.

Regarding the responsibility for flight operations on the apron, AMC personnel firmly stated that they hold full responsibility for all airside or apron area movements. This underscores their critical role in maintaining the smoothness and safety of flight operations in the area. As the number of flights continues to increase at Radin Inten II International Airport, AMC personnel have hopes and proposed solutions. Their hope is that all apron areas are strengthened to withstand

increasing loads in line with the growth in flights. This effort aims to ensure that flight-supporting infrastructure, such as the apron, remains capable of meeting the growing demand.

Overall, this interview provided a clear picture of the importance of flight punctuality, challenges faced in achieving on-time performance, efforts to maximize punctuality, and the roles and expectations of AMC personnel in facing challenges and growth in the future.

Various analyses were conducted to measure the validity, reliability, normality, and the influence of variables on flight services at Radin Inten II International Airport. First, regarding validity, a test was conducted using the Pearson correlation coefficient method. The results showed that the correlation values (0.712, 0.688, 0.715, 0.641, 0.559, 0.505, 0.606) for each statement from x1 to x7 exceeded the critical value of 0.361. Therefore, it can be concluded that the statements for the variable "apron optimization" are considered valid. Furthermore, for variable "y" (flight services), the correlation values (0.623, 0.471, 0.670, 0.639, 0.725, 0.751, 0.729) also exceeded the critical value of 0.361, indicating their validity.

Secondly, the reliability results showed that the reliability of the "apron optimization" variable is 0.773 and the reliability of the "flight services" variable is 0.797. Both of these values are categorized as high, indicating good consistency and reliability of the instruments used to measure the variables under study.

Subsequently, the normality test using the Kolmogorov-Smirnov test showed a significance value of 0.200, which is greater than the alpha value (0.05). This suggests that the data from the "apron optimization" and "flight services" variables have a normal distribution.

The regression analysis results in this study provided deeper insights into the relationship between the "apron optimization" variable and flight services at Radin Inten II International Airport. With a coefficient of determination (R Square) value of 0.781 or 78.1%, this study successfully explained that about 78.1% of the variation in flight services can be attributed to the "apron optimization" variable. This indicates that apron optimization significantly influences the observed variations in flight services.

Furthermore, the regression results revealed a significance value of 0.000, which is below the established alpha value (0.05). Thus, this result indicates a significant influence between the "apron optimization" variable and flight services at Radin Inten II International Airport. This implies that changes in the "apron optimization" variable significantly contribute to observed changes in the quality of flight services. The significance of this value shows that the research findings are statistically strong. With a value lower than the alpha value, it can be concluded that the research findings are not coincidental, but rather depict a consistent and measurable relationship between apron optimization and flight services at the airport.

These findings have important implications for airport management. Apron optimization can significantly contribute to improving the quality of flight services. By considering optimization aspects such as apron maintenance, aircraft parking management, and enhancing supporting infrastructure, the airport can optimize flight services as a whole. The regression analysis in this study strengthens the finding that the "apron optimization" variable has a significant and crucial impact on flight services at Radin Inten II International Airport. Through the use of appropriate statistical methods, this research provides a strong empirical foundation for decision-making that impacts the enhancement of flight service quality.

4. CONCLUSION

Before the implementation of apron improvement at Radin Inten II International Airport in Lampung, there were frequent cascading flight delays due to issues like wheel collapses on aircraft. The root of this problem was related to the uneven apron surface, causing aircraft wheels to get trapped. However, after the apron optimization was carried out through parking management based on even surfaces, there was a noticeable improvement in flight services. Apron optimization has a clear and positive impact on flight services at Radin Inten II International Airport. In the short term, this action significantly enhances flight punctuality and overall operational efficiency.

Based on the findings of this research, the airport management, specifically PT (Persero) Angkasa Pura I, Radin Inten II International Airport Branch, is advised to pay special attention to the selection of parking spots, considering even apron surfaces and favorable conditions. This step is believed to prevent wheel collapses and have a positive impact on overall flight services. Additionally, repainting markings in the apron area is recommended to ensure safety and operational efficiency. Another alternative worth considering is the exploration of more robust and stable apron structures, considering their long-term benefits in supporting improved flight services.

Furthermore, to mitigate risks and uphold operational flight safety, it is recommended to continuously monitor faded or unclear markings and temporarily use physical indicators like cones for warning. In the effort to establish a safer working environment and better safety practices, regular awareness campaigns should be conducted to educate airport personnel about the importance of safety

consciousness. Safety should remain a core principle in every operational aspect to ensure optimal and efficient services.

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