

Influence of Low-Cost Carrier Attributes towards Airline Choice Decision in Bandung-Surabaya Route

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Abstract. *The number of Indonesian domestic passengers which increased rapidly has encouraged for the airlines to expand their market share by opening routes in the local region and one of the promising region is Bandung. In early 2019, the Low-Cost Carrier has implemented paid baggage policy. The changes of airline conditions and regulations could affect consumer purchasing decisions. The airline have to redesign its strategies and conduct a strategy adjustment to identify the consumer's needs and wants these days. Based on the problem description, this research aims to identify what significant attributes influence passenger's purchasing decision-making and determine what elastic and inelastic attributes. Data collection using an online questionnaire then spread to 235 respondents and were analyzed with Mixed Logit Model using BIOGEME software. The results shows that airline's departure time is a significant attribute towards passenger's airline choice. Ticket price also plays a key role in selecting an airline for passengers when the ticket price increases, Passenger will consider choosing other alternative airlines that are more affordable. The results could be used by an airline company to attract the passenger by improving its marketing strategy.*

Keywords: *Low-cost carrier, airline choice, airline attribute, mixed logit, demand elasticities*

Abstrak. *Pertumbuhan pesat penumpang pesawat udara domestik di Indonesia memicu semua maskapai untuk memperluas pangsa pasar dengan membuka berbagai rute domestik baru, salah satu wilayah yang menjanjikan adalah Kota Bandung. Pada awal 2019, maskapai berbiaya rendah menerapkan kebijakan bagasi berbayar. Dinamika perubahan kondisi dan regulasi yang telah disebutkan sebelumnya dapat mempengaruhi keputusan pembelian konsumen. Oleh karena itu, maskapai harus merancang ulang strategi pemasaran untuk penyesuaian keinginan dan kebutuhan konsumen saat ini. Berdasarkan permasalahan tersebut, penelitian ini bertujuan untuk mengidentifikasi atribut-atribut apa saja yang signifikan mempengaruhi penumpang dalam membuat keputusan pembelian dan menentukan atribut-atribut apa saja yang elastis dan tidak elastis. Pengumpulan data menggunakan kuesioner daring lalu disebar ke 235 responden dan akan dianalisis dengan Mixed Logit Model menggunakan perangkat lunak BIOGEME. Hasil penelitian menunjukkan jika atribut waktu keberangkatan penerbangan signifikan terhadap pemilihan maskapai oleh penumpang. Selain itu, harga tiket juga memainkan peran penting dalam pemilihan maskapai dimana jika harga tiket suatu maskapai naik, maka penumpang akan mempertimbangkan untuk memilih maskapai lainnya yang lebih terjangkau. Hasil penelitian ini dapat digunakan oleh maskapai untuk menarik atensi penumpang dengan memperbaiki strategi pemasaran mereka.*

Kata kunci: *Low-cost carrier, airline choice, airline attribute, mixed logit, demand elasticities*

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Introduction

Rapid globalization development in this era affects too many industries, particularly in airlines industry. Impacts from the globalization effect, the airline industry faced some challenges: cost efficiency, unpredictable demand, and changes of consumer service quality requirements'—(Baker, 2013; Koklic et al., 2017). The growth of air passengers in Indonesia for the past decade has sharply increased. Based on the latest data from the Indonesia Central Bureau of Statistics, domestic passengers on five main airports in 2018 had reached 44,397,149 million passengers. For the last five years, domestic passengers have increased by 17% (Badan Pusat Statistik, 2018).

The increasing number of domestic passengers has encouraged all airlines to expand market share by opening routes in the regional region. One area that has promising consumer potential is Bandung.

According to the Angkasa Pura II statistical data report in 2018, the number of passengers at Husein Sastranegara International Airport, which shows on Figure 1, grew from 2,927,304 passengers in 2014 to 3,860,314 passengers in 2018. The increasing of passengers caused by Bandung is well-known as city of tourism, culinary, and education. Another reason is its closeness to the Indonesian main hub, Soekarno-Hatta International Airport and road traffic jams condition between Bandung-Jakarta makes some local consumers in Bandung prefer to take a flight from Bandung. (Yuliana, 2017).

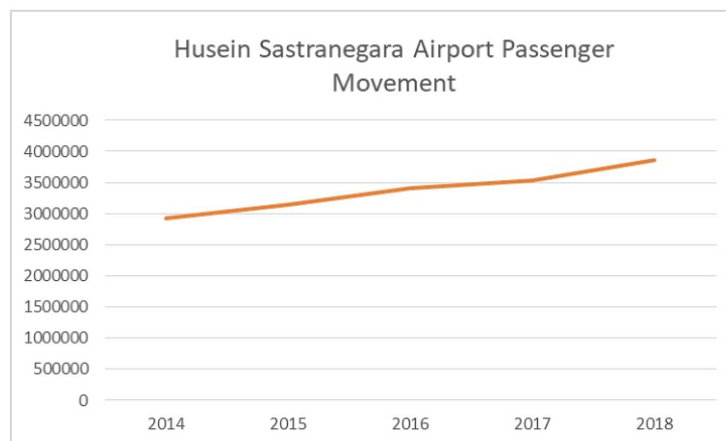


Figure 1.
Husein Sastranegara’s Airport Passenger Movement
Source : Angkasa Pura 2, 2020

In this study, researchers focused research on airlines for the Bandung-Surabaya route only. Based on the Air Transportation Annual report released by Indonesia Central Bureau of Statistics (BPS) from 2015-2018, the total passenger departed from Bandung to Surabaya is 231,817 in 2015 increased to 339,921 in 2018. In September 2016, there were four direct airlines listed on this route, and then in February 2019, there were only three airlines operating Bandung-Surabaya route named NAM Air, Lion Air, and Citilink

Airline selection attributes are factors that essential decision points for passengers to choose an airline. The selection of airline attributes are the core variable in an airline company's marketing strategy. The airline selection attributes represent the impression created by various factors that might play an important role in the passenger's decision-making process. Thus, these attributes also could also be an essential factor in distinguishing factor between an airline with its competitor (S. B. Kim & Park, 2017).

Previous studies on airline choice are widely available particular in various region in Asia and Europe which shows on Table 1. In Taiwanese studies, mostly previous passenger's preference studies depends on ticket price –(Chang & Sun, 2012; Lin & Huang, 2015; Lu, 2017; Wen & Lai, 2010), meanwhile the other one stated that their studies revealed if safety and reliability, punctuality, and customer service is the main consideration to select an airline (Chen & Chao, 2015). In South Korea's studies, Han (2013) stated that cabin ambience is the main factor on decision making in select low-cost carrier.

Kim (2015) stated that hedonic value and utilitarian value influences decision making for LCCs' passengers. Another Korean's passenger choice studies was conducted by Kim & Lee (2011) when they revealed that 'responsiveness' factor as the most important service factor which an airline should provide. Kim & Park (2017) studies have the same results with most Taiwanese airline's studies when the price is the most important element to select an airline. Then, based on studies which conducted by "Lee & Yip (2017) conclude that flight service and available schedule is positively related to airline choice behavior.

Table 1.
NGENE Sample Results
(Source : Author, 2020)

Attributes	Nam Air (IN)	Lion Air (JT)	Citilink (QG)
Travel Time (minutes)	85	75	95
Price (Indonesian Rupiah)	1,015	1,220	1,220
Extra Baggage Price (Indonesian Rupiah)	30	29	45
Departure Time (Score)	1	0,2	0.1
Service Quality (Score)	6.91	5.38	7.26

In European's studies, there a lot of study variation regarding airline choice. Milioti et al., (2015) and Medina-Muñoz et al. (2018) revealed that the price is the significant factors in airline choice. Then the studies which was conducted by Rouncivell et al., (2018) found that willingness to pay for preferred seat selection on UK domestic air services, for both business and non-business travel withover 50% of passengers expressing a WTP. Another results is revealed by Martinez-Garcia & Royo-Vela (2010) when they stated that lower price is generally most valued flight characteristics but it does not enough to discriminate passenger's preferences to select low-cost flights.

variables is interacted with flight's choice attributes. Teichert et al., (2008) was examined flight preferences in different customer segments. The results revealed that the dominant marketing strategy of airlines, such as price for economy passengers segment and flexibility for business passengers segment, is not dis-criminatory enough to cover the broad preference-spectrum.

The study which conducted by Fleischer et al (2012) to examine Fear-of-Flying factors to airline choice. The results revealed that Fear-of-Flying factors which is treated as latent

In Indonesian's studies, the studies which conducted by (Irawan et al., 2020) stated that attitudes is the significant factors that influence shifting of airline passenger's to use Trans-Java Toll Road for their trip because they are very much aware of the importance of having toll roads that offer safe, reliable, convenient, time-effective, and low tariff services

In early 2019, a low-cost carrier in Indonesia has implemented a paid-baggage policy for consumers. The change in conditions and regulations will influence consumer buying decisions. For this case, consumer can re-enter the full decision process and consider alternative brands if anything changes dramatically (price, product, availability, services). (Burnett, 2008).

Based on the research background, the research objectives of this study as follows. First, to identify the significant attribute of the airline choice in the Bandung-Surabaya route. Second, to understand the elasticity size of airline attributes. Third, to suggest marketing strategy improvement for the airline in the Bandung-Surabaya route.

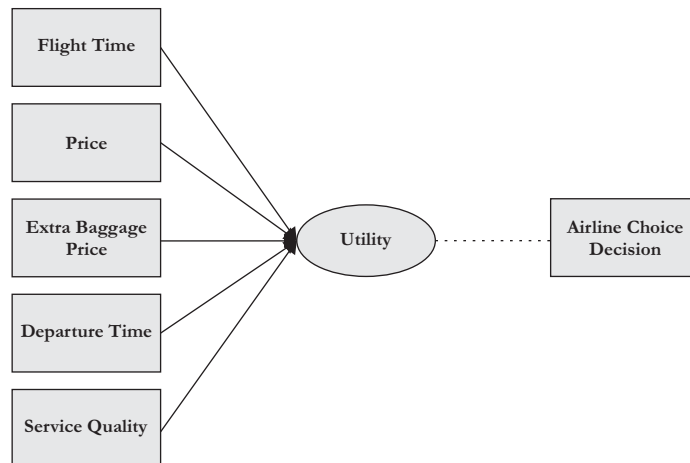


Figure 2
 Conceptual Framework
 (Source : Author, 2020)

The conceptual framework of this research shows on Figure 2. From the literature review flight time, price, extra baggage price, departure time, and service quality are the factors selected by the author to be analyzed concerning their effect as independent attributes on the airline choice decision. The black arrow represents the research objective where the relationship between flight time, price, extra baggage price, departure time, and service quality toward airline choice decision and the dashed arrow shows that choice model constructs by the utility.

Research Methodology

We use an online questionnaire to collect the research data. Online questionnaire is chosen for respondent convenience so they could fill the questionnaire through their personal gadget. The sampling methods which we used is purposive sampling due to our research aim is to know airline choice factors among the passenger in Bandung-Surabaya route.

The researchers have accomplished to collect data from 235 respondents who have already flown Bandung-Surabaya route. Total 235 respondents is determined by our research type is problem-solving research which the minimum sample size is 200 samples (Malhotra et al., 2017).

There are two sections to this questionnaire. In the first section, respondents were given three alternative airlines for the Bandung-Surabaya route, then respondents choose one alternative airline based on their own personal preference. In each alternative, there are five attributes when the first four attributes (travel time, ticket price, extra baggage price, and departure time) value are collected from the website of each airline. The value for service quality attributes based on customer judgment and it was got from surveys in travel surveyor website. In the next section, respondents will fill in their socio-demographic profiling data. Attributes selection is determined by qualitative research to aviation-related stakeholders about what factors that influence airline choice for air transport passenger's.

After collecting the data, the attributes which presented in **Table 1** were processed with NGENE Software with D-efficient design methods to reduce the complexity of experimental design (Rose & Bliemer, 2014). Respondents' results in the first section were related to their preference airlines, then processed using BIOGEME software with Mixed Logit Model. The mixed logit is a more flexible model that can be applied to any random utility model (J. K. Lee et al., 2016).

The formula will be presented on formula 1 and formula 2 as follow:

$$U_{(nsj)} = V_{nsj} + \epsilon_{nsj} \dots \dots \dots (1)$$

Where:

U_{nsj} : the utility of alternative j perceived by respondent n in choice situation

V_{nsj} : an observed component

ϵ_{nsj} : unobserved component

In case a certain parameter β_k appears in the utility function of multiple alternatives j, it is said to be generic over these alternatives. Otherwise, the parameter is called alternative-specific. (Bliemer & Rose, 2010).

$$V_{nsj} = \sum_{k=1}^K \beta_k \cdot x_{nsjk} \dots \dots \dots (2)$$

Where:

V_{nsj} : an observed component

β : corresponding parameters

x : level of each alternative

Next, the utility function equation for each alternatives which shows on Formula 3, 4, and 5.

$$V1 = ASC1 + B_{ttime} * INTT + B_{cost} * IN_{cost_Scaled} + B_{bcost} * INBC + B_{srvc} * INSRVC + B_{dtime} * INDNT + \sigma_{IN} * \omega_{IN} \dots \dots \dots (3)$$

$$V2 = ASC2 + B_{ttime} * JTIT + B_{cost} * JT_{cost_Scaled} + B_{bcost} * JTBC + B_{srvc} * JTSRVC + B_{dtime} * JTDT + \sigma_{JT} * \omega_{JT} \dots \dots \dots (4)$$

$$V3 = ASC3 + B_{ttime} * QGTT + B_{cost} * QG_{cost_Scaled} + B_{bcost} * QGBC + B_{srvc} * QGSRVC + B_{dtime} * QGDT + \sigma_{QG} * \omega_{QG} \dots \dots \dots (5)$$

We also analyze the elasticity of the attributes. We want to know the size of how much customer decisions are influenced by attributes. An attribute can be elastic if it has an elasticity value greater than or equal to one (≥ 1). The elasticity equation shows on formula 6. Formula 7, 8, and 9 will show the ticket price elasticity equation.

$$TCelas1 = (1.0 - Prob1) * MonteCarlo(B_{cost}) * IN_{cost_Scaled} \dots \dots \dots (7)$$

$$TCelas2 = (1.0 - Prob2) * MonteCarlo(B_{cost}) * JT_{cost_Scaled} \dots \dots \dots (8)$$

$$TCelas3 = (1.0 - Prob3) * MonteCarlo(B_{cost}) * QG_{cost_Scaled} \dots \dots \dots (9)$$

Results and Discussion

Respondent profile data is shown in Table 2 of socio-demographic respondents. Gender of the respondents were dominated by woman with percentage 59% and 41% for man respondents. The age range results shows that the young respondent with age range 18-25 years old, dominated on this research with percentage 56%. Respondent's occupation mostly as a employee with percentage 37% and students with percentage 30% on the second one. Respondent's monthly income range chart states that most of respondent's monthly incomes around IDR 3,000,001 – IDR 6.000.000 with percentage 38%. Last chart, the travel purpose of respondent state that 56% respondents purpose to Surabaya are for holiday, for work is 30%, and for visiting family/friends is 15%.

The attributes that used in this questionnaire are include traveling time, price, extra baggage price, departure time, and service quality. "Service Quality" attributes include pre-flight and In-flight services, which have been regulated in Ministerial Regulation No. 185 of 2015 Passenger Service Standards for Economy Class Domestic Scheduled Commercial Air Transportation. Based on BIOGEME software results which shows on Table 3, four significant parameters that influence consumers in making decisions. The attributes called significant if the t-test value $\leq -1,96$ or t-test value $\geq 1,96$.

The significant parameters or attributes will explained as follow :

- The positive value from B_dtime (2,15) indicates that departure time is significant attribute. If the positive value is improved, it will increase passenger's choice significantly.
- The positive value from ASC3 (4,14) indicates that passenger more likely to choose Citilink rather than Nam Air.
- The negative value from mu_cost (-7,49) and sig_cost (-9,56) indicates that if there is an increase in ticket price, passengers will choose other's alternative airlines that are affordable.

- The negative value from sig_JT (-8,11) indicates that passengers prefer Nam Air rather than Lion Air

The processed data from elasticity equation which shows on Table 4, the attribute "ticket price" and "service quality" which is the ticket price and service quality for each airline are elastic to the respondent's preference. This can be interpreted that if there is a slight change in the price of airline tickets and service quality, it will greatly influence to passenger's choice which is in line with mostly previous studies such as Chang & Sun (2012), Kim & Park(2017), and Milioti et al. (2015).

Table 2.
Socio-demographic Profile
(Source : Author, 2020)

Socio-Demographic Attributes	Total (% Total)
Gender	
Man	96 (41%)
Woman	139 (59%)
Age	
18-25 years	132 (56%)
26-35 years	77 (33%)
36-45 years	18 (8%)
>45 years	8 (3%)
Occupation	
Students	71 (30%)
State-Owned Enterprises Employee	31 (13%)
Civil Servant	24 (10%)
Employee	87 (37%)
Freelancer	3 (2%)
Housewife	2 (1%)
Entrepreneurship	17 (7%)
Income	
<3,000,000	55 (23%)
3,000.001-6,000,000	90 (38%)
6,000,001-9,000,000	35 (15%)
9,000.001-12,000,000	13 (6%)
12,000,001-15,000,000	15 (6%)
>15,000,001	27 (12%)
Travel purpose	
Work	69 (30%)
Holiday	130 (55%)
Visiting Family/Friends	36 (15%)

Table 3.
Result of Significant Attribute
 (Source : Author, 2020)

Name	Value	Std err	t-test	p-value		Robust Std err	Robust t-test	p-value
ASC2	-8.36	0.23	-1.68	0.09	*	5.15	-1.62	0.10
ASC3	2.16	0.36	4.14	0.00		0.40	0.18	0.00
B_bcost	-0.01	0.01	-1.55	0.12	*	0.07	-1.27	0.20
B_dtime	0.37	0,17	2.15	0.03		0.20	0.1	0.07
B_srvc	-1.25	3.19	-0.39	0.05	*	3.24	-0.39	0.04
mu_cost	-10.9	1.45	-7.49	0.00		1.59	-6.84	0.00
sig_cost	-16.0	0.09	-9.56	0.00		0.10	-8.49	0.00
sigma_IN	0.19	0.31	0.39	0.00		0.30	0.40	0.00
sigma_JT	-4.72	0.41	-8.11	0.00		0.36	-9.22	0.00
sigma_QG	3.34	0.27	0.38	0.00		0.22	10.32	0.00

Conclusion

The attribute significant results indicate that departure time is a significant attribute that can influence the passengers' choice of flight in Bandung – Surabaya route. Even the ticket price is not a significant attribute, but it is an elastic attribute along with service quality. If there are slight changes in the ticket price and service quality, it will substantially influence passenger choice decision.

The significant contribution of this research can be explained in both theoretical and practical perspectives. From theoretical perspective, this study has improved the understanding of the key attributes influencing passenger's decision-making, particularly in the Indonesian domestic market. The model in this research could be applied to all types of passengers, from all route, and even their types of passengers as our model is constructed by attributes which most of the attributes also used in previous studies.

From practical perspective, we suggest that the airline company improve its marketing strategy, particularly in pricing strategy. The wide choice of flight schedule and improving airline service quality are also important to attract more passengers for their services.

The research also has limitations and recommendations for future research. First, this research only focused on Bandung-Surabaya route passengers which obviously have different characteristics from another passenger's domestic routes. Socio-demographic profile of passengers might be influence passenger preference in particular route to choose an airline. Further research on another origin's to Surabaya, such as Jakarta-Surabaya, Denpasar-Surabaya or other domestic routes, is recommended. Second, this research limits on passenger perspectives. Further research could be directed to airline managerial or aviation experts perspectives which have different importance of the attributes toward passenger's perspective. Third, this research is conducted before COVID-19 pandemic spreads (in late 2019). Further research could add health attribute into the model so it would be appropriate into the current situation.

References

Angkasa Pura 2. Bandara Internasional Husein Sastranegara. (2019). Retrieved from https://www.angkaspura2.co.id/id/bisnis_relation/our_airport/18-bandara-internasional-husein-sastranegara/

- Badan Pusat Statistik. (2018). Statistik Transportasi Udara (Air Transportation Statistics) 2018. In Badan Pusat Statistik. *Badan Pusat Statistik*. <https://ejournal.poltektegal.ac.id/index.php/siklus/article/view/298%0Ahttp://repository.unan.edu.ni/2986/1/5624.pdf%0Ahttp://dx.doi.org/10.1016/j.jana.2015.10.005%0Ahttp://www.biomedcentral.com/1471-2458/12/58%0Ahttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&P>
- Baker, D. M. A. (2013). Service Quality and Customer Satisfaction in the Airline Industry: A Comparison between Legacy Airlines and Low-Cost Airlines. *American Journal of Tourism Research*, 2(1), 67–77. doi: 10.11634/216837861302317
- Bliemer, M. C. J., & Rose, J. M. (2010). Construction of experimental designs for mixed logit models allowing for correlation across choice observations. *Transportation Research Part B: Methodological*, 44(6), 720–734. doi: 10.1016/j.trb.2009.12.004
- Burnett, J. (2008). *Core Concepts of Marketing*. In Jacob Foundations.
- Chang, L. Y., & Sun, P. Y. (2012). Stated-choice analysis of willingness to pay for low cost carrier services. *Journal of Air Transport Management*, 20, 15–17. doi: 10.1016/j.jairtraman.2011.09.003
- Chen, H. T., & Chao, C. C. (2015). Airline choice by passengers from Taiwan and China: A case study of outgoing passengers from Kaohsiung International Airport. *Journal of Air Transport Management*, 49, 53–63. doi: 10.1016/j.jairtraman.2015.08.002
- Fleischer, A., Tchetchik, A., & Toledo, T. (2012). The Impact of Fear of Flying on Travelers' Flight Choice: Choice Model with Latent Variables. *Journal of Travel Research*, 51(5), 653–663. doi: 10.1177/0047287512437856
- Han, H. (2013). Effects of in-flight ambience and space/function on air travelers' decision to select a low-cost airline. *Tourism Management*, 37, 125–135. doi: 10.1016/j.tourman.2013.01.008
- Kim, S. B., & Park, J. W. (2017). A study on the importance of airline selection attributes by airline type: An emphasis on the difference of opinion in between Korean and overseas aviation experts. *Journal of Air Transport Management*, 60, 76–83. doi: 10.1016/j.jairtraman.2017.01.007
- Kim, Y. (2015). Assessing the effects of perceived value (utilitarian and hedonic) in LCCs and FSCs: Evidence from South Korea. *Journal of Air Transport Management*, 49, 17–22. doi: 10.1016/j.jairtraman.2015.07.001
- Kim, Y. K., & Lee, H. R. (2011). Customer satisfaction using low cost carriers. *Tourism Management*, 32(2), 235–243. doi: 10.1016/j.tourman.2009.12.008
- Koklic, M. K., Kukar-Kinney, M., & Vegelj, S. (2017). An investigation of customer satisfaction with low-cost and full-service airline companies. *Journal of Business Research*, 80(May), 188–196. doi: 10.1016/j.jbusres.2017.05.015
- Lee, J. K., Yoo, K. E., & Song, K. H. (2016). A study on travelers' transport mode choice behavior using the mixed logit model: A case study of the Seoul-Jeju route. *Journal of Air Transport Management*, 56 (Part B), 131–137. doi: 10.1016/j.jairtraman.2016.04.020
- Lee, T. T. H., & Yip, T. L. (2017). Impact of Flight Departure Delay on Airline Choice Behavior. *Asian Journal of Shipping and Logistics*, 33(4), 273–278. doi: 10.1016/j.ajsl.2017.12.011
- Lin, H., & Huang, Y. (2015). Factors affecting passenger choice of low cost carriers: An analytic network process approach. *TMP*, 16, 1–10. doi: 10.1016/j.tmp.2015.05.005
- Lu, J. L. (2017). Segmentation of passengers using full-service and low-cost carriers – Evidence from Taiwan. *Journal of Air Transport Management*, 62, 204–216. doi: 10.1016/j.jairtraman.2017.05.002
- Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing Research: An Applied Approach (Fifth Edition)*. Pearson Education Ltd.

- Martinez-Garcia, E., & Royo-Vela, M. (2010). Segmentation of low-cost flights users at secondary airports. *Journal of Air Transport Management*, 16(4), 234–237. doi: 10.1016/j.jairtraman.2010.01.003
- Medina-Muñoz, D. R., Medina-Muñoz, R. D., & Suárez-Cabrera, M. Á. (2018). Determining important attributes for assessing the attractiveness of airlines. *Journal of Air Transport Management*, 70(October 2017), 45–56. doi: 10.1016/j.jairtraman.2018.01.002
- Milioti, C. P., Karlaftis, M. G., & Akkogiounoglou, E. (2015). Traveler perceptions and airline choice: A multivariate probit approach. *Journal of Air Transport Management*, 49, 46–52. doi: 10.1016/j.jairtraman.2015.08.001
- Rose, J. M., & Bliemer, M. C. J. (2014). *Stated choice experimental design theory: The who, the what and the why*. In Handbook of Choice Modelling (pp. 152–177). Edward Elgar Publishing Limited. doi: 10.4337/9781781003152.00013
- Rouncivell, A., Timmis, A. J., & Ison, S. G. (2018). Willingness to pay for preferred seat selection on UK domestic flights. *Journal of Air Transport Management*, 70 (April), 57–61. doi: 10.1016/j.jairtraman.2018.04.018
- Teichert, T., Shehu, E., & von Wartburg, I. (2008). Customer segmentation revisited: The case of the airline industry. *Transportation Research Part A: Policy and Practice*, 42(1), 227–242. doi: 10.1016/j.tra.2007.08.003
- Wen, C. H., & Lai, S. C. (2010). Latent class models of international air carrier choice. *Transportation Research Part E: Logistics and Transportation Review*, 46(2), 211–221. doi: 10.1016/j.tre.2009.08.004
- Yuliana, D. (2017). Pengaruh Fasilitas, Layanan Dan Informasi Aksesibilitas Terhadap Tingkat Kepuasan Penumpang Di Bandara Husein Sastranegara Bandung. *WARTA ARDHLA: Jurnal Perhubungan Udara*, 43, 27–42. <https://wartaardhia.com/index.php/wartaardhia/article/view/235/pdf>