Importance Performance Analysis of Online Motorcycle Taxi Services: Indonesian Passenger Perspective

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Abstract: Online motorcycle taxis have received permission from the Indonesian government to serve the community. As a regulator, the government has an obligation to maintain that community needs are being met in every mode of public transportation. Therefore, online motorcycle taxi operations to be assessed for performance in order to maintain public services. This study aims to determine the characteristics of passengers as well as their importance and performance on online motorcycle taxis. Data was obtained by distributing questionnaires to, and conducting interviews with 200 random online motorcycle taxi passengers in Yogyakarta City, Indonesia. The Importance Performance Analysis (IPA) method was used to evaluate the online motorcycle taxis. According to IPA, most of the online motorcycle taxi services were perceived to be good by the passengers. A positive assessment of the online motorcycle taxi indicates that online transportation is very popular and fulfils a community need.

1 INTRODUCTION

Congestion is a serious problem in many cities in the world and various efforts have been made by governments to overcome this problem. One such effort has been to increase the use of urban public transport. Urban public transportation methods which are currently being widely developed are Bus Rapid Transit (BRT), Light Rail Transit (LRT), and Mass Rapid Transit (MRT). However, in the midst of efforts to increase urban public transport load factors, the rapid growth of online transportation has emerged. Application-based transportation company Uber has 3.9 million drivers around the world, while Grab, with 36 million passengers collectively using services as many as 2.5 billion times, is served by 2.8 million drivers and Lyft, another app based company, has 1.4 million drivers who have served 23 million passengers in over one billion trips (Iqbal, 2019). At first, the presence of many online transportation companies was opposed in various countries. Demonstrations by conventional taxi drivers often adorned the news in the mass media because of reductions in their incomes since online taxis began operating (Telegraph, 2019).

In addition, online transportation is deemed to be turning people away from fixed route urban public transportation and even increasing the level of congestion. But over time - although there are still governments that prohibit the use of online transportation - most cities of the world now allow online transportation companies to operate within certain parameters, such as having driving licenses and stickers on vehicles (Dickinson, 2018). In addition, fair cost standardization policies have been adopted for both online and conventional taxis in order to maintain a climate which is conducive to business.

During its development, Uber became the most downloaded ride-sharing and taxi application in Europe for May 2019 with almost 2.1 million installations representing 13.3 percent year-on-year growth from May 2018. The bulk of the installations came from Russia at 32 percent, followed by The United Kingdom 15 percent and France 11 percent (Chan, 2019). Meanwhile, based on Google and Temasek's research, the market share (Gross Merchandise Value / GMV) of online transportation services in six Southeast Asian countries reached US $ 2.98 billion, equivalent to Rp43.2 trillion, in 2015. The value consists of US$2.5 billion transportation services and US$450 million food delivery service. Then, in 2018 it increased to US$7.9 billion (Rp114 trillion) and is predicted to soar to US$29 billion (Rp420 trillion) in

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2025. In 2015, the daily average number of users of online transportation services reached 1.5 million / day and increased to 8 million / day in 2018 (katadata.co.id, 2018).

In Indonesia, on August 22 2017, the Supreme Court (MA) officially annulled the Minister of Transportation Regulation No. 26/2017, which became the legal umbrella for the implementation of application-based transportation. At least 14 points in the article are considered contrary to the higher laws and regulations by the Supreme Court, namely Law No. 20/2008 concerning Small and MicroMedium Enterprises and Law No. 22/2009 concerning Road Traffic and Transportation (detikNews, 2017). Thus, the points governing a number of rules, including upper and lower limit rates, were returned to the market scheme. That is to have online transportation without a legal umbrella but still allowed to operate.

Given the rapid growth of online motorcycle taxi services, the Indonesian government sought the need for policy / discretion based on Law Number 30 of 2014 concerning State Administration. In the Law it was stated that the minister may regulate something that occurs overwhelmingly in the community. With these considerations, the Government of Indonesia, through the Ministry of Transportation, permits the use of online motorcycle taxi services by issuing the Minister of Transportation Regulation No. 12 of 2019 concerning the Safety and Protection of Motorcycle Users While Utilising Such Services for Public Interest (INDONESIA, 2019).

In the midst of the pro-contra discourse, it cannot be denied that online motorbikes continue to receive a positive response from the public. Congestion that occurs in many cities in Indonesia encourages people to use online motorbikes as a faster but still affordable mode of transportation. Motorcycle based ride sourcing like Gojek and Grab Bike is a mode of motorbike taxi service that, assisted by technological devices, makes it easier for citizens to order quickly and be able to negotiate city traffic more easily compared to taxi cabs. The motorcycle taxi as a twowheeled motorized vehicle has its own advantages and uniqueness in that motorcycle taxis can provide door to door services, can reach difficult locations such as alleys and narrow roads and be able to bypass congestion spots.

Government policies that ultimately allow the use of motorcycle taxi online cannot be separated from the demands of the wider community to obtain the desired transportation services. However, every policy, of course, needs to be evaluated as the next policy material because the government's duty is to keep the needs of the community well served. One of the important aspects of the evaluation of materials is to understand the perception of passengers of online transportation services. If the public considers that online transportation performs well, this means that online transportation meets the expectations of the community and therefore online transportation operations are to be maintained. However, if the public's perception of online transportation is not good, the government can review the existence of online transportation by asking operators to improve their services or even, if it is deemed necessary, terminate this online transportation operation.

Online transportation in the form of motorcycles, also known as motorbike taxis, is, of course, quite unique and is not found in many countries. This research fills a gap by providing preliminary evidence about the use of motorbike ride sourcing in Yogyakarta Indonesia. The focus of this study was to answer two questions: (1) What are the main characteristics of online transport users (2) What are the perceptions of performance and interests according to passengers

2 PREVIOUS STUDIES

Studies related to online transportation include (Rayle et al., 2016), (Suatmadi et al., 2019)(Irawan et al., 2019)(Rakhmatulloh et al., 2019). Some studies highlight the shift in passengers of urban public bus transportation and conventional taxis to the use of online transportation services (Rayle et al., 2016). It was concluded that online transportation has the ability to increase mobility but it does nothing to improve environmental sustainability (Suatmadi et al., 2019). Meanwhile, (Irawan et al., 2019) showed that there is an opportunity for motorcycle-based ride sourcing as a feeder mode of Trans Jakarta Bus and Commuter Line in the Jakarta Metropolitan Area. However, not many of these writings are aimed specifically at motorbike type online transportation (as opposed to online cars / taxis). In certain countries such as Indonesia, the main reasons for the prohibition of online motorcycle taxis have been based on concerns for the safety and security of passengers, and it is precisely for these reasons that it is felt very necessary to conduct studies on online motorcycle services.

The focus of this research is to examine the performance and interests of online motorcycle taxis from a passenger perspective. If the assessment of the performance side falls below the interests of the users, then this indicates the need for service improvement. But if the opposite is the case, the interests of passengers are lower in terms of performance, meaning service to passengers has exceeded expectations.

2.1 Importance-performance Analysis

Importance-Performance Analysis (IPA) is a technique for analysing customer satisfaction with organizational products or services as proposed by Martilla and James (1977). IPA explicitly asks respondents in the customer satisfaction survey to show how important each attribute is (Eboli and Mazzulla, 2009). This method does not reflect the dependence of two or more variables and the effects of the presence or absence of different variables on overall service quality. Nevertheless this method is often used because it is easy to identify different quality parameters that can lead to improved service quality (Rahul Raoniar, 2015). In short, this science evaluation tool is used to prioritize attributes for improvement and can also provide guidance for strategic development (Slack, 2002). Some previous studies on transportation (Muttaqin et al., 2016), (Prasad and Maitra, 2019) (Machado-León et al., 2017) have also been used the IPA method.

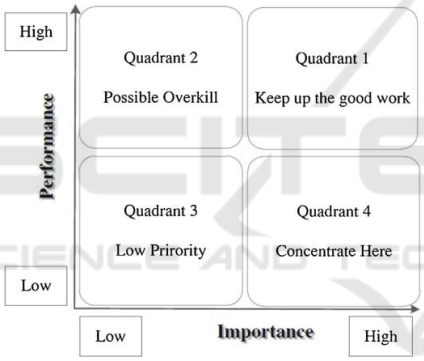

Figure 1: The Importance-Performance Analysis (IPA) matrix (Hosseini and Bideh, 2014)

Quadrant 1 contains attributes that are considered very important for the customer, and the driver provides a high level of performance. Thus the attributes in this quadrant are referred to as the main strengths and opportunities to achieve or maintain competitive advantage. Quadrant 2 contains attributes that are considered to be of low importance to the customer, but the driver provides a high level of performance. In this case, the organization must reallocate attributes in this quadrant to other quadrants that require performance improvements. Quadrant 3 contains low importance and low performance attributes which are referred to as small weaknesses. Thus attributes in this quadrant do not require many priorities for improvement. Quadrant 4 contains attributes that are considered very important for customers but the level of performance is very low. These attributes are referred to as major weaknesses that require immediate attention for improvement.

The steps in determining the results of the Importance Performance Analysis (IPA) as a result of filling out the forms by respondents in this study are as follows:

1. Calculate the importance of the online motorcycle taxi,
2. Calculate the mean performance of the online motorcycle taxi,
3. Conduct plotting of mean interests and mean performance by Cartesian method into the quadrant of the Importance Performance Analysis (IPA),
4. Interpreting and analysing what indicators to enter into each quadrant.

2.2 Service Indicator

There are 10 indicators that are used as references in the assessment of services (Parasuraman et al., 1985). The ten variables are reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding / knowing the customer, and tangibles. Then by using the SERVQUAL model assessment, it is summarized into 5 pieces, namely tangibles, reliability, responsiveness assurance, and empathy (Parasuraman et al., 1988). Assurance is a combination of communication, credibility, security, competence, and courtesy, whereas empathy is understanding/knowing customers and access (Parasuraman et al., 1988).

Tangibles include physical facilities, equipment, and what appears from employees / staff. Reliability is the ability to perform promised services reliably and accurately. Responsiveness is willingness to help customers and provide fast service. Assurance is the knowledge and politeness of employees and their ability to inspire trust and confidence. While empathy is concerned with the individual attention that the company gives to its customers.

3 METHODOLOGY

Two hundred people who had used Gojek motorbike online transportation were asked to take part in this study. Gojek was chosen because it is one of the leading online transportation players in Indonesia, where, as of 2018, Gojek had attracted 1.7 million drivers, 300 thousand Go-Food partners, and 60 thousand service providers (Setyowati, 2019). The Likert scale was used to determine the performance and interests of Gojek online motorcycle taxi passengers. To determine the level of performance (performance), the

Likert scale used 1-5 where 1 is very bad and 5 is very good. While in terms of interests 1 is not very important, up to 5, which is very important. Next was the Quadrant Analysis or Importance Performance Analysis (IPA).

Online motorcycle taxi passengers were interviewed for their demographic characteristics and perceptions about online motorcycle taxi services. Interviews using questionnaires were conducted in 8 places spread across the Yogyakarta City area of Indonesia. The eight places were: the Yogya Kembali monument, Jogja City Mall, Senior High School 2 of Yogyakarta, Kranggan Market, Tugu Railway Station, along Jenderal Sudirman Section, Malioboro Mall and Alun-alun Kidul Yogyakarta (Yogyakarta South Square).

4 RESULTS AND DISCUSSION

4.1 Demographic Characteristics of Respondents

Respondents' characteristics of online motorcycle taxi users are shown in the following Table 1. As many as 56% of users of online motorcycle transportation were found to be women. Passenger figures were dominated by those of ages between 20-30 years, most were students / college students at 50%, without family dependants 57%. The purpose of their trip being to study at school / campus was 40%, the frequency of use was 41%, which was as many as 2-3 times per week. Interestingly enough, the majority of online motorcycle taxi users, namely 67% of passengers, have their own vehicles.

Table 1: Socio-demography Characteristics of Online Motorcycle Passengers.

Socio-demography	n	%
Gender		
Male	88	44
Female	112	56
Age		
$<$ 20 years	50	25
20 – 30 years	102	51
31 – 40 years	28	14
41 – 50 years	20	10
$>$ 50 years	0	0
Education		
Primary School	4	2
Junior High School	32	16
Senior High School	94	47
University	70	35
Job		
Student/College student	100	50
Private employees	44	22
Government Employees/Indonesian Soldiers/Police	18	9
Entrepreneurs	38	19
Others	0	0
Status		
Married	72	36
Single	128	64
The number of family/family burden		
$<$ 2 persons	14	7
2 - 3	60	30
$>$ 4	14	7
alone (no burden)	114	57
Purposes using Gojek		
School / campus	80	40
Work	38	19
Market / shopping mall	26	13
Bus Terminal / Railway Station	20	10
Home	36	18
Frequency of using online motorbike services per week		
$<$ 2 (twice)	46	23
2 – 3 times	82	41
4 – 5 times	46	23
$>$ 5 times	26	13
Income per month		
$<$ 1 million	74	37
1 – 2 million	66	33
$>$ 2 million	60	30
Vehicle owners		
motorbikes	134	67
cars	8	4
none	58	29

4.2 Importance and Performance

The number of questions addressed to respondents was as many as 15 questions concerning aspects of tangibles, of which were 3 questions, reliability at 4 questions, responsiveness was 2 questions, assurance 4 questions and empathy 2 questions, the number of questions, at 15 pieces, was considered sufficient to be filled out by respondents when receiving survey forms. 15 questions were neither too many nor too few. If the number of questions were to be too many, it was feared that at the end of the form the questions would be answered by the respondent because they were saturated. In fact, if the number of questions were too small, the information extracted would be very lacking. When filling out the form, if there were any questions that were not understood by the respon-

dent, the surveyor would explain the purpose of the question to the respondent.

The following Table 2 is a recap of respondents' answers which is indicated by the mean value on the importance side as well as on the performance side of online motorcycle transportation.

Table 2: Importance Performance Analysis on online motorbike service.

Aspect	Importance	Performance	IPA quadrant
	Mean	Mean	
Tangibles			
1. The condition of the motorcycle looks decent	4.66	3.975	2
2. Clean and tidy driver appearance	4.725	3.94	2
3. Attributes such as helmets and masks	4.845	3.415	4
Reliability			
4. Get a motorcycle taxi wherever and whenever	4.75	3.925	1
5. Ease of ordering a motorbike taxi via smartphone	4.595	4.025	2
6. Process of cash and non-cash payments	4.625	4.065	2
7. Drivers arriving on time	4.775	3.505	4
Responsiveness			
8. The driver tries to deliver the passenger quickly and on time	4.65	3.89	2
9. Fast and responsive driver service	4.785	4.075	1
Aspect	Importance	Performance	IPA quadrant
	Mean	Mean	
Assurance			
10. Prioritizing traffic safety	4.9	3.925	1
11. Giving a sense of security from crime	4.92	4.04	1
12. Reputation of Gojek	4.71	4.065	1
13. Politeness to passengers	4.575	3.915	2
Empathy			
14. Providing input on choosing a good route	4.545	3.575	3
15. Speaking courteously when giving advice	4.61	3.615	3

The standard deviation of the "importance" aspect is between 0.272 to 0.499. While the standard deviation of the "performance" aspect is in the range of 0.234 - 0.549.

In the tangibles aspect, there are two aspects which are in quadrant 2 and 1 aspect in quadrant 4.Quadrant 2 is a quadrant where driver services are exceedingly good even though the passengers already feel happy with the services below. This means that resources on aspects of motorcycle hygiene can be diverted to overcome the problem of helmet attributes complained of by passengers about the less clean and smelly side, and masks that are not always available. Likewise in the reliability aspect, complaints about the accuracy of the arrival of the driver need to be addressed because they are included in quadrant 4.

Quadrant 1 where the elements of performance and interests are equally high, there are aspects of the flexibility of time and place to get an online motorcycle taxi, driver responsiveness, safety, security and reputation of motorcycle taxi. This result disputes concerns from some circles, including those from the government, who question the safety and security of motorbikes online. Some aspects that are considered by passengers to be not so important and also do not need to be of excessively good performance are the advice of the driver to the passengers regarding the route and hospitality in speaking.

If examined, there are 5 aspects of quadrant 1 entry, 6 aspects of quadrant 2 entry, 2 aspects of entrance to 3, and those in quadrant 4 in 2 aspects. These results indicate that the services of online motorcycle taxi drivers meet passenger expectations. This good service is certainly inseparable from the characteristics of drivers, where as many as 62% have high school education and 23% have been educated at university. High school and PT graduates are considered to have the ability to interact and provide the best service to passengers.

Good service quality is also inseparable from the management carried out by the Gojek company. In the regulations applied by Gojek, there were 3 types

of violations carried out by the driver, which would result in punishment. These were security threats, fraudulent actions, and poor service. Security threats can be in the form of violating traffic laws, neglect when driving, disrupting customer privacy or committing criminal acts. Cheating actions include making a fictitious order, giving money back or requesting a payment that is not in accordance with the agreement, or using a modified application. As for bad service, such was listed as speaking harshly, the vehicle number plate being different from that written on the application and delay in pick up.

5 CONCLUSIONS AND RECOMMENDATIONS

If any, This study was conducted in Indonesia where the government allows the use of online transportation, not only online taxis, but also online motorbikes are permitted. Based on the analysis in advance, motorcycle taxi transportation is perceived by passengers to have good service. Government concerns regarding the safety and security aspects of online motorcycle taxi passengers are very reasonable even though they are contrary to the perception of passengers. This is because passengers provide good ratings on safety and security aspects. The weakness of online motorcycle taxi operations lies in the incompleteness of the attributes (masks) and the timeliness of pick up. These two things need to be addressed by the operator.

The progress of communication technology that has fundamentally affected the urban transportation sector has triggered further research about the effects of the presence of online transportation on the number of urban public transport passengers. Likewise, an important consideration might be the use of ride hailing using routes of urban public transport such as BRT, LRT and MRT.

To close, although this study confirms that customers are commonly satisfied with the online motorcycle taxi service, the government must highly consider the public transport demand (i.e. TransJogja Bus) due to the emergence of motorcyclebased ride hailing, since the bus is very hard to compete with motorcycle mode, especially in term of travel time and travel cost (Irawan et al., 2017). In Yogyakarta, people who decide to use public transport must depart earlier to work/school than those who use motorcycle (Irawan and Sumi, 2012) (Irawan and Sumi, 2011). The high level of satisfaction with motorcycle-based ride hailing service is feared threatening the bus ridership.

REFERENCES

Chan, J. (2019). Top ridesharing and taxi apps in europe for may 2019 by downloads.

detikNews, A. S. (2017). 4 alasan ma cabut aturan transportasi online.

Dickinson, G. (2018). How the world is going to war with uber. *The Telegraph*.

Eboli, L. and Mazzulla, G. (2009). A new customer satisfaction index for evaluating transit service quality. *Journal of Public transportation*, 12(3):2.

Hosseini, S. Y. and Bideh, A. Z. (2014). A data mining approach for segmentation-based importance-performance analysis (som–bpnn–ipa): a new framework for developing customer retention strategies. *Service Business*, 8(2):295–312.

INDONESIA, M. P. R. (2019). Peraturan menteri perhubungan republik indonesia nomor pm 12 tahun 2019 tentang pelindungan keselamatan pengguna sepeda motor yang digunakan untuk kepentingan masyarakat.

Iqbal, M. (2019). Uber revenue and usage statistics. *Available at Business of Apps: http://www*, 24.

Irawan, M. Z., Belgiawan, P. F., Tarigan, A. K. M., and Wijanarko, F. (2019). To compete or not compete: exploring the relationships between motorcycle-based ride-sourcing, motorcycle taxis, and public transport in the jakarta metropolitan area. *Transportation*, pages 1–23.

Irawan, M. Z., Putri, M. K., Belgiawan, P. F., and Dwitasari, R. (2017). Analyzing commuters' behavior on egress trip from railway stations in yogyakarta, indonesia. *The Open Transportation Journal*, 11(1).

Irawan, M. Z. and Sumi, T. (2011). Modeling departure time of students on public transports in yogyakarta, indonesia. *Modern Applied Science*, 5(4):3.

Irawan, M. Z. and Sumi, T. (2012). Motorcycle-based adolescents' travel behaviour during the school morning commute and the effect of intra-household interaction on departure time and mode choice. *Transportation planning and technology*, 35(3):263–279.

katadata.co.id (2018). Pangsa pasar layanan transportasi online indonesia terbesar di asean.

Machado-León, J. L., de Oña, R., Baouni, T., and de Oña, J. (2017). Railway transit services in algiers: priority improvement actions based on users perceptions. *Transport Policy*, 53:175–185.

Muttaqin, M. Z., Munawar, A., and Haglund, L. (2016). Promoting bus as alternative transport modes in the city based from customer view. In *Prosiding Forum Studi Transportasi antar Perguruan Tinggi*.

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *Journal of marketing*, 49(4):41–50.

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. *Journal of retailing*, 64(1):12.

Prasad, P. and Maitra, B. (2019). Identifying areas of interventions for improvement of shared modes for school

trips. *Transportation Research Part A: Policy and Practice*, 121:122–135.

Rahul Raoniar, Velmurugan Senathipathi, M. R. (2015). Public transport performance evaluation techniques -a review.

Rakhmatulloh, A., Pulungan, R., and Dewi, D. K. (2019). Online transportation demand model in residential and education area in semarang city. In *IOP Conference Series: Earth and Environmental Science*, volume 248, page 012014. IOP Publishing.

Rayle, L., Dai, D., Chan, N., Cervero, R., and Shaheen, S. (2016). Just a better taxi? a survey-based comparison of taxis, transit, and ridesourcing services in san francisco. *Transport Policy*, 45:168–178.

Setyowati, D. (2019). Terbesar di indonesia, gojek targetkan pertumbuhan dua kali lipat.

Suatmadi, A. Y., Creutzig, F., and Otto, I. M. (2019). On-demand motorcycle taxis improve mobility, not sustainability. *Case Studies on Transport Policy*, 7(2):218–229.

Telegraph, T. (2019). Anti-uber protests around the world, in pictures.