Service Quality Analysis for Online-taxi: A Case Study of Malang City, Indonesia

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Abstract: The aims of this study is to analyze the service quality of Online-taxi focusing on minimum service standard aspect. The research approach is a quantitative approach with Importance-Performance Analysis for data analysis, and Online-taxi (GRAB-CAR and GO-CAR) as a case study in Malang city. The number of respondents for this study is 200. The analysis shows that there are 23 items that can be used to measure Online-taxi service quality. From the Importance-Performance Analysis (IPA) each item was weighted to rank the quality of the service relatively to each other. It was found that based on a minimum service standard aspect, there are several items which is important to passenger and need to improve, these are "No smoking" stick inside the car, the online-taxi application is always running well, online-taxi driver mastering the trip route and the alternative route, and provision of accident insurance.

Keywords: Online-taxi, Service quality, Importance-Performance Analysis, Malang, Indonesia

1. INTRODUCTION

Traffic congestion is one of the transportation problems which occurred in many major cities in Indonesia, such as Jakarta, Medan, Surabaya, Bandung, and Malang. In Indonesia, cities with population more than a million have been faced with traffic congestions, due to high usage of private cars. Recently, while the number of private vehicle increase significantly, the road construction to provide the means do not pace that much. Facing the problem, most authorities prefer to introduce transportation means similar to private cars, which is popularly called as "online-taxi", hoping to reduce the use of a private car.

The phenomenon of ridesharing become common issues, based on ridesharing thought, cab-sharing or taxi-sharing developed (Gidofalvi and Gederson, 2007 and Lin et al, 2012). Development of technology such as mobile phone and social network have enhanced and changed the traditional ridesharing. The recent emergence of app-based, on-demand ride services has sparked debate over their role in urban transport. Ride service-company such as Uber, Lyft, Grab and their competitors – also known as "Transportation Network Companies" (TNCs). Malang, one of a big city in Indonesia, has an online-taxi company such as Grab and local ride service named GO-JEK. The study that had been held in Malang found that the citizen's perception influence significantly, and it has a positive preference to online transportation utilization (Hardaningtyas, 2018) (Rayle et.al (2014). Ridesharing promise to increase reliability and reduce waiting times, and affect to total travel time of point-to-point traveling.

Subscribers or user in smart ridesharing system can be any type, such as those who are non-vehicle owners, the private vehicle owner or even public service vehicle owners (taxi's owners). The good service quality is the most important reason for citizen/people willing to use public transportation. Since service quality is essential for passengers, the gap between expected and perceived made as small as possible, good service quality of online-taxi encourage citizen to use an online-taxi, eventually, online-taxi is a substitute for the private vehicle. Study about service quality of online-taxi according to the passenger need to be conducted, in order to understand what people perception about taxi online performance, what they want from the online-taxi. If the objective is to fulfil the need of the user of smart ridesharing, the characteristic and perception of the users need to be identified. Therefore, the aims of this study is to analyze the service quality of online-taxi, focusing on the minimum service standard aspect. The research approach is a quantitative approach with Importance-Performance Analysis (IPA) method for data analysis, and 2 types of online-taxis (GRAB-CAR and GO-CAR) as a case study in Malang city.

2. LITERATURE REVIEW

Service quality has been an important issue in e-commerce domain. Service quality, along with information quality and system quality, is included in updated DeLone & McLean IS success model to measure e-commerce success (DeLone& McLean, 2004). Performance measurement in public transportation indicates the achievement of the service provider in giving service for the public (Joewono, 2008). Furthermore, Transportation Ministerial Regulation no 46 Year 2014 arrange the minimum service standard as the requirement for organizing public passenger transportation vehicle with non-fixed route. It's contain about minimum service quality that user must obtain. Minimum service standard consists of 6 aspects, these are security, safety, convenience, affordability, equality, and punctuality. A previous study in mobile service from Choi et al (2007) who explained six factors namely network, device, contents, security, convenience and customer support. Meanwhile, Lim et al (2006) identified 8 dimensions which are pricing plans, network quality, data services, messaging services, entertainment services, locator services, billing system, and customer service.

To improve service quality and customer satisfaction, one of the widely use analytical frameworks by stakeholder/manager to make such a decision is Importance-Performance Analysis (Azzopardi and Nash, 2013; Caber, 2013; Pan, 2015). The method of Importance-Performance Analysis (IPA) has been widely adopted in a variety of business sector, for understanding customer satisfaction, identifying areas for improvement and prioritizing resource allocation (Arbore and Busacca, 2011; Geng and Chu, 2012; Kuo *et al*, 2012). In conventional IPA data are collected from customer surveys that measure customer perception of the importance of a list of products and or service attribute, and their satisfaction with respect to each of the attribute (Martila and James, 1977). The data presented in a matrix, with the X-axis depicts attribute importance and the Y-axis attribute satisfaction/performance, with four quadrants based on their rankings.

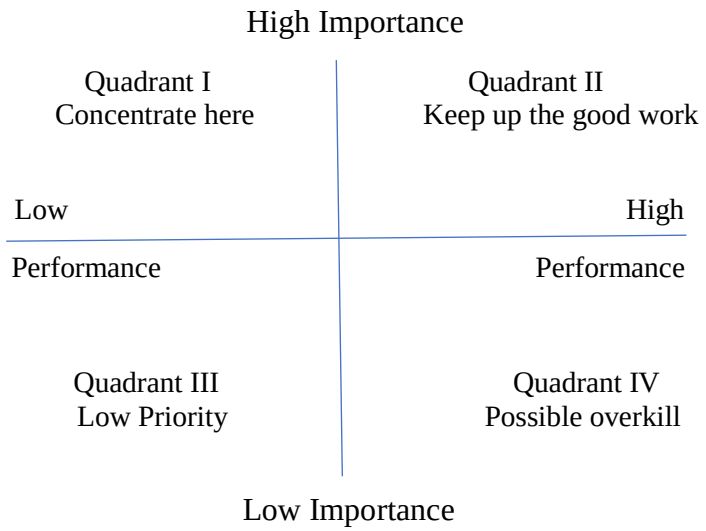

Figure 1. The Importance-Performance-Analysis Matrix (Martila and James, 1977)

Attribute located in quadrant I is high importance but low performance which require manager/stakeholder to concentrate their effort and resources; quadrant II is for attribute that has both high importance and performance rankings, thus manager/stakeholder need to keep up the good work; attribute in quadrant III is low in importance and performance rankings, which are low priority for resource allocation, finally those fall into quadrant IV are low in importance but high in performance, thus possibly overkill, manager/stakeholder might direct their resources elsewhere (Lin & Flachos, 2018)

3. RESEARCH METHOD

3.1. Location of Study

This research was conducted in the city of Malang, the second biggest and densest city in East Java. The City area is 110.06 Km^2 and consists of five sub-districts. The selection of Malang as the research location is based on its unique characteristics as an education and tourism city in which the need for transportation is highly growth-demanding. While the city provides public transport (run wholly by private entities), its role has been decreasing. Instead, many people are switch to motorcycle or private cars.

3.2. Data Collection

To achieve the objective, study literature about online-taxi performance has been held, after that collect the data and analyze data by using Importance Performance Analyses (IPA), to get the user perception on the performance of online-taxi.

3.2.1. Type of data

a) Primary Data

The primary data collected by using questionnaire that online-spread using Google-form and offline while doing the survey. The questionnaire consists of the questions about people

perception of online-taxi and the respondent characteristic. The citizen, as respondents, are selected randomly, and must be experienced using the online-taxi, at least no longer than two months, the age somewhere between 15 - 65 years old, have the mobile online application in their phone cellular, and have experience using the app.

2) Secondary Data

The secondary data collected from the relevant offices, for the example data about the number of the vehicle, the number of population, are collected from office of Statistic of Malang Municipality. Study literature held to collect previous research connecting with this study.

3.2.2. Variable of study

Based on Transportation Ministerial regulation no 46 Year 2014, regarding minimum service standard for non-fixed route highway transportation, the variable of study was developed. The list of the variables are shown on Table 1.

Table 1. The List of Variables

Code	Item
1	Age of vehicle less than ten years
2	Vehicle always in clean condition and free from bad-smell
3	A sticker that contains hot-call number for complaint is available
4	The driver identity that installed at car dashboard same as at mobile app
5	Tinted window-glass is less than 40%
6	Air conditioner (AC) is running well
7	Luggage storage is available
8	Visual audio is well available
9	"No smoking" sticker installed in car interior
10	Availability of hot-call number contacted by user for complaint or critics
11	Chatting feature with driver is available
12	Online-taxi application is always running well
13	Quick respond from application to facilitate user to order vehicle
14	Driver mastering trip route and alternative route
15	Driver delivering the service of a route that agreed upon
16	Provision of accident insurance
17	Availability of alternative payment (cash or non-cash)
18	Price is fixed, as stated in application
19	Promo price or other free services
20	Regulation about maximum number of passenger
21	Pick-up time corresponding with application
22	Providing facility for disabled, elderly, pregnant women and baby chair
23	Driver obey traffic rule and have a good communication with passenger

3.3. Method of Data Analysis

At first, descriptive statistic was used to analyse the demographic characteristic of the respondent, to understand user of online-taxi in Malang city. Meanwhile to understand the user perception about online-taxi in Malang city, Importance-Performance Analysis (IPA) has been used. The IPA has two implicit assumptions, these are (1) attribute of performance and importance are independent; (2) attribute performance has a linear and symmetric impact on overall performance (Matzler *et al*, 2004). Agustin et al (2019) using Importance-Performance Analysis method to study the service quality and online-taxi mode choice in Malang, found that the attribute is importance but low performance is the suitability of mobile number with the application, the suitability of vehicle identity with application, suitability of driver identity with application, and punctuality (pick up time).

4. RESULT AND ANALYSIS

4.1. Respondent Characteristics

The respondent for this study is Indonesian people who stay in Malang, and who have experience in using both online-taxi (Grab-Car and Go-Car), the last time using this mode at

least not more than two months, respondent's age between 15 – 65 years old, the respondent must have the mobile application for online-taxi in their mobile-phone.

After conducting the survey, we found that the number of respondent in this research is 200, and the respondents are dominated by the female (60%), as can be seen in Figure 2. The number of users who ages 22-45 years old is significantly more than other age categories (Figure 3). The factor that influencing the phenomenon is that people within those range is easier to adapt to new technology development, which is online transportation service (Dutzik, English& Baxandall, 2014; Silalahi, 2017).

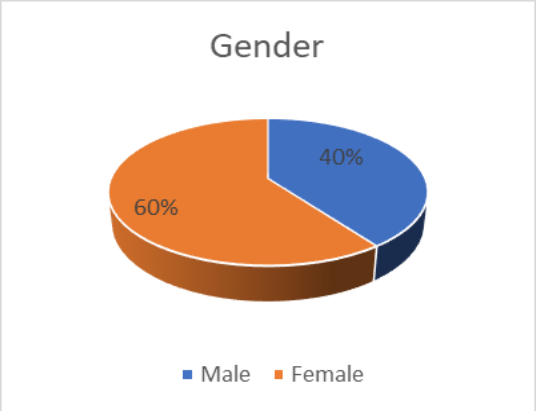

Figure 2. Gender of Respondents (Percentage)

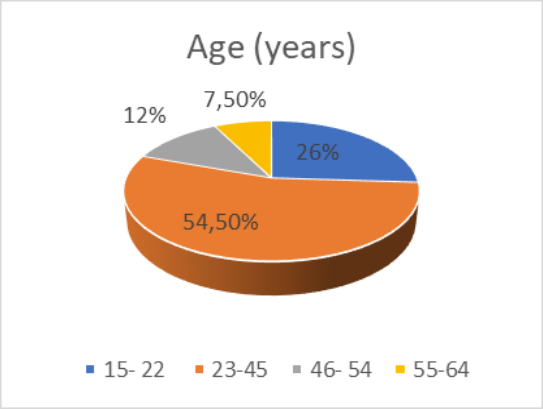

Figure 3. Age of Respondents (Percentage)

Table 2 has shown that the occupation of respondent dominated by university student (42 %) which they live temporary in Malang (55,5%), the main purpose of using online-taxi in traveling is recreational activity (25,5%), the highest percentage of usage frequency is less than twice a week (57,5%), also concluded that the most reason why respondents using online-taxi because it is more reliability in getting the taxi-vehicle. Based on the educational category, we can see that there are a lot of users with education level of Senior High School (42%), and the reason why using taxi-online is because taxi-online more reliable in getting the vehicle (47%), since the pick-up time is mentioned in application, so the passenger can manage the activity well.

Table 2. Respondent Characteristics

Demographic Variable		Number	Percentage
Residence	Permanent	89	44.5 %
	Temporal	111	55.5 %
Occupation	High-school student	42	21 %
	University student	84	42 %
	Private employees	34	17 %
	Civil servant	10	5 %
	Entrepreneur	10	5 %
	Teacher/lecturer/others	8	4 %
	Housewife	12	6 %
Education Level	Elementary/Junior High School	42	21%
	Senior High School	84	42 %
	Diploma/Bachelor Degree	51	25.5 %
	Master/Doctoral Degree	23	11.5 %
Online Transportation Service Usage Frequency	< 2 times/week	115	57.5 %
	3-4 times/week	49	24.5 %
	5-7 times/week	29	14.5 %
	> 7 times/week	7	3.5 %
Main purpose Of Traveling	Work	24	12 %
	Study	29	14.5 %
	Shopping	44	21.5 %
	Family	43	21.5 %
	Recreational	51	25.5 %
	Health	9	4.5 %
Reason Using Taxi Online	Following Trend	11	5.5 %
	More safe and comfortable	60	30 %
	Affordable price	35	17.5 %
	More reliable in getting the vehicle	94	47 %

Source: Result of Analysis

4.2 Service Quality Analysis

Importance Performance Analysis (IPA) was used to analysis service quality of online-taxi based on minimum standards of service in Malang city. From the Importance-Performance Analysis (IPA) we can get the result which item in quadrant I, quadrant II, quadrant III or quadrant IV.

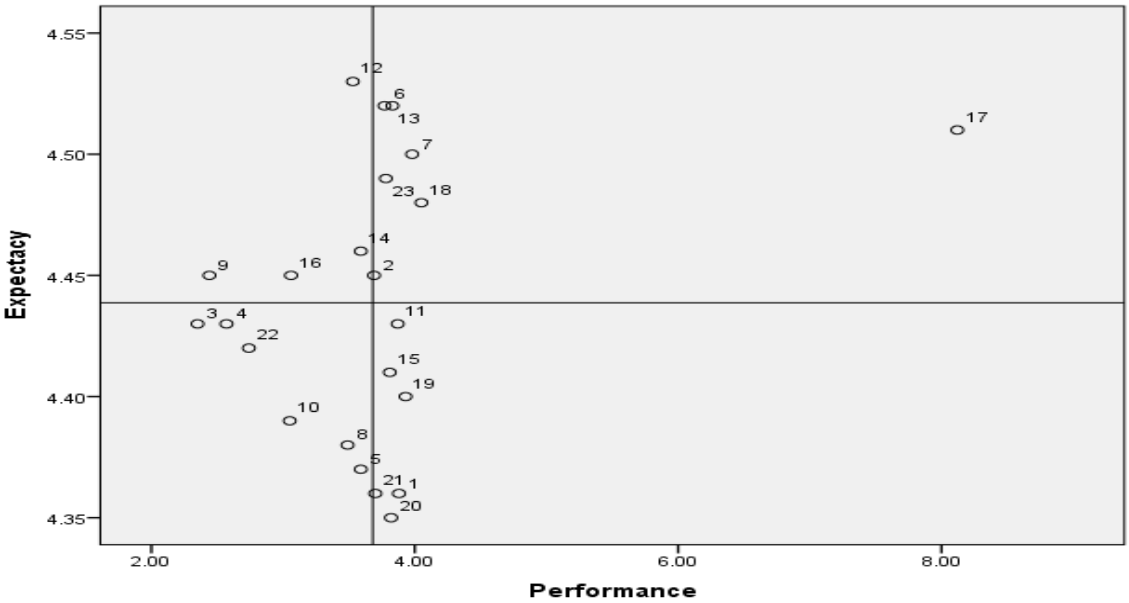

Figure 4. IPA Matrix

From IPA matrix (Figure 4), it can be seen that there are several items/attribute need the improvement, need to be more concentrated with the item tend to increase the satisfaction of the passenger, because the items are important to passenger (quadrant I), while other items are low priority (quadrant III), according to passengers the item are not urge. Quadrant II, "keep up the good work" show the item that importance according to passenger and the item/attribute is already doing well. Meanwhile, the items in quadrant IV are "overkill" which means that items are not important and urge according to the passenger but it provides excessive.

Table 3. of Importance-Performance Analysis (IPA)

Quadrant	Definition	Code	Item
I	Concentrate	9	"No smoking" stick at car interior
		12	Application always running well
		14	Driver mastering trip route and alternative route
		16	Providing accident insurance
II	Keep up the good work	2	Vehicle always in clean condition and free from bad-smell
		6	Air conditioner/AC running well
		7	Luggage storage is well available
		13	Quick respond from application to facilitate user to order vehicle
		17	Availability of alternative payment (cash or non-cash)
		18	Price is fixed, as stated in application
		23	Driver obey traffic rule of traffic and have a good communication with passenger
III	Low Priority	3	A sticker that contains hot-call number for complaint is available
		4	The driver identity that installed at car dashboard same as at mobile app
		5	Tinted window-glass less than 40%
		8	Visual audio facility is well available
		10	Availability of hot-call number contacted by user for complaint or critics
		21	Pick-up time corresponding with app
		22	Providing facility for disabled, elderly, pregnant women and baby chair
IV	Overkill	1	Vehicle age is less than ten years
		11	Chatting feature with driver is available
		15	Driver delivering the service of route that agreed upon
		19	Promo price or other free services
		20	Regulation about the maximum number of passenger

Source: Result of Importance-Performance Analysis (IPA)

5. RESEARCH IMPLICATIONS

In this empirical study about the user perception of online-taxi concerning the minimum service level standard based on Transportation Ministerial Regulation no 46 Year 2014 found that there are several items/attribute need the improvement, since according to users these attribute is importance but low performance. There is some gaps need to fulfil, so

manager/stakeholder need to concentrate their efforts and resources more to fill the gap between users expectation and perception. The result shows that in a special occasion such as peak time (lunchtime, after school/after work time) and rainy day it is often that the mobile application of online-taxi is not running well, it needs longer time to get the vehicle. The main reason user wants to use online-taxi, because of by using an online-taxi from their mobile phone, they easily and reliable to get the vehicle, reduce waiting times, and total travel time of point-to-point transportation. So the application always running well is urgent and importance according to the passenger.

Driver mastering the route of trip become important to the passenger, because most of the passenger is not the local people, so the driver must mastering the route at least main road of a travel destination. The "No smoking" sticker installed in all the online-taxi was seen as important to do, and also to keep the car neat and free from bad smell. Accident insurance also importance for passenger since they are traveling with family, they need insurance if an accident occurs,

The items of study such as vehicle always in clean condition and free from bad-smell, air conditioner/AC running well, the luggage storage is well available, quick respond from application to facilitate the user to order the vehicle, the availability of alternative payment (cash or non-cash), the fix price with the app and driver obey traffic rule and have good communication with passenger are importance and in good performance according to passenger/user. Hence "keep up the good working" tend to keep up the good perspective of taxi online user and keep up the customer satisfaction. Corresponding with the previous explanation that clean and neat of vehicle is important and it is performing well by the provider. Payment alternative also important because online-taxi user is dominated by the female so it is safer for the women using non-cash payment.

Vehicle under ten years, feature to chat with the driver, and driver delivering the service of the route that agreed upon, promo price or additional free service, regulation about the maximum number of the passenger are not so important according to the passenger, but it is provided excessive. Instead of the promotion of the price or other services promotion, the vehicle under ten years and regulation about the maximum number of passenger, the user confirms that the most they need is the neat vehicle, running well application and reliability of getting the vehicle.

The sticker that contain the number for complaining is not available in the car, and the sticker is also not necessary according to the passenger, since in the online-taxi-app always give a place for the passenger to give feedback at the end of a journey. Same as the sticker, the special facility such as visual audio, the facility for disabled, elderly, pregnant women or baby chair in the vehicle are not available and it is also a not important item that can improve the performance of taxi online according to the passenger.

7. CONCLUSIONS

Importance-Performance Analysis (IPA) has been widely adopted in a variety business sector for understanding customer satisfaction, identifying areas for improvement and prioritizing resource allocation. In the transportation business, IPA also uses to understanding the customer/passenger perspective about the transportation mode that they use. This study discusses about the characteristic and perspective online-taxi in Malang city. From IPA conclude that "No smoking" sticker installed in the car, application always running well, driver mastering trip route and alternative route, and providing accident insurance as item that

need to concentrate since the item are importance according to passenger but poor in service, so to increase the customer good perspective of online-taxi these item need to improve.

In summary, the result of this study shows that IPA useful to analyse the perception of taxi online, to understand which attribute that importance and how its performance according to the user, from the result of IPA manager/stakeholder able to compile the step about the item/attribute.

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