ANALYSIS OF THE INCREASE OF PASSENGERS ON DEPARTUREAND ARRIVAL SERVICE FACILITIES AT CLASS 1 UTAMA JUWATA AIRPORT, TARAKAN, NORTH KALIMANTAN

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ABSTRACT
At this time there is a buildup of passengers found at the Class 1 Main Airport Juwata Tarakan. In compiling this research, the researcher used a quantitative descriptive forecasting method. The data source in this research was secondary data obtained from Class 1 Main Airport Juwata Tarakan. The number of passengers in 2045 based on the arithmetic forecasting method is 4,900,991 passengers. In addition, the number of departure service facility needs is 2,527.5m2 of Departure Hall, 80.25m2 of Departure Curb, 4 X-ray units, 2,200m2 of Departure Waiting Room, 398.75m2 of Check-in Area, 26 Check-in Counters, 26 Baggage Scales, 320 Seats, 2,264m2 of Arrival Hall, 990m2 of Baggage Claim Area, 83.6m2 of Arrival Curb and 211.2m2 of Toilet Needs.

Keywords: Juwata Tarakan Class 1 Main Airport, Increased passengers, Terminal service facilities, Terminal Departure, Terminal Arrival, Forecasting.

1. INTRODUCTION

North Kalimantan is one of the youngest provinces in Indonesia, officially established in 2012after being separated from East Kalimantan. The province gained full autonomy in 2017, with the authority to develop its region in accordance with the Republic of Indonesia Law No. 20 of 2012. One of the key cities in this province is Tarakan, which has high accessibility, particularly through air transportation. Juwata Tarakan Class 1 Main Airport, which serves as a hub between domestic and pioneer airports, is one of the vital facilities in this region. The airport is managed by the Ministry of Transportation through the Airport Implementation Unit (UPBU) and plays a strategic role in supporting the mobility of people and the economic growth of the area.

Juwata Tarakan Class 1 Main Airport has a long history, initially built during the Dutch colonial period and used as a military airbase. During the Japanese occupation, Japanese fighter planes first landed in Indonesia on January 11, 1942, at this airport. Since Indonesia's independence, the airport has been officially owned by the Indonesian government and has functioned as a pioneer airport, serving only small aircraft. However, with the increasing number of passengers each year, the airport's capacity has come under greater scrutiny to ensure the safety and comfort of flights. The supervision of airport facilities has become a crucial aspect of its operations. The management of Juwata Tarakan Class 1 Main Airport continues to strive to enhance its facility capacity to meet the growing demand for air transportation.

Currently, Juwata Tarakan Class 1 Main Airport has a total passenger terminal area of 12,044 m², with the last development carried out in March 2016. However, given the significant increase in the number of passengers each year, the airport faces a major challenge in terms of the capacity and comfort of the terminal facilities, both for departures and arrivals. These terminals are a critical part of the landside facilities regulated by the Indonesian National Standard (SNI) 03-7046-2004, which requires that every airport in Indonesia provides adequatefacilities for passenger comfort and safety. The current situation shows passenger congestion in the arrival and departure terminals, particularly in the baggage claim area and the arrival and departure halls.

Given the predicted continued increase in passengers through 2045, comprehensive development planning is required to anticipate this surge. The construction of new terminals or the expansion of existing terminals is urgently needed so that the airport can continue to provide optimal service. This aligns with President Joko Widodo's directive, which mandates the Ministry of National Development Planning to formulate the Vision of Golden Indonesia 2045, where the transportation sector is considered one of the main drivers of economic growth and national progress.

This study aims to provide an overview of the predicted number of passengers at Juwata Tarakan Class 1 Main Airport in 2045. With this prediction, the study also seeks to determine the requirements for departure and arrival service facilities that the airport must provide to accommodate the increasing number of passengers in the future. The results of this study are expected to serve as a reference in planning the development of facilities at the airport to provide optimal service, support passenger safety and comfort, and contribute to the economic growth of North Kalimantan and Indonesia as a whole.

The benefits expected from this research include providing accurate information on passenger forecasts and the needs for service facilities at Juwata Tarakan Class 1 Main Airport up to 2045. This information will be highly useful for airport management in evaluating and planning the development of departure and arrival service facilities, ensuring better service for passengers in the future. Additionally, this research is hoped to serve as a reference for relevant parties in making strategic decisions regarding the development of air transportation infrastructure in Indonesia.

2. LITERATURE REVIEW

2.1 Airport Definition

The definition of an airport is outlined in the Indonesian Minister of Transportation Regulation No. 39 of 2019, which describes an airport as a restricted area located on land or water, serving as a site for aircraft to land and take off, where passengers board and disembark, cargo is loaded and unloaded, and transfers occur between and within modes of transportation. Airports are also equipped with essential safety and security facilities, as well as other primary and supporting infrastructure.

Similarly, Presidential Regulation No. 27 of 2021 concerning the Implementation of Public Service Obligations for the Transportation of Goods to and from Remote, Isolated, Outermost, and Border Areas defines an airport as a designated area on land and water, with specific boundaries, used for aircraft landings and takeoffs, passenger boarding and disembarkation, cargo handling, and transportation mode transfers, all supported by flight safety and security facilities.

The International Civil Aviation Organization (ICAO) Annex 14 of 2004 expands on this, defining an airport as a specific area, whether on land or water, including buildings, equipment, and installations, designated entirely or partially for aircraft arrivals, departures, and activities. The airport's role as afacilitator for air passengers is underscored by the Directorate General of Civil Aviation through SKEP/77/VI/2005, which describes an airport as an airfield designed and built with flight safety facilities to support activities such as aircraft takeoffs and landings, passenger exchange areas, and cargo or mail handling, aswell as intermodal transfer points.

2.2 Definition of Passengers

According to Indonesian Minister of Transportation Regulation No. PM. 38 of 2015, a passenger is defined as someone who uses air transportation services, holding a ticket with valid personal identification documents and a boarding pass. Passengers are individuals transported in an aircraft or other means of transport with the consent of the transport service provider. Yoeti (1999) further elaborates that a passenger is essentially a buyer of a product or service at a particular place, thereby becoming a customer. In essence, a passenger is an individual or group that utilizes transportation services, paying for the journey provided by the company with the carrier's consent.

Special needs passengers, or those requiring specific accommodations due to physical conditions or special requests, fall under the category of passengers with special needs. These include people with disabilities, the elderly, children, pregnant women, and individuals who are ill. To adequately serve air transportation passengers at airports, several service standards are implemented, including safety, security, reliability, comfort, convenience, and equality. These standards encompass the availability of safety information and facilities, security personnel and infrastructure, passenger and baggage checks, boarding services, and baggage handling, along with amenities like toilets, prayer rooms, optimized lighting, temperature regulation, smoking areas, cleanliness, and ground staff services.

2.3 Airport Terminal Facilities

Airport terminal facilities are crucial in serving all passenger activities from departure to arrival. The terminal building's space requirements are determined by the number of passengers and standards set by the Directorate General of Civil Aviation through SKEP.347/XII/1999 regarding the Design and

Engineering Standards for Airport Facilities and Equipment. The space needed for passenger terminals is typically calculated per passenger, meeting operational safety requirements. To enhance passenger service and comfort, these areas can be expanded. The terminal size is influenced by the annual passenger volume and peak-hour passenger traffic, which determine the necessary space within the terminal building.

According to the Directorate General of Civil Aviation Regulation No. SKEP.77/VI/2005 on Technical Requirements for Operating Airport Facilities, passenger terminal buildings are designed to facilitate all activities from departure to arrival. The terminal is divided into three key aspects: departure, arrival, and supporting airport equipment.

Departure facilities refer to the infrastructure and services provided at the airport to handle passengers and cargo before departure. These include departure lounges, check-in counters, baggage handling systems, and security checks. Arrival facilities encompass buildings and infrastructure that manage the arrival of passengers and cargo. These facilities, such as arrival halls, baggage claim areas, customs, and immigration facilities, are designed to provide a comfortable and efficient exit from the airport. Additionally, arrival facilities include amenities like toilets, food and beverage options, and seating areas for passengers while their baggage is being processed.

3. METHOD

The research employs a quantitative forecasting method to analyze future trends in passenger growth and its impact on the service facilities at Juwata Tarakan Airport, North Kalimantan. According to Stevenson & Chuong (2018), forecasting is a fundamental input in decision-making processes, providing essential information on future demand. This study uses time series and causal methods for quantitative forecasting, focusing on the mathematical relationships between dependent and independent variables over time.

The research design outlines a structured plan to analyze the relationship between variables. The independent variable in this study is passenger growth, while the dependent variable includes the service facilities at the airport, such as the departure and arrival areas. This design aims to provide comprehensive answers to the research questions by systematically studying the impact of increasing passenger numbers on airport facilities.

The study's population comprises the annual passenger numbers at Juwata Tarakan Airport from 2014 to 2018. A sample is drawn from peak travel periods within these years to analyze the busiest times at the airport. Data is collected through secondary sources, including documented records and relevant literature.The study utilizes Microsoft Excel for data analysis,applying arithmetic methods for forecasting and standard regulatory measures to calculate the required area for terminal service facilities.

4. RESULT AND DISCUSSION

4.1 Research Results

4.1.1 Passenger Prediction Results in 2045

Passenger data from 2014 to 2018 for passengers arriving and departing at Juwata Tarakan Main Class 1 Airport has consistently increased. The increase in the number of passengers can be seen in more detail in Table 4.1. Data on arriving and departing passengers will later be used as a reference in forecasting projections of arriving and departing passengers until 2045, as well as used in analyzing the need for the area of departure and arrival service facilities.

Table 4.1 Passenger Growth 2014 – 2018

No	Year	Passenger		Amount	Growth (%)
		Come	Leave		
1.	2014	342,683	348,725	691,408	-
2.	2015	353,996	361,092	715,088	3%
3.	2016	488,443	495.129	983,572	37%
4.	2017	533,581	541,429	1,075,010	9%
5.	2018	615,465	619.115	1,234,580	14%
Average increase					15.7%

To determine the development of the use of departure and arrival service facilities at Juwata Tarakan Main Class 1 Airport in 2045, passenger forecasting calculations are needed to analyze the needs for the area of departure and arrival service facilities at Juwata Tarakan Main Class 1 Airport, passenger data is needed at busy times which can be obtained from annual passenger number data as shown in table 4.1 and then calculated using the arithmetic forecasting method assisted by using Microsoft Excel software.

4.1.1.1 Arithmetic Analysis

Projecting the number of passengers using the arithmetic method assumes that the number of passengers in the future will increase by the same amount every year. The projection result will be in the form of a straight line. The calculations used in the arithmetic method are as follows (Rizky, 2021):

$$p_n = p_o + n.r \rightarrow r = \frac{(P_o - P_n)}{n} \rightarrow r = \frac{\Sigma r'}{n}$$

The initial step is to find the number of passengers which can be calculated by = number of passengers in year n – number of passengers in year n-1. It is known that the number of passengers in 2015 = 715,088 people and the number of passengers in 2014 (n-1) = 691,408 people. So = 715,088 – 691,408 = 23,680 people. Table 4.2 is a table of calculation results using the arithmetic method for the number of passengers from 2014 to 2018.$r'r'r'r'$

Table 4.2 Arithmetic Method Calculations

Year	Number of Passengers	r'
2014	691,408	-
2015	715,088	23,680
2016	983,572	268,484
2017	1,075,010	91,438
2018	1,234,580	159,570
Amount		543,172

So,$r = \frac{\sum r}{4} = \frac{543.172}{4} = 135.793$

The arithmetic method calculation for the number of passengers is:

$p_n = p_o + n.r$

$p_{2019} = 1234580 + (1x135.793)$

$p_{2019} = 1.370.373$

Table 4.3 is the result of calculations using the arithmetic method for the number of passengers from 2019 to 2045.

Table 4.3 Arithmetic Calculation Results

Year	r	Pn	No	Year	r	Pn
2019	135,793	1,370,373	15	2033	135,793	3,271,475
2020	135,793	1,506,166	16	2034	135,793	3,407,268
2021	135,793	1,641,959	17	2035	135,793	3,543,061
2022	135,793	1,777,752	18	2036	135,793	3,678,854
2023	135,793	1,913,545	19	2037	135,793	3,814,647
2024	135,793	2,049,338	20	2038	135,793	3,950,440
2025	135,793	2,185,131	21	2039	135,793	4,086,233
2026	135,793	2,320,924	22	2040	135,793	4,222,026
2027	135,793	2,456,717	23	2041	135,793	4,357,819
2028	135,793	2,592,510	24	2042	135,793	4,493,612
2029	135,793	2,728,303	25	2043	135,793	4,629,405
2030	135,793	2,864,096	26	2044	135,793	4,765,198
2031	135,793	2,999,889	27	2045	135,793	4,900,991
2032	135,793	3,135,682				

From the table above, it can be seen that the predicted number of passengers at Juwata Tarakan Main Class 1 Airport is 4,900,911 people.

4.1.1.2 Prediction of Number of Passengers at Peak Times

Regulation of the Minister of Transportation of the Republic of Indonesia Number 41 of 2023 can be used as a reference to obtain the number of busy time passengers (PWS) for 2019-2045. Based on passenger forecasting calculations using the arithmetic method, it can be seen that in 2045 the estimated number of passengers will reach 4 million/year. Determination of the passenger coefficient during busy times is adjusted to the number of passengers/year as shown in Table 4.4.

Table 4.4 Rush Time Passengers

Number of Pax/year (Million)	PWS Coefficient (%)
>30	0.035%
20 – 29,999	0.40%
10 – 19,999	0.045%
1 – 9,999	0.050%
0.5 – 0.999	0.080%
0.1 – 0.4999	0.130%
< 0.1	0.2%

Source: PM 41 of 2023

Next, find out passenger calculations during busy times in 2019-2045 of course refers to the coefficient obtained from
Table 4.4 is then accumulated into the following formula. The results of the calculation of Rush Time Passengers in 2019-2045 are available seen in Table 4.5.

$$PWS = \frac{JumlahPenumpang/tahun \times koefPWS}{100} \quad \ldots(4.1)$$

Table 4.5 Busy Time Passenger Forecasting

Year	Number of Passengers	Coefficient (%)	PWS
2019	1,370,373	0.05	685
2020	1,506,166	0.05	753

Year	Number of Passengers	Coefficient (%)	PWS
2021	1,641,959	0.05	820
2022	1,777,752	0.05	888
2023	1,913,545	0.05	956
2024	2,049,338	0.05	1,024
2025	2,185,131	0.05	1,092
2026	2,320,924	0.05	1,160
2027	2,456,717	0.05	1,228
2028	2,592,510	0.05	1,296
2029	2,728,303	0.05	1,364
2030	2,864,096	0.05	1,432
2031	2,999,889	0.05	1,499
2032	3,135,682	0.05	1,567
2033	3,271,475	0.05	1,635

Table 4.5 Peak Time Passenger Forecasting (Continued)

Year	Number of Passengers	Coefficient (%)	PWS
2034	3,407,268	0.05	1,703
2035	3,543,061	0.05	1,771
2036	3,678,854	0.05	1,839
2037	3,814,647	0.05	1,907
2038	3,950,440	0.05	1,975
2039	4,086,233	0.05	2,043
2040	4,222,026	0.05	2,111
2041	4,357,819	0.05	2,178
2042	4,493,612	0.05	2,246
2043	4,629,405	0.05	2,314
2044	4,765,198	0.05	2,382
2045	4,900,991	0.05	2,450

The table above is the result of peak passenger forecasting for all passengers, both arriving and departing passengers. From the results of this table, it can be seen that the predicted number of busy passengers in 2045 is 2,450 passengers. To analyze the facility capacity requirements at Juwata Tarakan Main Class 1 Airport in 2045 based on peak passengers, it is necessary to analyze the estimated number of departing passengers and peak passengers in 2045.

The data used in calculating the number of transfer passengers is as explained in SKEP 77/VI/2005 that the number of transfer passengers is equal to 20% of the number of passengers during busy times. Based on this formula, the following results are obtained.

Number of transfer passengers = Busy time passengers x 20%.....(4.2)

Number of transfer passengers = 2450 x 20%

= 490 passengers

In determining busy arrival and departure passengers, the average percentage of each of the two data is used, where the average percentage of arriving passengers is 51% while for departing passengers it is 49%. The results of the average percentage of passengers obtained can be seen from the following table.

Table 4.6 Percentage of PWS Arrivals and Departures

No	Year	Passenger		Amount
		Departure	Arrival	
1	2014	342,683	348,725	691,408
2	2015	353,996	361,092	715,088
3	2016	488,443	495.129	983,572
4	2017	533,581	541,429	1,075,010
5	2018	615,465	619.115	1,234,580
Total		2,334,168	2,365,490	4,699,658
Comparison (%)		49%	51%	100%

In analyzing space requirements, data is needed for each passenger during busy times, both arriving and departing passengers. In determining busy arrival and departure passengers, the average percentage of each of the two data is used, where the average percentage of arriving passengers is 51% while for departing passengers it is 49%. Passenger busy times are used to calculate the extensive requirements for departure and arrival service facilities. Based on the results of accumulated data, more detail can be seen in Table 4.7.

Table 4.7 PWS Forecasting Results

Passenger Data	Amount
Passengers depart during busy times	960

Passengers arrive at busy times	1000
Busy time transfer passengers	490

Next, the results are calculated using the total peak passenger results and the data obtained is as shown in Table 4.8.

Table 4.8PWS Coming and Going

Year	PWS	Coming (51%)	Departing (49%)	Transfers (20%)
2019	685	279	269	137
2020	753	307	295	151
2021	820	335	321	164
2022	888	362	348	178
2023	956	390	375	191
2024	1,024	418	401	205
2025	1,092	446	428	218
2026	1,160	473	455	232
2027	1,228	501	481	246
2028	1,296	529	508	259
2029	1,364	556	535	273
2030	1,432	584	561	287
2031	1,499	611	588	300
2032	1,567	639	614	314
2033	1,635	667	641	327
2034	1,703	695	667	341
2035	1,771	723	694	354
2036	1,839	750	721	368
2037	1,907	778	748	381
2038	1,975	806	774	395
2039	2,043	833	801	409
2040	2,111	861	828	422
2041	2,178	889	854	435
2042	2,246	916	881	449
2043	2,314	944	907	463
2044	2,382	972	934	476
2045	2,450	1000	960	490

Table 4.8 PWS Arrivals and Departures (Continued)

4.1.2 Results of Area Requirements for Terminal Service Facilities

In calculating the space requirements for departure and arrival service facilities, of course you need supporting data in the form of data on busy arrival and departure passengers. Based on Table 4.8, it can be seen that in 2045 there will be 1000 passengers arriving at busytimes, while there will be 960 passengers during peak departing times.

The calculations used in analyzing space requirements in 2045 are as follows:

- Departure

1) Hall Departure

The area of the departure hall can be calculated using the formula:

$A = 0{,}75\{a(1+f)+b\}\ m^2$……..(4.3)

Calculation:

$A = 0{,}75\{a(1+f)+b\}\ m^2$

$A = 0{,}75(960(1+2)+490)$

$A = 0{,}75(960(3)+490)$

$A = 0{,}75(3370)$

$A = 2527{,}5m^2$

2) Curbs Departure (Departure Terrace)

The length of the departure curb can be calculated as below:

$L = 0{,}095\ a.p +$ 10%.....
.....(4.4)

Calculation:

$L = 0{,}095\ a.p + 10\%$

$L = 0{,}095\ 960.80\% + 10\%$

$L = 0{,}095.768 + 10\%$

$L = 80{,}25m^2$

3) Security Check (security gate)

To calculate the number of X-rays needed, you can use the formula below:

$N = \frac{(a+b)}{300} unit$……..…(4.5)

Calculation:

$N = \frac{(960+490)}{300} unit$

$N = 4\ unit\ X-ray$

4) Departure Waiting Room

The area of the departure waiting room can be calculated using the formula:

$A = c\ (\frac{ui+vk}{30})\ m^2(+10\%)$……...(4.6)

Calculation:

$A = c\ (\frac{ui+vk}{30})\ m^2(+10\%)$

$A = 1000\ (\frac{90.50\%+30.50\%}{30})\ m^2(+10\%)$

$A = 1000\ (\frac{45+15}{30})\ m^2(+10\%)$

$A = 1000(2)m^2(+10\%)$

$A = 2500m^2(+10\%)$

$A = 2200m^2$

5) Check-in Area

The area of the check-in area can be calculated using the formula below:

$A = 0{,}25\ (a + b)m^2(+10\%)$…….(4.7)

Calculation:

$A = 0{,}25\ (a + b)m^2(+10\%)$

$A = 0{,}25\ (960 + 490)m^2(+10\%)$

$A = 0{,}25\ (1450)m^2(+10\%)$

$A = 362{,}5m^2(+10\%)$

$A = 398{,}75m^2$

6) Check-in Counter

The number of tables needed can be calculated using the formula below:

$N = \frac{(a+b)t1}{60} posisi(+10\%)$……..…(4.8)

Calculation:

$N = \frac{(a+b)t1}{60} posisi(+10\%)$

$N = \frac{(960+490)1}{60} posisi(+10\%)$

$N = 24{,}16posisi(+10\%)$

$N = 26posisi$

7) Luggage Scales

The number of baggage scales corresponds to the number of check-in counters. So the number of luggage scales is 26 pieces.

8) Seat

The estimated number of seats can be calculated using the formula:

$N = \frac{1}{3} \times a$……..(4.9)

Calculation:

$N = \frac{1}{3} \times a$

$N = \frac{1}{3} \times 960$

$N = 320$

- Arrival

1) Hall arrival

$A = 0{,}375\ (\ b\ + c + 2.c.f\ ) + 10\%$….(4.10)

Calculation:

$A = \ 0{,}375\ (\ b\ +\ c\ +\ 2.c.f\ )\ +\ 10\%$

$A = \ 0{,}375\ (\ 490 + 1000 + 2.1000.2\ )\ +\ 10\%$

$A = \ 0{,}375\ (\ 5490\ )\ +\ 10\%$

$A = \ 1387{,}5\ +\ 10\%$

$A = \ 2264{,}6m^2$

2) Baggage Claim Area

To determine the area required for the baggage claim area, the calculation as below is used

$A = \ 0{,}9c\ +\ 10\%$.....(4.11)

Calculation:

$A = \ 0{,}9c\ +\ 10\%$

$A = 0{,}9.1000 + 10\%$

$A = 990m^2$

3) *Curbs*Arrival (Arrival Terrace)

This facility can be calculated using the following formula:

$L = 0{,}095\ (c \times p) + 10\%$.....(4.12)

Calculation:

$L = 0{,}095\ (c \times p) + 10\%$

$L = 0{,}095\ (1000 \times 80\%) + 10\%$

$L = 0{,}095\ (800) + 10\%$

$L = 76 + 10\%$

$L = 83{,}6m^2$

4) Toilet Needs

The required toilet area can be calculated using the following formula:

$A = a \times 0{,}2 +$
10%.....(4.13)

Calculation:

$A = a \times 0{,}2 + 10\%$

$A = 960 \times 0{,}2 + 10\%$

$A = 211{,}2m^2$

4.2 Discussion

4.2.1 Discussion of Predicted Number of Passengers

Method usedTo predict the number of passengers, namely the arithmetic method of the forecasting method, you can see significant growth comparisons to find a passenger forecasting model in the future and project the forecast to find out the number of passenger demands in the next 21 years.

4.2.1.1 Arithmetic Methods

Projecting the number of passengers using the arithmetic method assumes that the number of passengers in the future will increase by the same amount every year. The projection result will be in the form of a straight line. (Rizky, 2021). Below is a table of passenger growth percentages and a passenger growth graph using calculations from the results of the arithmetic method.

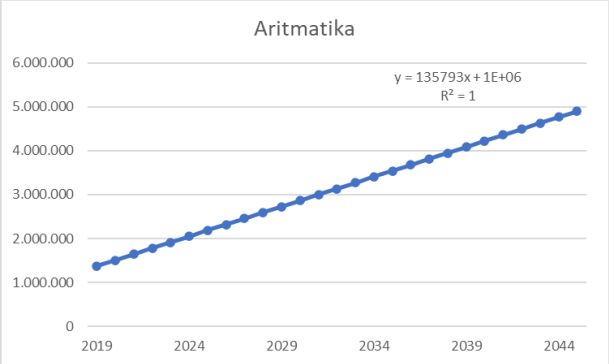
Table 4.9Percentage Growth Arithmetic Method

Year	Number of Passengers	Growth (%)
2019	1,370,373	-
2020	1,506,166	10%
2021	1,641,959	9%
2022	1,777,752	8%
2023	1,913,545	8%
2024	2,049,338	7%
2025	2,185,131	7%
2026	2,320,924	6%
2027	2,456,717	6%
2028	2,592,510	6%
2029	2,728,303	5%
2030	2,864,096	5%
2031	2,999,889	5%
2032	3,135,682	5%
2033	3,271,475	4%
2034	3,407,268	4%
2035	3,543,061	4%
2036	3,678,854	4%
2037	3,814,647	4%
2038	3,950,440	4%
2039	4,086,233	3%
2040	4,222,026	3%
2041	4,357,819	3%

Table 4.9 Percentage Growth Arithmetic Method (Continued)

Year	Number of Passengers	Growth (%)
2042	4,493,612	3%
2043	4,629,405	3%
2044	4,765,198	3%
2045	4,900,991	3%

Figure 4.1 Arithmetic Method Passenger Forecasting Chart



So we got significant passenger forecasting results using the arithmetic method with projections of the number of passengers based on the largest positive determination number (closest to 1 or -1). Significant growth was using the arithmetic method.

4.2.2 Discussion of the Area of Terminal Service Facilities

Based on the analysis above, a comparison was obtained between the existing building area and the area that should be based on SNI 03-7046-2004 concerning Airport Passenger Terminals, which can be seen in the table below:

Table 4.10 Area Comparison

No	Description	Current situation	Analysis results
1	*Hall*Departure	1,450m^2	2527,5m^2
2	*Curbs*Departure	34m^2	80,25m^2
3	Security Check (X-ray)	2 units	4 units
4	Departure Waiting Room	741m^2	2200m^2
5	*Check-in Area*	288m^2	398,75m^2
6	*Check-in Counter*	14 pieces	26 pieces
7	Luggage Scales	14 pieces	26 pieces
8	Seat	495 pieces	320 pieces
9	*Hall*Arrival	414m^2	2264,6m^2
10	*Baggage Claim Area*	273m^2	990m^2
11	*Curbs*Arrival	27m^2	83,6m^2
12	Toilet Needs	69m^2	211,2m^2

From table 4.10 of the calculation results, it can be seen that the seating requirements have met the requirements, while for several departure and arrival service facilities they have not met the technical requirements for operating services at airports as stated in SKEP.77/VI/2005. The results of forecasting the number of passengers using the arithmetic analysis method of the total annual number of passengers arrivingand departing at Juwata Tarakan Class 1 Main Airport show a very striking increase.

From calculations that have been calculated based on the current condition of the terminal facilities and calculating the projection forecast for the next 21 years using the arithmetic method. The condition of the existing terminal facilities at Juwata Tarakan Main Class 1 Airport currently allows it to accommodate passengers at busy times but the arrival hall needs to be expanded due to the accumulation of passengers and does not meet the requirements of SKEP.77/VI/2005. From the forecast calculated for the next 21 years, it is necessary to add space requirements for the departure and arrival service facilities so that the Juwata Tarakan Main Class 1 Airport terminal building can accommodate the number of passengers at busy times in 2045. Therefore, it is necessary to expand the terminal. By adding a number of facilities according to the needs that have been taken into account.

3. CONSCLUSION

Based on the analysis and discussion regarding the necessary area for departure and arrival service facilities at Juwata Tarakan Class 1 Main Airport, the following conclusions were reached: The forecasting results for passenger growth in 2045, using the arithmetic method, indicate an annual increase in the number of passengers, with a projected total of 4,900,991 passengers by 2045. The departure and arrival service facilities at Juwata Tarakan Class 1 Main Airport will require expansion by 2045 to meet the standards outlined in SKEP.77/VI/2005 and PM 41 of 2023. According to the arithmetic forecasting method, the required area for departure service facilities includes a 2,527.5 m² Departure Hall, an 80.25 m² Departure Curb, four X-ray Security units, a 2,200 m² Departure Waiting Area, a 398.75 m² Check-in Area, 26 Check-in Counters, 26 Baggage Scales, and 320 seats. For arrival service facilities, the necessary areas include a 2,264 m² Arrival Hall, a 990 m² Baggage Claim Area, an 83.6 m² Arrival Curb, and a 211.2 m² Toilet area.

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