The Impact of Aviobridge Facility on Flight Security, Safety, and Comfort

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ABSTRACT
Aviobridge is a facility used for passengers as a liaison between the departure/arrival terminal building for passengers and airplanes. Therefore, the Apron Movement Control (AMC) that provides aerobridges can facilitate the process of getting on and off passengers from airplanes while still paying attention to the security and safety of flight operations, so that using aviobridge is effective and makes passengers comfortable with the available aviobridge facilities. Broadly speaking, the purpose of this research is to look deeper into aerobridged facilities in providing security, safety, and flight comfort at Lampung Radin Inten II International Airport. This research uses quantitative methods with a description of the situation that occurs directly in the object of research. Data was obtained from direct observation, literature review, and distributing questionnaires to passengers totaling 50 respondents. The results of the calculations that have been done by the author use the Likert scale and are tested with validity tests, reliability tests, and correlation tests. The results obtained from this study that according to data that have been processed show that this aerobridged facility can provide security, safety, and comfort on flights at Lampung Radin Inten II International Airport. This is evidenced by validity tests, reliability tests, and correlation tests that have positive results that indicate that aerobridged facilities and flight security, safety, and comfort have a relationship.

Keywords: *Aviobridge, Security, Safety, Comfort*

1. INTRODUCTION

According to concerning Aviation, an airport is deemed as a significantly crucial site for conducting air transportation activities utilizing aircraft as the means of transport [1]. The growing importance of rapid and efficient modes of transportation has elevated airplanes to become the primary choice for long-distance travel due to their ability to cover vast distances in minimal time [2]. The term "bandar udara" refers to an airfield used for aircraft takeoff and landing, passenger embarkation and disembarkation, loading and unloading of cargo and mail, equipped with aviation safety facilities, and serves as an interchange point for various modes of transportation.

Aviation holds a pivotal role in modern air transportation, offering unparalleled convenience in swiftly transporting both people and goods across vast distances in a matter of hours [3]. As a result, the prominence of air travel has grown exponentially in the present era, owing to the increasing demand for modes of transportation that prioritize comfort, speed, and safety.

In the contemporary landscape, the significance of aviation transcends mere convenience, encompassing economic, social, and cultural dimensions. Economically, aviation fuels globalization by fostering international trade, business collaborations, and tourism. It enables goods to be transported swiftly and efficiently, connecting markets and industries across the globe. Additionally, the ease of air travel facilitates business meetings, conferences, and other time-sensitive engagements that drive economic growthand innovation.

Moreover, aviation's impact extends to social and cultural realms. It brings people together from different corners of the world, fostering cross-cultural exchanges, tourism experiences, and interpersonal relationships that enrich societies. The ability to explore diverse destinations and experience new cultures contributes to a more interconnected and tolerant global community.

However, while aviation offers an array of benefits, it also brings forth environmental challenges, primarily related to carbon emissions and ecological footprints. As the industry continues to evolve, efforts to mitigate its

environmental impact through technological advancements, sustainable practices, and regulatory measures are essential to ensure a harmonious coexistence with our planet.

Aviation safety stands as an unwavering effort and comprehensive policy aimed at mitigating the full spectrum of potential accidents during flight operations. In practical terms, the responsibility for aviation safety extends across a multitude of stakeholders, encompassing not only airlines and airport administrators, but also passengers who actively contribute to upholding the standards of flight safety. Recognizing the critical nature of aviation accidents, which carry an elevated degree of risk and the potential to imperil numerous lives, underscores the gravity of this collective commitment.

Over the course of years, a remarkable decline in the incidence of aircraft accidents has been observed. This achievement can be attributed to the collaborative endeavors of nations in diligently adhering to established aviation safety protocols. A pivotal role in this global effort is played by the International Civil Aviation Organization (ICAO), an internationally recognized aviation entity. Functioning as the arbiter of aviation standards, ICAO has established comprehensive guidelines and mandates for each member country. This overarching framework is designed to progressively minimize the overall level of aircraft accident risks, thereby ensuring a higher degree of safety for both passengers and aviation personnel.

The pursuit of aviation safety represents an ongoing commitment that transcends borders and unites nations in a common objective: safeguarding the lives and well-being of all individuals involved in air travel. Through unwavering adherence to established international standards and the collaborative dedication of various stakeholders, the aviation industry continues to evolve toward greater safety and reduced accident risks. By persistently striving for enhancement and fostering cooperation among involved parties, notable advancements have been achieved within the aviation sector to amplify safety and diminish the likelihood of accidents. The field has embraced global benchmarks and enacted strategies to tackle multifaceted facets encompassing jeopardy, safety, and protection. This encompasses the integration of management frameworks designed to proficiently oversee these elements across international, regional, and local scopes [4].

Airport services are divided into two categories: ground services and airside services [3]. Airside services are under full supervision of AMC personnel. One such service is the "garbarata," a covered bridge connecting the passenger waiting area to the aircraft door, facilitating passenger boarding and disembarkation [4]. The "garbarata" encapsulates a holistic approach to enhancing the overall travel experience for passengers. By directly linking the terminal to the aircraft, it eliminates the need for passengers to traverse open tarmacs, exposed to weather conditions that could potentially impact their comfort and well-being. This protection against adverse weather elements is particularly beneficial during inclement weather, such as rain, snow, or excessive heat, ensuring that passengers remain dry and comfortable throughout their journey to and from the aircraft.

Furthermore, the "garbarata" significantly expedites the boarding and disembarkation processes. Its integration with the aircraft's entryway allows for a more organized and efficient flow of passengers, minimizing congestion and reducing the time required for these crucial phases of the flight. This, in turn, contributes to punctuality in flight operations, enhancing overall travel experiences and customer satisfaction. Overall, the integration of the "garbarata" with the aircraft's entryway enhances travel experiences and customer satisfaction [5]

Moreover, the safety aspect of the "garbarata" cannot be understated. The covered bridge provides a controlled and secure pathway for passengers, shielded from potential hazards present on the tarmac. This includes protection from moving vehicles, equipment, and other potential risks that passengers might encounter in an open-air environment. The emphasis on safety aligns with the overarching aviation principle of prioritizing the well-being of passengers and personnel [6].

As a service provider, PT. Angkasa Pura II, Radin Inten II International Airport in Lampung, needs to enhance its services to provide passenger comfort. At Radin Inten II International Airport in Lampung, there are 2 garbaratas available at parking stand 1 and parking stand 2, both under the supervision of the Apron Movement Control (AMC) unit. According to the [7], if a garbarata experiences an error, it will be repaired by the Electrical & Mechanical Facility. This is done to ensure flight safety. Garbarata operators must possess the appropriate licenses as it significantly impacts operational flight safety. Petitt's research uncovered that pilot training and comprehension of aircraft operational systems emerged as noteworthy indicators of manual flight conduct [8]. For instance, if a garbarata is not properly attached, it leads to an unsafe passenger embarkation and disembarkation process. Errors frequently occur at Radin Inten II International Airport, causing disruptions in passenger boarding and disembarkation, leading to passenger discomfort due to waiting for garbarata repairs. The actual condition of garbaratas at Radin Inten II International Airport reveals discomforting factors such as dusty floors and leaking air conditioning, resulting in damp carpets, all of which contribute to passenger discomfort [9].

Figure 1 The condition of the garbarata

As outlined in the, it is stated that the garbarata must be kept clean, especially when passengers are about to use or pass through it [7]. The garbarata should be cleaned every morning before operational hours by the cleaning staff. However, in reality, it is often observed that garbaratas are in a dirty condition, causing passengers to feel uncomfortable when using them.

Figure 2 Cleaning Personel

In order to uphold the level of airside service (garbarata), an evaluation of its utilization needs to be conducted. One of the evaluation steps to be undertaken involves gathering feedback and assessments from garbarata users. To collect this feedback, the author distributes questionnaires to passengers. The collected data can subsequently be utilized to measure the effectiveness of garbarata utilization and assess passenger satisfaction. Hence, drawing from the aforementioned scenario, the objectives of this study are twofold: (1) To elucidate how the garbarata facility meets the standards of safety, security, and comfort in flights at Radin Inten II International Airport Lampung, (2) To ascertain whether the garbarata facility exerts an influence on the safety, security, and comfort of flights at Radin Inten II International Airport Lampung.

2. METHOD

The research methodology employed in this study is a quantitative research approach. Quantitative research method is utilized to investigate specific populations or samples and involves random sampling techniques [10]. Data collection is facilitated through research instruments, and data analysis is predominantly quantitative or statistical in nature, with the primary goal of testing predefined hypotheses [11]. The study was conducted at Radin Inten II International Airport Lampung from January 9, 2023, to March 31, 2023.

The research population consists of 100 passengers at Radin Inten II International Airport Lampung, from which a sample of 50 passengers who utilized the garbarata facility was selected. Data collection methods encompassed observation, questionnaire administration, and a literature review. Data analysis techniques included testing the validity and reliability of the questionnaire concerning the garbarata facility's influence on flight safety, security, and comfort at Radin Inten II International Airport Lampung. Validity testing was conducted to ascertain the questionnaire's credibility. The interrelation between variables was examined using the Pearson correlation test [12].

3. RESULT AND DISCUSSION

This research method uses primary data as its main source of information. The data collected for this study was obtained through the distribution of questionnaires to respondents, which aimed to collect information about aviobridge facilities at Radin Inten II International Airport Lampung regarding aviobridge facilities. The purpose of collecting this data is to know about aviobridge facilities. A total of 50 respondents were selected as samples for this study.

3.1. Result

3.1.1. Observation

The observation was conducted by the researcher at Radin Inten II International Airport in Lampung, commencing from January 9, 2023, until March 31, 2023. The researcher undertook field observations concerning the aviobridge facilities in relation to flight security, safety, and comfort. These observations encompassed instances during the maintenance of the aviobridge over a specified period of time. There are two aviobridge facilities at Radin Inten II International Airport in Lampung. A survey was conducted among several passengers by distributing questionnaires to gather their responses regarding the aviobridge facilities [13].

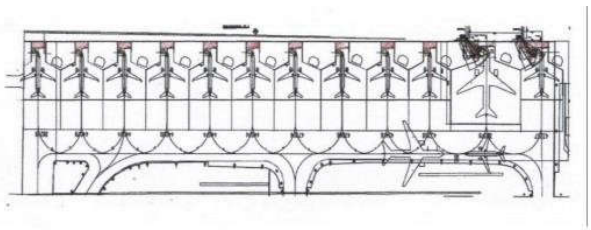


Figure 3 Layout Apron [7]

3.1.2. Literature Review

Based on the literature review conducted by the researcher, it encompassed relevant regulations such as [14]regarding the Maintenance and Prevention List, and

(SOP AMC Radin Inten II International Airport Lampung) concerning the Supervision and Coordination of Garbarata Cleanliness.

3.1.3. Questionnaire

The researcher distributed questionnaires to 50 respondents passing through the garbarata at Radin Inten II International Airport Lampung. Based on the questionnaires presented to 50 randomly selected respondents, who were airplane passengers at the Airport, as depicted in Figure 4.2 "Improvement of Garbarata at Radin Inten II International Airport Lampung," the questionnaire calculation formula employed the Likert scale, following the recommendation by [15]. The list of questions included in the questionnaire addressed to the respondents is as follows:

1) Aviobridge facility serves in flight security, safety, and comfort.
2) Aviobridge facility eases passengers in the boarding process.
3) Aviobridge facility enhances aircraft boarding service in all passenger conditions.
4) Usage of aviobridge facility provides aircraft boarding effectiveness and efficiency.
5) Standard-compliant aviobridge facility (clean and cool temperature) makes passengers feel comfortable.
6) Aviobridge facility offers protection from adverse weather conditions during aircraft boarding.
7) Aviobridge facility provides good accessibility for passengers with special needs.
8) Security, safety, and comfort are crucial factors in air transportation.\
9) An aviobridge service at the airport provides passenger comfort.
10) Aviobridge usage can enhance flight security, safety, and comfort.
11) Aviobridge provides added comfort for passengers with infants or small children.
12) Aviobridge facilitates passenger mobility for aircraft boarding.
13) Aviobridge offers passenger comfort from aircraft engine noise.
14) Aviobridge provides passenger convenience when entering the aircraft without having to walk to the airside area.

In order to ensure valid results, the measurement content must encompass all relevant aspects of the subject under examination [16]. The assessment of the instruments employed the Likert scale with a range of 1 to 5, and the validation assessment results were obtained for each instrument of the predetermined variables. The validity testing utilized the Pearson Correlation method, where the SPSS values were examined against the total table. The instrument is considered valid if the Pearson correlation > r table. The higher the Pearson correlation value, the more accurate the measurement (positive or negative signs can be disregarded as they only indicate the relationship between indicators).

Based on the validity test results with a sample of 50 respondents and an r-table value of 0.279, it was found that the validity of all items was confirmed as valid, since the validity results indicated > 0.344.

Reliability is an index that measures the extent to which a measuring instrument can be trusted or relied upon [17]. The reliability of the research instrument was assessed using the internal consistency method. Reliability was calculated based on the internal consistency of responses for each item that inquired about the same construct. The level of reliability is determined by the coefficient value. The instrument's reliability was tested using the Cronbach's Alpha formula, as the research instrument took the form of a questionnaire. The Cronbach's Alpha formula is as follows:

$$r_{11} = \left(\frac{n}{n-1}\right)\left(1 - \frac{\sum \sigma_t^2}{\sigma_t^2}\right)$$

Explanation:

r_{11} : Coefficient of Reliability

n : Number of statements/items being tested

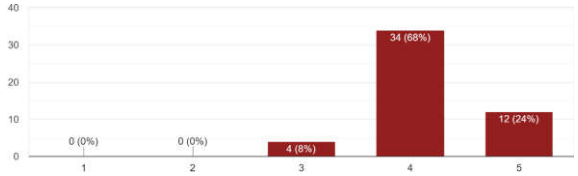
$\sum \sigma_t^2$: Sum of variances of scores for each item

σ_t^2 : Total variance

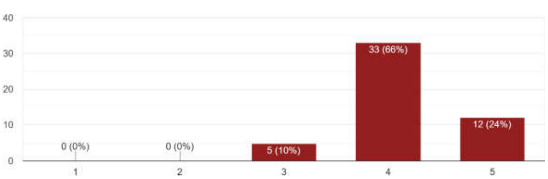
Reliable questionnaires are indicated by having a Cronbach's Alpha value. The minimum acceptable value for Cronbach's Alpha is 0.70, which implies that the instrument has an adequate level of reliability. If the Cronbach's Alpha value is > 0.80, it indicates that all items are reliable, and the entire test consistently exhibits strong reliability [11].

After conducting validity and reliability tests, the questionnaire was distributed to the respondents. The results of the questionnaire from 50 respondents regarding the 14 statement items are as follows:

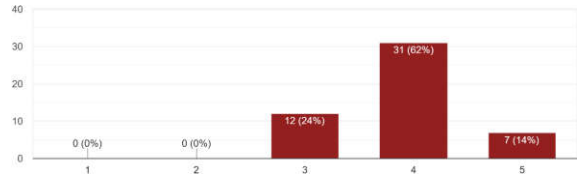
1) Item 1



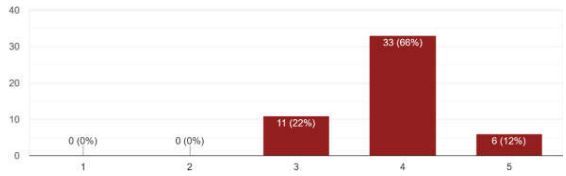
2) Item 2



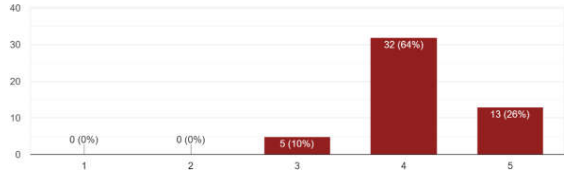
3) Item 3



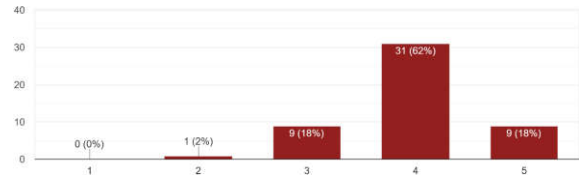
4) Item 4



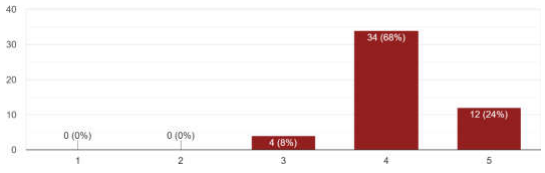
5) Item 5



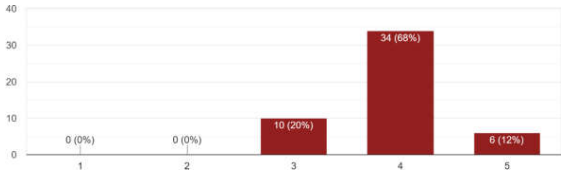
6) Item 6



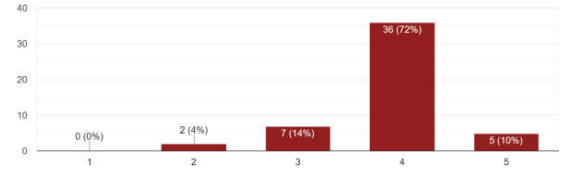
7) Item 7



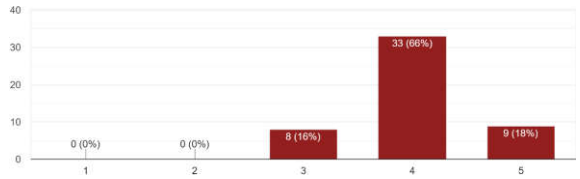
8) Item 8



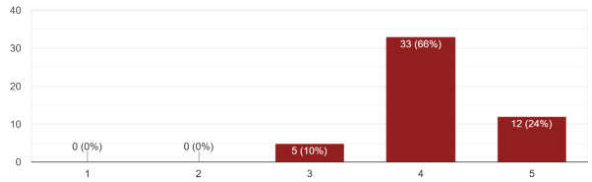
9) Item 9



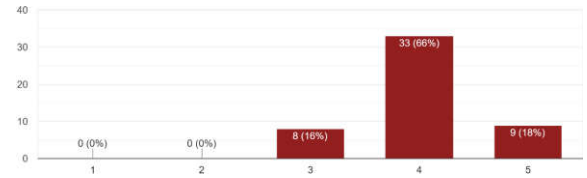
10) Item 10



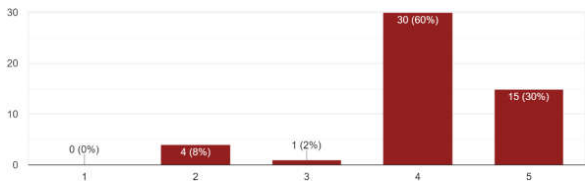
11) Item 11



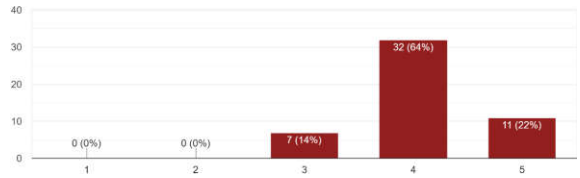
12) Item 12



13) Item 13



14) Item 14



3.1.4. Correlation Test

Correlations

		Var Y	Var X
Var Y	Pearson Correlation	1	.974**
	Sig. (2-tailed)		.000
	N	50	50
Var X	Pearson Correlation	.974**	1
	Sig. (2-tailed)	.000	
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4. Correlation Test Results

Based on the test results, it can be concluded that it has a significance value of 0.00 < 0.50, which means it has a significant relationship, and a Pearson correlation value of 0.974, indicating a perfect positive correlation.

3.2. Discussion

In the context of delving deeper into this research framework, a series of analyses have been conducted with a focus on testing the validity, reliability, and correlation involving variable x (avio-bridge facilities) and variable y (passenger comfort). The expounded results of the validity test reinforce the confirmation that all items possess validity values exceeding the threshold of 0.344. This signifies that the employed measurement instrument holds substantial credibility in gauging the desired variable dimensions. Moreover, the reliability test outcomes provide further insights, indicating that variable x demonstrates high consistency with values surpassing 0.880, while variable y boasts a Cronbach's alpha coefficient of 0.970. This underscores the instrument's reliability in measuring the dimensions of passenger comfort.

In the subsequent analysis, the correlation test utilizing Pearson correlation coefficients sheds light on the relationship between variables x and y. Although you have cited the threshold value of 0.05 as a measure of correlation strength, it is imperative to be reminded of the importance of considering statistical significance as a primary element in the assessment.

An aviobridge serves as a communication interface that facilitates the interchange of information across diverse media having distinct capacities. Its purpose is to connect varying technological alternatives, while also considering factors such as network quality, capabilities of user devices, and user preferences. The aviobridge functions as a consolidated platform, allowing the development of applications that span dissimilar capabilities present in different Digital Divides. It provides a mechanism for efficient interaction and cooperation between users and computational devices, enabling the sharing of text, audio, and high-bandwidth communication. The architecture of the aviobridge fulfills the demand for linking different media capabilities and is designed to tackle the challenges arising from the expanding array of technological choices [18].

The Aviobridge facilities have a significant impact on the aspects of Flight Security, Safety, and Comfort due to their central role in facilitating passenger embarkation and disembarkation processes, as well as interactions between passengers and aircraft within the airport area. Firstly, the Aviobridge facilities create a protected and secure pathway for passengers as they transition between the terminal and the aircraft. This reduces the risk of injuries or undesirable incidents that might occur when passengers interact with potentially hazardous airport environments.

Furthermore, in terms of Safety, the Aviobridge facilities enable passengers and flight crew to move in a more controlled and organized manner. This can reduce the risk of accidents or injuries that could arise from passenger movement around aircraft on runways or airport aprons, which are typically crowded with vehicles and other aviation equipment.

Meanwhile, within the context of Flight Comfort, Aviobridge facilities provide a sheltered and controlled environment for passengers as they board or disembark from the aircraft. This helps passengers avoid uncomfortable or even hazardous external weather conditions, such as heavy rain or extreme temperatures. Therefore, the Aviobridge facilities directly contribute to creating a more comfortable travel experience for passengers [19].

Overall, the impact of Aviobridge facilities on Flight Security, Safety, and Comfort is highly significant, as they mitigate the risk of injuries, enhance control over passenger and flight crew movement, and establish a comfortable environment during the embarkation and disembarkation processes [20].

4. CONCLUSION

The presence of an aerobridge facility at Lampung Radin Inten II International Airport significantly contributes to elevating the levels of security, safety, and comfort experienced during flights. This assertion gains robust support through a comprehensive set of meticulous assessments, encompassing validity tests, reliability tests, and correlation tests. These examinations collectively yield affirmative results that underscore the intrinsic connection between the aviobridge facilities and the critical dimensions of flight security, safety, and passenger well-being.

The conducted validity tests serve to authenticate the effectiveness and genuineness of the aerobridge facilities in bolstering the essential aspects of flight security, safety, and passenger comfort. The outcomes of these tests, aligning with established criteria, present compelling evidence that the aviobridge infrastructure operates as a robust component in fortifying these foundational elements of air travel.

Furthermore, the administered reliability tests substantiate the consistency and dependability of the aerobridge facilities in maintaining the desired standards of flight security, safety, and passenger comfort. The commendable reliability scores underscore the enduring and resilient nature of the aerobridge system, demonstrating its capacity to consistently deliver intended benefits over time.

Crucially, the conducted correlation tests unveil a positive and significant relationship between the utilization of aerobridge facilities and the augmentation of flight security, safety, and passenger comfort. These tests affirm that the integration of these facilities directly contributes to the enhancement of aviation standards, effectively addressing pivotal concerns and fostering a more secure, safe, and comfortable flying experience for both passengers and crew members.

Collectively, these comprehensive evaluations provide empirical substantiation for the assertion that aerobridge facilities play a pivotal role in bolstering the security, safety, and comfort dimensions of flights at Lampung Radin Inten II International Airport. The positive outcomes of the validity, reliability, and correlation tests not only validate the importance of these facilities but also emphasize their transformative influence in elevating the overall quality of air travel experiences.

In relation to the avio-bridge facilities at Radin Inten II International Airport in Lampung, these facilities are meticulously aligned with the requirements for flight security, safety, and comfort, as outlined in the Standard Operating Procedures (SOP) of Radin Inten II International Airport's Apron Movement Control (AMC). This alignment is vital, as any impairment to the avio-bridge will promptly prompt repair by the dedicated Electrical & Mechanical Facility personnel. Additionally, measures are in place to address potential issues such as leaks and water seepage within the avio-bridge, with cleaning personnel ready to rectify such situations while ensuring passenger movements remain unobstructed.

Furthermore, the impact of avio-bridge facilities on flight security, safety, and comfort is notable. While the avio-bridge seamlessly facilitates passenger embarkation and disembarkation processes and aids in flight operations, it is crucial to recognize that incorrect usage of these facilities could introduce risks to flight operations.

Based on the findings and conclusions presented by the author, several recommendations emerge. Firstly, it is advisable for the avio-bridge facilities at Radin Inten II Airport to undergo regular inspections in accordance with prevailing regulations. Consistent maintenance of the avio-bridge should be conducted as a standard practice. Secondly, to enhance avio-bridge services for passenger comfort, a structured maintenance regimen should be established, with meticulous attention to adherence to the Standard Operating Procedures (SOP) of Radin Inten II International Airport's Apron Movement Control (AMC). These steps collectively aim to ensure the continued effectiveness and optimal functioning of the avio-bridge facilities, thereby contributing to the overall excellence of the airport's operations.

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