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Evaluation of Ability to Pay and Willingness to Pay Kualanamu Airport Railink User Service

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Abstract

Kualanamu Airport railway transportation has yet to become the public's leading choice for commuting to Kualanamu Airport because, according to the public, the rates set are still relatively expensive. So, further research is needed on the level of passenger satisfaction, ability to pay (ATP), and willingness to pay (WTP) so that tariffs can be determined according to people's ability and willingness to pay. The method used in this research includes distributing questionnaires and interviews using stated preference techniques. The methods used in this research are the importance-performance analysis (IPA) method and the household budget method. The main priority for the level of satisfaction that needs to be improved is the attribute in quadrant 1 (A), namely the time interval between Kualanamu Airport train, Kualanamu Airport train operational schedules, and Kualanamu Airport train ticket prices. The ability to pay (ATP) for train users at Kualanamu Airport is IDR 79,000. Willingness to pay (WTP) from Kualanamu Airport train users is IDR 49,000.

Keywords

Kualanamu Airport railway, *i*mportance performance analysis (IPA), ability to pay (ATP), willingness to pay (WTP)

INTRODUCTION

Global economic instability often results in an increase in the cost of vehicle operations and a decrease in the ability of people to pay the amount of the tariff set as a user of public transportation. At the beginning of its operation in 2013, the Kualanamu Airport train was charged by PT Railink at IDR 80,000/ person for one way trip, this nominal was the result of consideration of vehicle operational costs at that time, but the condition of the break event point (BEP) could be achieved if the tariff set at IDR 70,000 / person for one trip with an estimated 70% of each airport train trip filled with 70% of [1]**.**

Along the way, airport train fares have changed. On January 15, 2015, the airport train fare increased by IDR 100,000/ person for one trip. This tariff determination is based on consideration of increased operational costs due to the weakening of the rupiah exchange rate to the US dollar, causing high component spare parts costs and the use of non-subsidized **[2].**

After the COVID-19 pandemic, on November 1, 2022, the Kualanamu Airport train fare will be IDR 70,000 / person for one trip. These rates are valid until now in 2023. However, Kualananu Airport train fares charged by Kualanamu Airport trains are currently still relatively expensive compared to other modes of transportation to the airport such as buses.

In previous research, it was known that the ideal fare recommendation for the Kualanamu Airport train was IDR 69,375, where 72.5% of respondents had the ability to pay, and the average willingness of respondents to pay was IDR 60,375, where the applicable fare at the time of the study was IDR 80,000 of [1]. In previous research, it was also found that the load factor of the Kualanamu Airport train was 28.95%, and there was 71.05% of the potential unused train capacity, with the applicable tariff at the time of research of IDR 100,000 / person for one trip [3].

During its 10-year operation, passengers still have not chosen the Kualananu Airport train as a mode of transportation to and from Kualananu Airport where the passenger load factor a few years ago only reached 28.95%. Therefore, it is very necessary to analyze the satisfaction of Kualanamu Airport train customers to find out what factors are maintained and the top priority factors that need to be improved service quality. To analyze user satisfaction, the IPA (Importance Performance Analysis) method can be used [4]. And then analyzing the choice of transportation mode, it can be done by considering ability to pay (ATP) and willingness to pay (WTP) [5]. By knowing the level of satisfaction, ability to pay (ATP) and willingness to pay (WTP) from the perspective of Kualanamu Airport Train service users, this research can be used as input for improving performance and setting tariffs for the Kualanamu Airport Train.

RESEARCH SIGNIFICANCE

This research aims to analyze the level of satisfaction of people using the Kualanamu airport train, ability to pay

(ATP) and willingness to pay (WTP). We hope that knowing the level of satisfaction, ability to pay and willingness to pay for Kualanamu Airport train transportation can be a management consideration for increasing the number of passengers using the Kualanamu Airport train.

METHODOLOGY

This study aims to analyze the level of satisfaction of Kualanamu airport train users, ability to pay (ATP), and willingness to pay (WTP). Knowing the level of satisfaction, ability to pay, and desire to pay for Kualanamu Airport train transportation can be a management consideration to increase the number of passengers using Kualanamu Airport trains.

A. COLLECTION OF TECHNIQUE DATA

The stated preference technique is a data collection technique that refers to the approach to respondents' opinions in the face of various [6]. The stated preference survey can be used to analyze changes in transportation demand by considering differences in price sensitivity [7]. Using the expressed preference (SP) technique can assess passenger transportation mode choice behavior with several additional variables that combine the specific characteristics of the selected market [8].

Table 1. Service Attribute

SERVQUAL	Attribute	Code
Reliability	Accuracy of the Kualanamu Airport Train travel schedule	1
	Easy ticket ordering directly or online	2
	Time interval between airport trains	3
	Kualanamu airport train travel time	4
	Kualanamu Airport train operating schedule	5
Assurance	Security facilities, lighting and CCTV surveillance cameras in one train series and at the station	6
	Uniformed security officers are equipped with attributes and tools	7
	Instruction and complaint information facilities	8
	Safety support facilities which include first aid kit, fire extinguisher, glass breaking equipment, emergency button etc	9
Tangible	The seats in the train are comfortable with a fixed construction that has a backrest	10
	The toilets on the train are functional and the area is clean and odorless	11
	Condition of air circulation in the train	12
	Special luggage space in the train	13
	Cleanliness in the train	14
	Is the dark level of airport train window film appropriate (reduces solar heat but does not reduce visibility outside)	15
Empathy	Information on the station to be visited/passed by is equipped with clear sound intensity	16
	Train disruption information is announced with clear sound intensity	17
	Ease of reaching the station location	18
	Information on instructions for onward transportation/integration of other transportation	19
	The ticket price offered by the Kualanamu Airport Train is IDR 70,000	20
	It is not permitted to bring strong-smelling items (durian/durian souvenirs) onto the train	21
	Walking distance at the Station to the Airport Train	22
Responsiveness	Facilities for passengers with special needs (pregnant women, sick people, elderly people, people with disabilities)	23
	Responsiveness and friendliness of officers/employees in providing services	24

Table 2. Answer Rating

Scale	Performance	Scale	Importantce
5	Very good	5	Very important
4	Good	4	Important
3	Quite good	3	Quite important
2	Bad	2	Unimportant
1	Very bad	1	Very unimportant

Methods used in data collection includes secondary data and primary data [9]. Secondary data such as fare and schedule information in this study were obtained from the Kualanamu Airport railway instagram social media.

The primary data in this study was obtained from the results of the distribution of questionnaires directly to respondents of Kualanamu Airport train users. Based on secondary data that has been collected in the form of information related to the Kualanamu airport train schedule, Kualanamu airport train ticket prices, then the next step is prepare a survey form (questionnaire). The survey form (questionnaire) consists of attributes which is related to the level of satisfaction of Kulanamu Airport train users, the ability to pay for Kualanamu Airport train passengers and the willingness to pay for Kualanamu Airport train passengers. The sample size was calculated using the Slovin formula. The sample size according to the Slovin formula is calculated based on population and margin of error (e) [10]. The Slovin formula stated in Equation 1 [11] .

$$n = \frac{N}{1+Ne^2} \quad (1)$$

With:
n = Sample size
N = Population
e = Margin of error

The number of passengers arriving and departing domestically through Kualanamu Airport based on data from the central statistics agency in 2022 is 3,844,006 people/year. So 3,844,006 people/year divided by 365 days, the number of passengers per day is 10,532 people. So the sample size required for this research is as follows:

$$n = \frac{N}{1+Ne^2} = \frac{10.532}{1+10.532(0.1)^2} = 99{,}06 \sim 100 \text{ respondents}$$

B. TECHNIQUE ANALYSIS

1. User Satisfaction Level Analysis

In measuring customer perception of service quality, the SERVQUAL (Service Quality) approach can be used [12]. SERVQUAL consists of five service quality items: reliability, assurance, tangibles, empathy, and responsiveness. Knowledge of customer needs obtained from service quality items and customer responses based on their experience can be used to measure customer perceptions of service quality. Evaluation of service quality items shows priorities and criticisms from customers that are used to improve service quality in a better direction.

In the railway industry, there are technological developments regarding minimum service standards for transporting people by train in accordance with current legal needs [13]. So, in this research, the questionnaire was designed based on the SERVQUAL approach and on the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM 63 of 2019 concerning Minimum Service Standards for Transportation of People by Train. The service attributes in this research can be seen in Table 1.

In analyzing questionnaire data, validation tests and reliability tests are needed. Validity and reliability testing is carried out to determine whether the instrument or measurement scale can behave correctly (valid) and consistently (reliable) [14].

Furthermore, importance performance analysis (IPA) is used to determine the performance of service attributes by grouping these attributes into assessment quadrants according to the level of importance and performance of each attribute [14]. The grouping of attributes can be seen in Figure 1. To find out the distribution of internal attributes IPA diagram, each attribute is mapped based on performance value and importance value. At the level of performance and level of importance, a rating scale of 1 to 5 is used [15]. The scale of answer levels can be seen in Table 2. The horizontal/X axis is filled with the average score of the performance level. Meanwhile, the vertical/Y axis is filled with the average importance level score [16]. The formula to calculating the average value can be seen in Equation 2 and Equation 3.

$$\bar{X} = \frac{\sum X_i}{n} \quad (2)$$

$$\bar{Y} = \frac{\sum Y_i}{n} \quad (3)$$

With:
$\bar{X}$ = Average level of performance
$\bar{Y}$ = Average level of importance
n = Sample size

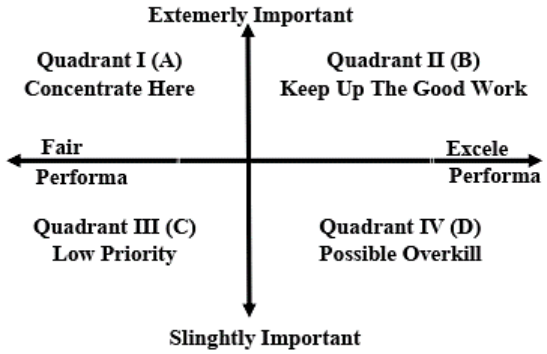

Figure 1. Importance performance matrix [17]

2. Ability to Pay Analysis

In the ability to pay analysis of transportation service users, it is analyzed based on respondents' income, allocation of income to transportation, allocation of transportation costs to Kualanamu Airport per month and frequency to Kualanamu Airport per month. In the analysis, the method used is the household budget method [1]**.** The formula stated in Equation 4.

$$\text{ATP} = \frac{\text{It x Pp xPt}}{\text{Tt}} \quad (4)$$

with:
It = income per month
Pp = percentage of income for the allocation of transportation costs per month
Pt = percentage of income for transportation costs to the airport per month
Tt = travel frequency

3. Willingness to Pay Analysis

In analyzing the willingness to pay, it is obtained from the answers of each respondent asked in the questionnaire, which is in the form of the maximum value of rupiah that respondents are willing to pay for Kualanamu Airport train services, then processed to get the average value (*mean*) from the WTP value [1]. The formula stated in Equation 5.

$$MWTP = \frac{1}{n}\sum_{i=1}^{n} WTPi \qquad (5)$$

with:
MWTP = WTP average
n = sample size
WTPi = maximum WTP value of respondents to i

4. The Relationship Between Ability To Pay and Willingness To Pay

The ability to pay and willingness to pay of transportation users are related [18]

- If ATP > WTP, this is a condition that occurs if the user has income which is relatively high but the utility of the service is relatively low, users in this condition it is called choice riders.
- If ATP < WTP, this is a condition that may occur for users who have a relatively low income but utility for the service very high, so the user's desire to pay for the service tends to be more influenced by utility, in this condition the user is called captive riders.
- If ATP = WTP, this is a condition where the user's utility is balanced costs incurred to pay for these services

According to Tamin [18] If the ability to pay (ATP) and willingness to pay (WTP) parameters are reviewed, then the user aspect in this case is used as the subject that determines the tariff value applied with the principle :

- Ability to pay is a function of ability to pay, so that the value of the tariff applied should, as far as possible, not exceed the ability to pay value of the target community group. Government intervention/interference in the form of direct or cross subsidies or other government support is needed according to conditions, where the applicable tariff value is greater than the ability to pay, so that a tariff value is obtained that is the same as the ability to pay value.
- Willingness to pay is a function of the level of public transport service, if the willingness to pay value is still below ability to pay, than the tariff value can still be increased by improving service performance.
- If the tariff calculation is far below the ability to pay and willingness to pay, then there is latitude in calculating/submitting a new tariff value.

An illustration of the extent of tariff determination based on ATP-WTP can be seen in Figure 2.

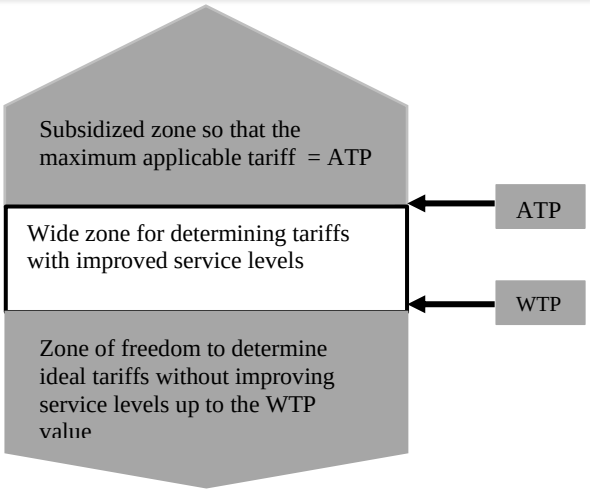

Figure 2. Illustration of the extent to which tariffs are determined based on ATP-WTP [18]

RESULTS AND DISCUSSIONS

A. LEVEL OF SATISFACTION

This research takes the form of a questionnaire survey which is formulated in the form of questions. So reliability and validity tests are needed. Validation and reliability tests are carried out by calculating the correlation between 1 item and all items using correlation calculations from research results and then comparing them with the r table. The sample size is 100 respondents with a significance of 5% in 2 directions so that the value Df = n-2 is obtained, then Df = 100-2 = 98 then obtained r table 0.1966. A recapitulation of the results of the questionnaire testing on the level of performance and importance of the Kualanamu Airport train can be seen in the Table 3 and Table 4.

From Table 3 and Table 4 it is known that all question attributes are valid and reliable. Therefore, it can be continued to the next stage for analysis because all question attributes can be included in the next analysis.

Next, calculate the average value of performance level and Kualanamu Airport railway interests, whose performance will be the X axis and interests will be Y. The results of calculating the average level of performance and level of importance for 100 respondents can be seen in Table 5.

Next, the results in Table 5 will be mapped. The results of mapping research attributes into an importance performance analysis (IPA) diagram using the SPSS program can be seen in Figure 2. Figure 2 shows the position of each attribute that influences Kualanamu Airport Train customer satisfaction in their respective quadrants.

Quadrant 1 (A) indicates several attributes that affect service quality, which are variables that must be corrected immediately because the attributes are considered necessary. Still, service users have to receive the service they expect (top priority).

Table 3 Reliability test results

No.	r		r table	Note
	Performance	Importance		
1	0,850	0,877	0,1966	Reliable
2	0,849	0,875	0,1966	Reliable
3	0,852	0,883	0,1966	Reliable
4	0,847	0,875	0,1966	Reliable
5	0,854	0,878	0,1966	Reliable
6	0,847	0,886	0,1966	Reliable
7	0,845	0,884	0,1966	Reliable
8	0,850	0,882	0,1966	Reliable
9	0,840	0,877	0,1966	Reliable
10	0,850	0,871	0,1966	Reliable
11	0,854	0,885	0,1966	Reliable
12	0,845	0,874	0,1966	Reliable
13	0,846	0,881	0,1966	Reliable
14	0,852	0,879	0,1966	Reliable
15	0,849	0,720	0,1966	Reliable
16	0,840	0,871	0,1966	Reliable
17	0,841	0,872	0,1966	Reliable
18	0,856	0,873	0,1966	Reliable
19	0,847	0,878	0,1966	Reliable
20	0,858	0,876	0,1966	Reliable
21	0,857	0,884	0,1966	Reliable
22	0,849	0,873	0,1966	Reliable
23	0,843	0,885	0,1966	Reliable
24	0,844	0,872	0,1966	Reliable
σ	0,854	0,882		

Table 4 Validity test results

No.	r		r table	Note
	Performance	Importance		
1	0,431	0,538	0,1966	Valid
2	0,454	0,617	0,1966	Valid
3	0,310	0,296	0,1966	Valid
4	0,472	0,612	0,1966	Valid
5	0,364	0,526	0,1966	Valid
6	0,515	0,214	0,1966	Valid
7	0,589	0,304	0,1966	Valid
8	0,438	0,430	0,1966	Valid
9	0,727	0,539	0,1966	Valid
10	0,417	0,786	0,1966	Valid
11	0,321	0,254	0,1966	Valid
12	0,598	0,654	0,1966	Valid
13	0,557	0,374	0,1966	Valid
14	0,374	0,457	0,1966	Valid
15	0,466	0,706	0,1966	Valid
16	0,683	0,750	0,1966	Valid
17	0,666	0,730	0,1966	Valid
18	0,219	0,684	0,1966	Valid
19	0,549	0,684	0,1966	Valid
20	0,279	0,581	0,1966	Valid
21	0,286	0,343	0,1966	Valid
22	0,513	0,664	0,1966	Valid
23	0,638	0,318	0,1966	Valid
24	0,600	0,704	0,1966	Valid

Table 5 The average level of performance and level of importance

Attribute	Performance	Importance
	($\bar{X}$)	($\bar{Y}$)
1	4,26	4,55
2	4,19	4,53
3	3,81	4,57
4	4,21	4,44
5	3,88	4,51
6	4,23	4,39
7	4,22	4,24
8	3,84	4,19
9	4,18	4,28
10	4,22	4,53
11	4,16	4,45
12	4,22	4,47
13	4,24	4,46
14	4,29	4,46
15	4,13	4,45
16	4,21	4,44
17	4,14	4,47
18	4,15	4,45
19	3,85	4,23
20	3,82	4,52
21	3,85	4,16
22	3,87	4,3
23	4,18	4,26
24	4,17	4,54

The attributes in this quadrant are:
X3. The time interval between airport trains is appropriate
X5. Kualanamu Airport Train operational schedule
X20. The ticket price offered by Kualanamu Airport Train is IDR 70,000

Quadrant 2(B) indicates some attributes that respondents think are important and that respondents have obtained by their expectations (satisfactory). These attributes, according to customers, must be maintained achievements. The attributes included in quadrant two are:
X1. The accuracy of the Kualanamu Airport train itinerary
X2. Easy ticket booking in person or online
X19. Information on instructions for other transportation connections / integrase
X21. It is not allowed to bring pungent smelling items (Durian) into the train
X22. Walking distance at the Station into the Airport Railway

Quadrant 4(D) indicates that the factors affecting service users are less critical but shows that respondents receive perceptions more than expected and do not prioritize improvement. The attributes in quadrant four are:
X6. Security facilities lighting lights and CCTV surveillance cameras in 1 train series and at the station

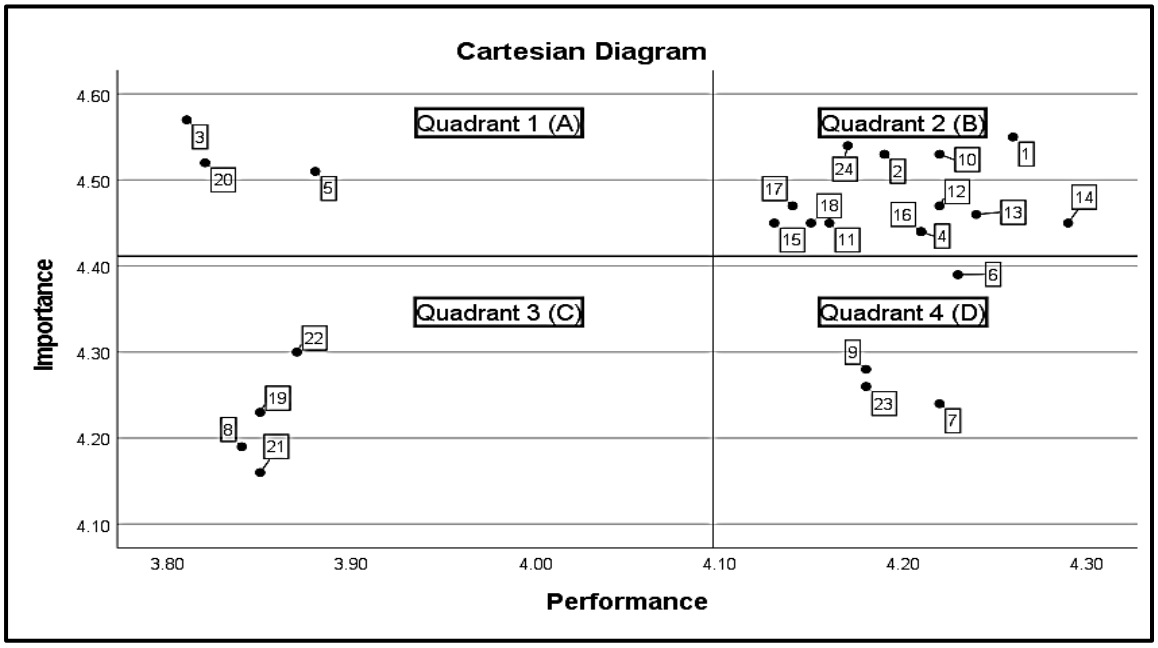

Figure 2 Cartesian Diagram

X4. Train travel time Kualanamu airport
X10. The seats inside the car are comfortable with a fixed construction that has a backrest
X11. The toilets inside the train are working and the area is clean and odorless
X12. Air conditioning condition in the train
X13. Dedicated luggage space inside the train
X14. Cleanliness inside the train
X15. The darkening content of the window film of the Airport Railway is appropriate (reduces the heat of the sun but does not reduce the ease of view out)
X16. Information on the station to be stopped / passed by the clue is equipped with clear sound intensity
X17. Information on train travel disruption is announced with clear sound intensity
X18. Easy access to station location
X24. Responsiveness and friendliness of officers/ employees in providing services

Quadrant 3 (C) indicates several less important factors to the respondent and indicates that the respondent does not receive perceptions such as what is expected (unsatisfactory) and thus becomes considered less important. The attributes included in quadrant three are:
X8. Guidance and complaint information facilities
X7. Uniformed security officers are equipped with attributes and aids
X9. Safety support facilities which include P3K, fire extinguisher, glass breaker, emergency button etc.
X23. Facilities for passengers with special needs (pregnant women, sick people, elderly, people with disabilities)

B. ABILITY TO PAY

The ability to pay value is obtained from the calculation of each respondent's answer to the questionnaire calculated based on the household budget method [19]. The variables used in calculating the ability to pay are income per month, allocation of costs for transportation per month, allocation of travel costs to Kualanamu Airport, and frequency of travel [20]. The results of the ability to pay calculation for 100 respondents can be seen in Table 6. The formula for calculating the respondent's ability to pay is:

$$ATP = \frac{It\ x\ Pp\ xPt}{Tt} = \frac{IDR\ 5.000.000\ x\ 20\%\ x7\%}{1}$$

$$ATP = IDR\ 70.000$$

Table 6 The Results of calculating the respondent's ability to pay

No.	Personal income/month	% Transportation cost allocation/Month	% Allocation of travel costs to KNO	Frequency of trips to KNO/Month	Ability to pay
1	IDR 5.000.000	20%	7%	1	IDR 70.000
2	IDR 2.000.000	10%	35%	1	IDR 70.000
3	IDR 2.000.000	10%	70%	2	IDR 70.000
4	IDR 4.000.000	20%	9%	1	IDR 70.000
5	IDR 5.000.000	20%	21%	3	IDR 70.000
6	IDR 7.000.000	10%	20%	2	IDR 70.000
7	IDR17.000.000	10%	4%	1	IDR 70.000
8	IDR 12.000.000	20%	4%	1	IDR100.000
9	IDR 5.000.000	20%	7%	1	IDR 70.000
10	IDR 4.000.000	10%	18%	1	IDR 70.000
11	IDR 4.000.000	10%	18%	1	IDR 70.000
12	IDR 5.000.000	10%	14%	1	IDR 70.000
13	IDR 4.000.000	30%	12%	2	IDR 70.000
14	IDR 7.000.000	10%	20%	2	IDR 70.000
15	IDR 9.000.000	10%	16%	2	IDR 70.000
16	IDR 1.500.000	10%	8%	0,167	IDR 70.000
17	IDR 4.000.000	20%	35%	4	IDR 70.000
18	IDR 2.000.000	10%	35%	1	IDR 70.000
19	IDR 4.000.000	10%	18%	1	IDR 70.000
20	IDR 1.500.000	10%	47%	1	IDR 70.000
21	IDR 3.000.000	10%	23%	1	IDR 70.000
22	IDR 2.000.000	10%	35%	1	IDR 70.000
23	IDR 10.000.000	10%	14%	2	IDR 70.000
24	IDR 5.000.000	20%	10%	1	IDR 100.000
25	IDR 8.000.000	10%	13%	1	IDR 100.000
26	IDR 5.000.000	10%	30%	1	IDR 150.000
27	IDR 5.000.000	10%	40%	2	IDR 100.000
28	IDR 9.500.000	10%	11%	1	IDR 100.000
29	IDR 32.000.000	10%	9%	2	IDR 150.000
30	IDR 10.000.000	20%	1%	0,167	IDR 70.000
31	IDR 3.000.000	10%	47%	2	IDR 70.000
32	IDR 6.000.000	20%	1%	0,167	IDR 70.000
33	IDR 6.000.000	20%	12%	2	IDR 70.000
34	IDR 7.500.000	10%	9%	1	IDR 70.000
35	IDR 2.700.000	10%	4%	0,167	IDR 70.000
36	IDR 5.000.000	20%	7%	1	IDR 70.000
37	IDR 2.000.000	10%	35%	1	IDR 70.000
38	IDR 2.000.000	10%	70%	2	IDR 70.000
39	IDR 4.000.000	20%	9%	1	IDR 70.000
40	IDR 5.000.000	20%	21%	3	IDR 70.000
41	IDR 7.000.000	10%	20%	2	IDR 70.000
42	IDR 17.000.000	10%	4%	1	IDR 70.000
43	IDR 12.000.000	20%	4%	1	IDR 100.000
44	IDR 5.000.000	20%	7%	1	IDR 70.000
45	IDR 4.000.000	10%	18%	1	IDR 70.000

No.	Personal income/month	% Transportation cost allocation/Month	% Allocation of travel costs to KNO	Frequency of trips to KNO /Month	Ability to pay
46	IDR 4.000.000	10%	18%	1	IDR 70.000
47	IDR 5.000.000	10%	14%	1	IDR 70.000
48	IDR 4.000.000	30%	12%	2	IDR 70.000
49	IDR 7.000.000	10%	20%	2	IDR 70.000
50	IDR 9.000.000	10%	16%	2	IDR 70.000
51	IDR 1.500.000	10%	8%	0,167	IDR 70.000
52	IDR 4.000.000	20%	35%	4	IDR 70.000
53	IDR 2.000.000	10%	35%	1	IDR 70.000
54	IDR 4.000.000	10%	18%	1	IDR 70.000
55	IDR 1.500.000	10%	47%	1	IDR 70.000
56	IDR 3.000.000	10%	23%	1	IDR 70.000
57	IDR 2.000.000	10%	35%	1	IDR 70.000
58	IDR 10.000.000	10%	14%	2	IDR 70.000
59	IDR 5.000.000	20%	10%	1	IDR 100.000
60	IDR 8.000.000	10%	13%	1	IDR 100.000
61	IDR 5.000.000	10%	30%	1	IDR 150.000
62	IDR 5.000.000	10%	40%	2	IDR 100.000
63	IDR 9.500.000	10%	11%	1	IDR 100.000
64	IDR 32.000.000	10%	9%	2	IDR 150.000
65	IDR 10.000.000	20%	1%	0,167	IDR 70.000
66	IDR 3.000.000	10%	47%	2	IDR 70.000
67	IDR 6.000.000	20%	1%	0,167	IDR 70.000
68	IDR 6.000.000	20%	12%	2	IDR 70.000
69	IDR 7.500.000	10%	9%	1	IDR 70.000
70	IDR 2.700.000	10%	4%	0,167	IDR 70.000
71	IDR 4.000.000	10%	18%	1	IDR 70.000
72	IDR 5.000.000	10%	14%	1	IDR 70.000
73	IDR 4.000.000	30%	12%	2	IDR 70.000
74	IDR 7.000.000	10%	20%	2	IDR 70.000
75	IDR 9.000.000	10%	16%	2	IDR 70.000
76	IDR 1.500.000	10%	8%	0,167	IDR 70.000
77	IDR 4.000.000	20%	35%	4	IDR 70.000
78	IDR 2.000.000	10%	35%	1	IDR 70.000
79	IDR 4.000.000	10%	18%	1	IDR 70.000
80	IDR 1.500.000	10%	47%	1	IDR 70.000
81	IDR 3.000.000	10%	23%	1	IDR 70.000
82	IDR 2.000.000	10%	35%	1	IDR 70.000
83	IDR 10.000.000	10%	14%	2	IDR 70.000
84	IDR 5.000.000	20%	10%	1	IDR 100.000
85	IDR 8.000.000	10%	13%	1	IDR 100.000
86	IDR 5.000.000	10%	30%	1	IDR 150.000
87	IDR 5.000.000	10%	40%	2	IDR 100.000
88	IDR 9.500.000	10%	11%	1	IDR 100.000
89	IDR 32.000.000	10%	9%	2	IDR 150.000
90	IDR 10.000.000	20%	1%	0,167	IDR 70.000

No.	Personal income/month	% Transportation cost allocation /Month	% Allocation of travel costs to KNO	Frequency of trips to KNO /Month	Ability to pay
91	IDR 3.000.000	10%	47%	2	IDR 70.000
92	IDR 6.000.000	20%	1%	0,167	IDR 70.000
93	IDR 6.000.000	20%	12%	2	IDR 70.000
94	IDR 7.500.000	10%	9%	1	IDR 70.000
95	IDR 2.700.000	10%	4%	0,167	IDR 70.000
96	IDR 4.000.000	10%	18%	1	IDR 70.000
97	IDR 5.000.000	10%	14%	1	IDR 70.000
98	IDR 4.000.000	30%	12%	2	IDR 70.000
99	IDR 7.000.000	10%	20%	2	IDR 70.000
100	IDR 9.000.000	10%	16%	2	IDR 70.000
		∑			**IDR 79.000**

with:
It = income per month
Pp = percentage of income for the allocation of transportation costs per month
Pt = percentage of income for transportation costs to the airport Kualanamu (KNO) per month
Tt = total travel frequency

So, the average value of the ability to pay respondents using Kualanamu Airport trains is IDR 79,000.

C. WILLINGNESS TO PAY

The willingness to pay value obtained from the answers of each respondent asked in the questionnaire can be seen in Figure 3. Figure 3 shows that 20% of users are willingness to pay IDR 70,000. As many as 80% of users are willingness to pay under IDR 70,000. This shows that the majority of users are willingness to pay lower than the existing tariff IDR 70,000.

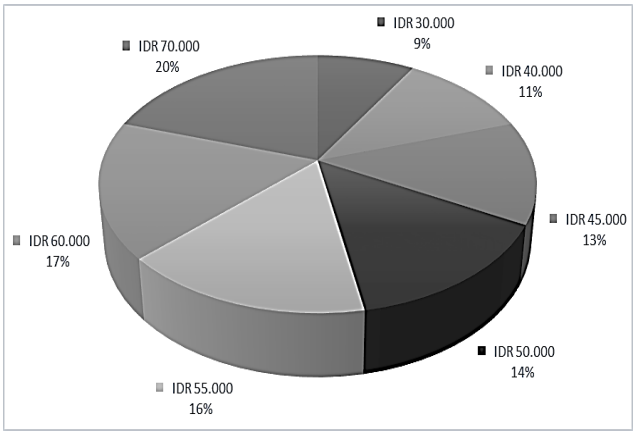

Figure 3. Results of data collection on users' willingness to pay

The formula to calculate the willingness to pay for an average of 100 respondents is:

$$MWTP = \frac{1}{n}\sum_{i=1}^{n} WTPi$$

$$MWTP = \frac{1}{100}\sum_{i=1}^{100} IDR\ 4.885.000$$

$$MWTP = IDR\ 48.850 \sim IDR 49.000$$

with:
MWTP = WTP average
n = sample size
WTPi = WTP value of respondents

So, the average value of the ability to pay respondents using Kualanamu Airport trains is IDR 49,000.

D. THE RELATIONSHIP BETWEEN ATP AND WTP

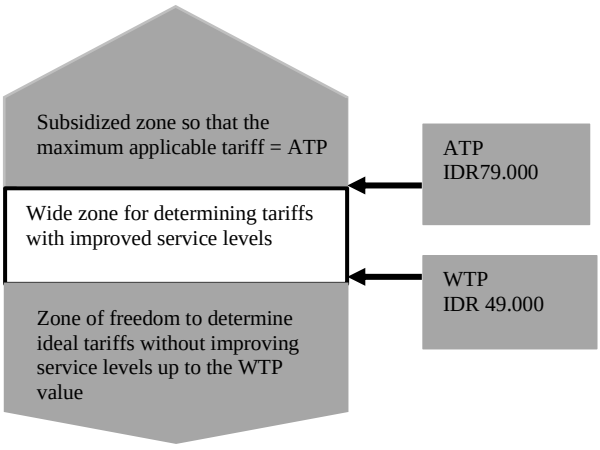

Figure 4. Illustration of the extent to which the recommended tariff level is determined based on ATP-WTP

From the calculation of the ability to pay and willingness to pay, it is known that the ability to pay is greater than the willingness to pay. So, ATP > WTP, this situation shows that Kualanamu Airport train users have relatively high incomes but their service utility is relatively

low. So Kualanamu Airport train users are called choice riders. From Figure 4, The tariff of IDR 49,000 is the ideal tariff limit without increasing the level of service.

CONCLUSIONS

Based on the discussion carried out in this study, it can be concluded that the overall level of satisfaction of Kualanamu Airport Train transportation users is very satisfied. However, there are several service attributes that are top priorities that are important to pay attention to, namely the time interval between Airport Trains, the Kualanamu Airport Train operational schedule and the Kualanamu Airport Train ticket price of Rp 70,000. Second, the ability to pay (ATP) of Kualanamu Airport train users is IDR 79,000 and the willingness to pay (WTP) of Kualanamu Airport train users is IDR 49,000. ATP > WTP, this situation shows that Kualanamu Airport train users have relatively high incomes but relatively low service utilities. So that Kualanamu Airport Train users are referred to as choice riders. Finally, the tariff of Rp 49,000 is the ideal tariff limit that can be set without having to increase the level of service.

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