

Analysis Ability To Pay And Willingness To Pay For Low Cost Carrier (LCC) Airlines (Case Study: Flight Jakarta to Surabaya With Citilink And Sriwijaya Airlines)

A.A. Zaniar^{1*}, A.Y. Genovani², A. Hamdi³, A. Sodikin⁴, Nursery Alfaridi⁵

^{1,2,3,4,5}Institute of Transportation and Logistic Trisakti, Jakarta, Indonesia

*Corresponding author: aisyaridanisa@gmail.com

Abstract. Increasing airplane ticket rates is a problem for customers of air transportation services for now. The purchasing power of people to use air transportation has decreased so that it has an impact on passenger volumes which decreased by 20% from April 2018 compared to April 2019 (yoy) for Citilink and Sriwijaya airlines with the Jakarta-Surabaya Route. The purpose of this study is to look at the level of Ability To Pay (ATP) and Willingness To Pay (WTP) for users of LCC airline services using the Jakarta-Surabaya flight route using Sriwijaya and Citilink airlines in addition to see the relationship between respondents income to willingness to pay and determined by using a simple regression method. The data are divided into two, which is primary data and secondary data. The primary data is obtained from the distribution of questionnaires through google forms and then analyzed to the indicators of ATP and WTP. The secondary data is the data on passenger volumes of Sriwijaya Air and Citilink for the Januari 2018-April 2019 period. The number of samples used is 100 people calculated by Slovin Method. By using household budget method, the average Ability to Pay value is Rp683.875. As for Willingness to Pay results, the average value of Rp597.694 is obtained. Through linear regression methods, there is a positive relationship and Between revenue and willingness to pay value.

1. Introduction

The airplane transportation mode is one of options to reach the destination in a short time and with a convenient travel. Soekarno-Hatta International Airport is the largest connecting airport in Indonesia that has a high frequency of flights with various destinations. The rapid growth in passenger traffic has been experienced in domestic commercial airline markets that have been deregulated around the world. The competition gets to increase as the airlines strive to acquire and retain customers. The price was used as the main competitive weapon at the first place. However, the flight soon realized that competition at its own price is a no win situation in the long run [1].

Low cost carrier (LCC) flights emerged as a breakthrough for users of air transportation services that are operated at a lower cost, but under Law No. 1 of 2009 about Flight article 97, of course, LCC flights provide Minimalist flight service but still pay attention to the problem of safety [2]. Low cost carrier has such a sharp competitiveness within Indonesian markets and has made significant impacts in for Indonesian passenger [3].

The current issue of cost increase policy impacts the purchasing power of the public in airplane transportation mode, especially LCC airlines. Not only raising the ticket price, a much more controversial policy at this time is the paid baggage policy where baggage is carried more than 10 kilograms per person, the next per 1 kilogram will be charged baggage charges. In this regard, the price raising policy has 2 points that are important and inversely proportional and should be considered because on one side of the price increase is a must for the stability of the company's condition.[4] While on the other hand the price increase should always be balanced with the improvement of real service for consumers. This means that the price increases paid by consumers should have an advantage as the benefits of consumers receive in real time.

Examples of LCC airlines in Indonesia are Sriwijaya Air and Citilink which are the members of Garuda Group. Sriwijaya Air used to be one of Citilink's competitors before joining Garuda Group. The reason for using both airlines and the route of Jakarta Surabaya is because both airlines have the same business strategy and the same target market as well, but they have a

different operating base despite being in a single group. Sriwijaya Air Its operating base is Jakarta, while Citilink is located in Surabaya.[5] Surabaya also got Best City of Yokatta Wonderful Indonesia Tourism Award 2018 and the number of foreign tourists from the entrance of Juanda Airport, Surabaya rose by 34.71% in March 2018 compared to the previous month [6].

Here is a comparison chart of the ticket purchase rate of LCC (Sriwijaya and Citilink) in January-April 2018 compared to January-April 2019 for the Jakarta-Surabaya, which is influential because of the price increase.

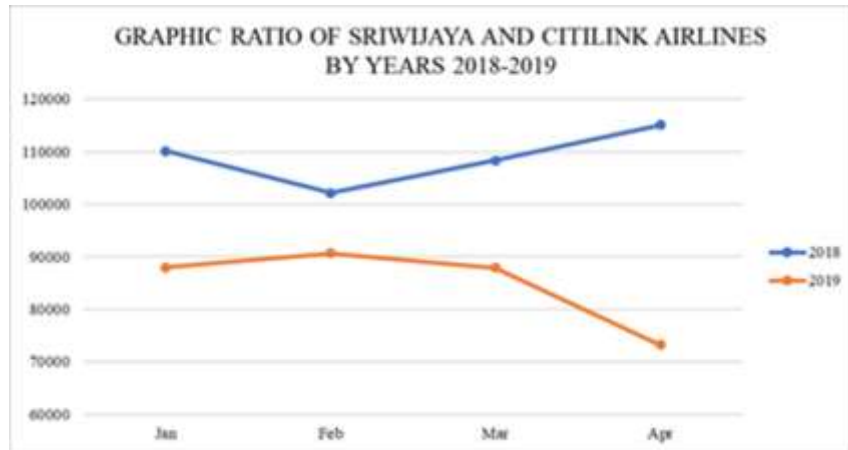


Figure 1. Graphic Ratio of Sriwijaya air and Citilink Airlines on 2018-2019

On the chart, it can be seen that a decline in the highest ticket purchase rate occurred in April 2019 compared to April 2018 which reached 22%. This was due to the peak rate increases in the month. The average reduction in the purchase rate of air tickets from 2018 compared to 2019 reached 12.4%. In the next 20 years perspective; (a) Global scale airline of air transport will decline to 59% levels from 62% level of the total share of the market, (b) non-scheduled flights that, (c) shares large airline would show an increase of 9-10% 1% level, (d) Low cost carrier level of 17% to 21% of the total share of the market foresees increased [7].

Perception of rising airfare is an obstacle to consumers. This is a consideration of the purchase of airfare so it is important to know how much the consumer's willingness to pay and assess the ability to pay users of air transportation services to the monthly income they receive. This research aims to see how much ability and willingness to pay the community to buy air tickets where the alleged ability to pay respondents is greater than the willingness to pay respondents and there is a relationship that between the income and ability of the respondent to pay for the Jakarta-Surabaya Air flight ticket.

2. Experimental

ATP and WTP of LCC airlines services users using the Jakarta-Surabaya flight route with Sriwijaya and Citilink airlines are seen as a relationship with the current actual price and determined by using a cross sectional regression method. The data are divided into two, which is primary data and secondary data. The primary data is obtained from the distribution of questionnaires through google forms and then being analysed to the indicators of ATP and WTP. The total of population is 166.594 from Sriwijaya and Citilink users on Januari-April 2019. After counted by Slovin Method, the total of respondents are 100 persons with purposive sampling for the respondents who ever used the LCC airlines in 1 year with the Jakarta-Surabaya route.

2.1. Sampling

The sample is counted by Slovin Method with the formula follows: [8]

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

n : number of sample

N: total population

e : margin of error

2.2. Ability To Pay (ATP)

Ability to pay is the ability of a person to pay a service based on the income obtained.[9] The large ATP is the budget ratio for transportation with intensity, travel. This magnitude demonstrates the ability of the community to pay for the travel fare. To analyse the ability to pay the community is done by the travel cost approach, assuming that each user of the mode surveyed will always allocate a portion of its income for transportation needs, whether using both private and public transport vehicles.

This magnitude demonstrates the ability of the community to pay for the travel fare. Demographic based pricing can be viewed based on the customer's age, gender or income level allows the estimate of someone to pay.[10]

ATP is formulated by this method. The ATP formulation using the household budget method:

$$ATPresp/trip = \frac{Irs \times Pp \times Pt}{Trs} \dots\dots\dots (2)$$

Description:

ATPresp = ATP respondent based on the variety of occupation (Rp/Resp/Trip)

Irs = Respondent's income per month (Rp/month)

Pp = Income percentage for transportation in a month from respondent's income.

Pt = Percentage for vehicles from income to transportation.

Trs = Long trip total per month per trip (Trip/Resp/month)

2.3. Willingness To Pay (WTP)

Willingness to pay is defined as willingness for the costumers to issue a reward (in terms of money) for the services which are gained. Willingness to pay is also defined as the maximum amount to be paid by consumers to enjoy the quality improvement.[11]

The issue of WTP transportation is influenced by several factors, including the production of transportation services provided, quality and quantity of services, costumer's utility, and costumer's income.

The followings are the factors that influence WTP towards the transportation. [12] :

- a. Products provided by Transportation service operators
- b. Quantity and quality provided
- c. Utilities of service users
- d. Service user characteristics

The stated preference technique is used to analyze the willingness to pay (WTP) of respondents. WTP value is the average value that the passenger is willing to pay for the system which is given by air transport service.[13]The stated preference technique is used to construct an alternative hypothetical situation presented in the form of a questionnaire that contains questions about a particular choice or value over the alleged condition of the respondent. [14] In testing the hypothesis, it needs control over other factors that may affect the judgment of influence. As long as the goods are normal, WTP is positively related to income. Thus individuals with higher revenues will have a greater WTP value. [15] The assessment result is transformed into a numerical scale that translates the preference of respondents to their wishes in a state of suspicion over the WTP level.

2.4. Simple Linear Regression

Linear regression is the modelling approach of associations between variables that rely on numeric y and one or more independent variables denoted by X. The explanation of case one variable in regression model is called simple linear regression. [16] Regression analysis can also be carried out to establish the extent to which variability in WTP can be explained by relevant variables such as income and positive environmental attitude/behaviour.[17]

The benefit of linear regression analysis is more accurate in conducting a correlation analysis due to the difficulties in indicating the level of change of one variable to another variable. Therefore, by using this linear regression analysis can be obtained level of relationship between the respondents revenue to the value of willingness to pay, because there is suspected positive relationship between income to the value of willingness to pay. Equations for simple linear regression models are as follows:[18]

$$Y = a + bX \dots\dots\dots (3)$$

Description:

- X = Free variable
- Y = bound variable
- a, b = Constants

Criteria for the reception of hypotheses, if:

- a. The value of significance (Sig) < 0.05; then Ho (zero hypothesis) is rejected and HA (the alternative hypothesis) is accepted.
- b. The value of significance (Sig) > 0.05; then Ho (zero hypothesis) is accepted and HA (the alternative hypothesis) is rejected.

The coefficient of determination (R²) provides a percentage and information on how much the regression model capabilities in explaining the bound variable model [19].

3. Result and Discussion

Average values of ATP and WTP Calculations use 100 respondents with various characteristics, such as gender, age, income, and frequency and travel intent by plane for the Jakarta-Surabaya route.

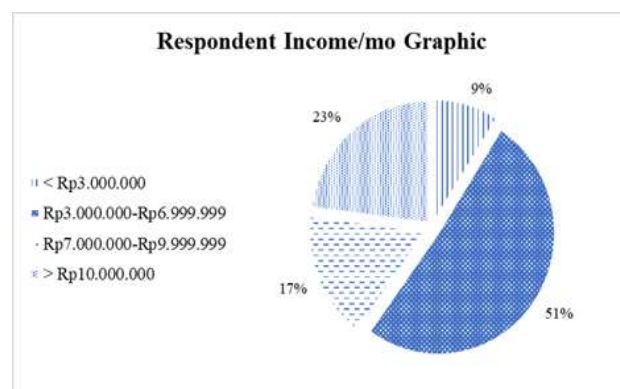


Figure 2. Respondent Income.mo Graphic

Revenue with the highest number of respondents, which is 51%, is at an income level of Rp 3.000.000 – Rp 6.999.999. For low income levels with value < RP 3.000.0000 has a 9% total number of respondents. As for income level > Rp 10,000,000 has a large number of respondents, which is 23%. Another thing that affects the value of ATP is the frequency of travel by respondents with the Jakarta-Surabaya route using air transport mode.

Respondent Trip Frequency Graphic

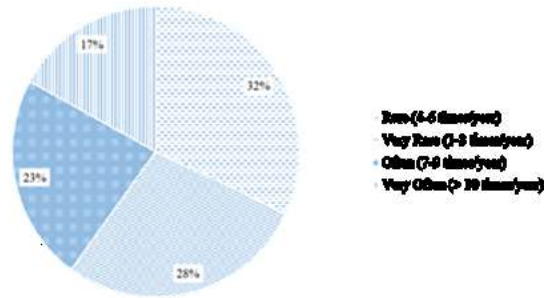


Figure 3. Respondent Trip Frequency Graphic

The frequency of the most popular travel is rare or 4-6 times/year, which is 32%. As for the lowest travel frequency The respondent is in the category of very often or > 10 times/year, as the category of the highest travel frequency, with the number of respondents 17 people (17%).

3.1. Result analysis of Ability to Pay and Willingness to Pay's Value

The ability to pay value analysis uses a household budget method which is influenced by the monthly revenue, the allocation of transportation costs per month, and the frequency of travel using air transport mode for the Jakarta-Surabaya route per year. Table 1 shows the results of calculating ATP values.

Tabel 1. ATP Result

ATP Interval (Rp)	Frequency	Frequency Cummulative (%)	ATP Rate	
>99.999	27	27%	Rp	683.875
100.000-299.999	16	43%		
300.000-599.999	24	67%		
600.000-899.999	16	83%		
900.000-1.199.999	7	90%		
<1.200.000	10	100%		

The average ATP value obtained from the calculation of ATP value is using the household budget method, which is Rp683.875. The highest frequency of the ability to pay respondents was between the fare of Rp300.000 – Rp599.999 of 26 people (26%). Meanwhile, for the fare > Rp89.999 and < Rp1,200,000 have the same frequency and still relatively high of 23 people (23%).

With the stated preference method, it can count the number of respondents stating how much the fare is willing to be paid.

Tabel 2. WTP Result

WTP Interval (Rp)		Frequency	Frequency Cummulative (%)	WTP Rate	
Low	< 399.999	8	8%	Rp	597.694
Medium	400.000-549.999	39	47%		
Fair	550.000-649.999	17	64%		
High	650.000-749.999	13	77%		
Very High	> 750.000	23	100%		

Average WTP value is Rp597.694-. Most of the respondents had a willingness to pay as much as 39 people (39%) get into the category of medium whose rate ranges from Rp400.000 – Rp549.999. In low category for fare < Rp399.999 only 8 people (8%). As for the fare with a very high category with a rate of fare > Rp750.000 as much as 23 people (23%). The minimum willingness to pay respondents is Rp206.600, while the maximum willingness to pay is Rp981.350. The middle/median value of the willingness to pay the respondent amounted to Rp568.150. For the average WTP value obtained from the Calculation result of Rp597.694.

3.2. ATP Relations, WTP and Existing Fare

As the ATP and WTP have been accumulated, so that it can be seen the comparison at the current fare. The following is a comparison chart of ATP, WTP, and existing price.

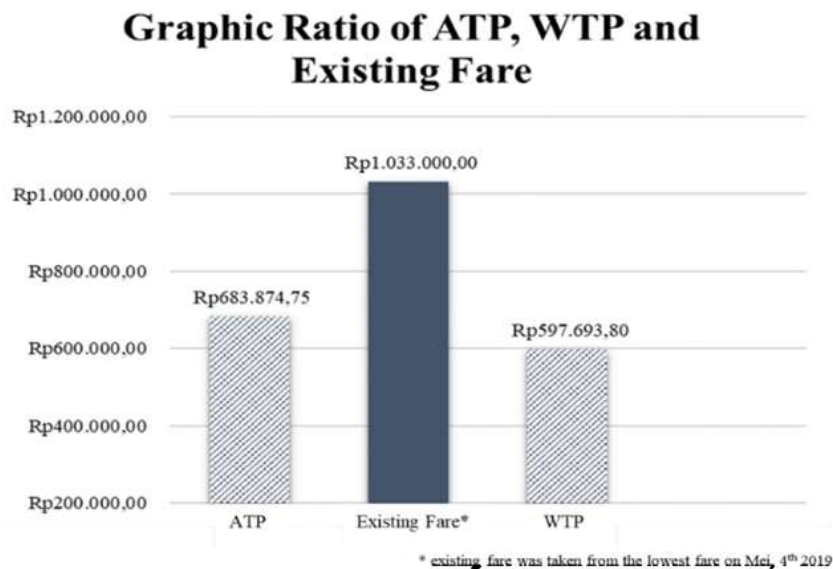


Figure 4. Graphic Ratio of ATP, WTP, and Existing Fare

Based on the chart above, it can be seen that the ATP value is higher than the WTP. This happens because ATP values are influenced by revenue, travel frequencies and travel expenses while WTP is only affected by the willingness factor of the respondent. The comparison between the prevailing fare and ATP value is 1:3 or of 33%. The difference between the applicable fare and the WTP amount is 3:7 or 42%. The number of differences indicates that there is still a gap between the ability and willingness of the users of air transportation modes, especially LCC Airlines (Sriwijaya Air and Citilink), compared to the current fare. Thus, the lower limit fare of the flight ticket to the Jakarta-Surabaya route is Rp 597.693,80; While for upper limit fare is Rp 683.874, 75. [20] showed that ATP value is higher than WTP value based on fare determination formula and ATP value becomes determination if ATP is found higher than WTP.

3.3. Relation between WTP and existing fares

As the ATP and WTP have been accumulated, so that it can be seen the comparison at the current fare. The following is a comparison chart of ATP, WTP, and existing fare. This regression analysis can be used to establish the variability in WTP and explained by a relevant variable, such as income.

Tabel 3. Income And WTP Regression Result

Model		Unstandardized Coeff (B)	t	Sig.	Adjusted R square
1	Constant	4,128	14,450	,000	,243
	Income	,241	5,723	,000	

Based on the adjusted R square on Table 3. It can be concluded that with a value of 0.243 or 24.3% the income factor affects the willingness to pay of the respondents.

Based on the regression analysis results obtained, the regression equation is described as follows: $Y = 4,128 + 0,241X$ with the significance rate of 0.000 and T value of 5.723. By using the significance limit of 0.10, the value of that significance is less than 10%. This means the income variable (x) positively and significantly affects the willingness of the person to pay for the ticket (y). If the revenue rises, then the willingness of people to pay will also be reminded. But conversely, if the income falls, then the willingness of people to pay also decreases. If the revenue rises by Rp 1.000 then the willingness of someone to pay a flight ticket to Jakarta-Surabaya route will increase by Rp241.[21] showed that people sensitiveness of income is totally effect on their willingness to pay especially for People who tend to have a lower income.

4. Conclusion

According to the result of data calculation analysis of ability to pay, willingness to pay and the relationship between income to willingness to pay value, from counting result using 100 respondents, so that it can be concluded as follows:

- Lower limit fare of the flight ticket to the Jakarta-Surabaya route is Rp597.693,80 based on the results of the value of WTP respondents. And for the upper limit fare of the flight ticket to the LCC Jakarta-Surabaya route is Rp683.874 which is based on the results of the ATP respondents' calculation. ATP values tend to be greater than WTP because the value of ATP is influenced by monthly revenue, travel frequencies per year, and transportation costs using the air transportation mode of Jakarta Surabaya route. While the value of WTP is only influenced by the percentage of price declines desired by the air Transportation Service users to the price applied by the air transportation Company.
- Variable income (x) positively and significantly affects the willingness of people to pay for tickets (y). This happens because with the increase in revenue, it will improve the welfare of the service users so that the willingness will pay more for a service that wants to be enjoyed or used will increase.

5. References

- [1] Y. H. Chang and C. H. Yeh, "A survey analysis of service quality for domestic airlines," *Eur. J. Oper. Res.*, vol. 139, no. 1, pp. 166–177, 2002.
- [2] Y. Sri Rizki, "Peran Maskapai Penerbangan Berbiaya Murah/Low Cost Carrier (LCC) di Bandara Adisutjipto-Yogyakarta Untuk Mendukung Peningkatan Jumlah Wisatawan Domestik," *War. Ardhia J. Perhub. Udar.*, vol. 39, no. 2, pp. 145–166, 2013.
- [3] J. F. O. C. Ã and G. Williams, "Passengers' perceptions of low cost airlines and full service carriers: A case study involving Ryanair, Aer Lingus, Air Asia and Malaysia Airlines," vol. 11, pp. 259–272, 2005.
- [4] S. Suryadi, "Dampak Kenaikan Harga Tiket Pesawat Serta Peramalan Pertumbuhan Angkutan Udara," *War. Penelit. Perhub.*, 2019.
- [5] H. B. Yowanda, "(LCC) DAN DAYA SAING PERUSAHAAN (Studi Pada Maskapai Penerbangan Pt. Garuda Indonesia Citilink)," vol. 51, no. 2, pp. 168–178, 2017.
- [6] J. Timur, J. Jul, and J. Jul, "Perkembangan Pariwisata Jawa Timur," no. 60, pp. 33–36, 2015.

- [7] M. K. Yılmaz, "A Study on The Future of Low Cost Carrier Business Model in International Air Transportation," *İnsan ve Toplum Bilim. Araştırmaları Derg.*, vol. 6, no. 6, pp. 48–57, 2017.
- [8] M. G. Mona, J. S. Kekenusa, and J. D. Prang, "Penggunaan Regresi Linear Berganda untuk Menganalisis Pendapatan Petani Kelapa Studi Kasus : Petani Kelapa Di Desa Beo , Kecamatan Beo Kabupaten Talaud The Use of Multivariate Linear Regression to Analyse Income of Coconut Farmer Case Study : Coconut Farm," *JdC*, vol. 4, p. 2, 2015.
- [9] Julien and K. Mahalli, "Analisis Ability To Pay Dan Willingness To Pay Pengguna Jasa Kereta Api Bandara Kualanamu (Airport Railink Service)," *J. Ekon. dan Keuangan*. Vol.2 No.3 Menurut, pp. 167–179, 2013.
- [10] A. Krämer, M. Friesen, and T. Shelton, "Are airline passengers ready for personalized dynamic pricing? A study of German consumers," *J. Revenue Pricing Manag.*, vol. 17, no. 2, pp. 115–120, 2018.
- [11] J. C. Whitehead, "Combining willingness to pay and behavior data with limited information," *Resour. Energy Econ.*, vol. 27, no. 2, pp. 143–155, 2005.
- [12] I. F. Panjaitan and M. S. Surbakti, "Analisa Tarif Jalan Tol Berdasarkan Pendekatan Willingness To Pay (WTP) Dan Ability To Pay (ATP) (Studi Kasus : Rencana Jalan Tol Medan - Binjai)," *J. Tek. Sipil USU*, vol. 2, no. 3, 2013.
- [13] K. City, "Willingness and Ability to Pay for a New Public Transport : a Case Study of."
- [14] R. Rahman, "Studi Pemilihan Moda Angkutan Umum Antar Kota Menggunakan Metode Stated Preference," *SMARTek*, vol. 7, no. 4, pp. 229–243, 2009.
- [15] E. Saptutyningsih, "Faktor-Faktor yang Berpengaruh Terhadap Willingness to Pay untuk Perbaikan Kualitas Air Sungai Code di Kota Yogyakarta," *J. Ekon. dan Stud. Pembang.*, vol. 8, no. 2, pp. 171–182, 2007.
- [16] S. Kilic, "Linear regression analysis," *J. Mood Disord.*, vol. 3, no. 2, p. 90, 2013.
- [17] D. C. Macmillan, "Actual and Hypothetical Willingness To Pay for Environmental Outputs: Why Are They Different?," no. January, p. 64, 2004.
- [18] A. Schneider, G. Hommel, and M. Blettner, "Linear regression analysis: part 14 of a series on evaluation of scientific publications.," *Dtsch. Arztebl. Int.*, vol. 107, no. 44, pp. 776–82, 2010.
- [19] A. Wiratmoko, "Pengaruh Kegiatan Ekstrakurikuler Robotika Terhadap Kecerdasan Emosional Siswa Di Smk Negeri 3 Yogyakarta," *J. Penelit.*, 2012.
- [20] M. H. A. Sarwandy, J. Arliansyah, and H. Fitriani, "The Analysis of Ability to Pay (ATP) and Willingness to Pay (WTP) on Light Rail Transit (LRT) Tariff in Palembang," *J. Phys. Conf. Ser.*, vol. 1198, p. 082023, 2019.
- [21] E. Ainy, H. Soori, M. Ganjali, H. Le, and T. Baghfalaki, "Estimating cost of road traffic injuries in iran using willingness to pay (WTP) method," *PLoS One*, vol. 9, no. 12, pp. 1–16, 2014.