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Analysis of online-taxi service quality and passenger satisfaction

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Abstract: The study aims are to analyze the performance of Online-taxi focusing on the minimum service standard aspect and to define the model of online-taxi service quality performance and passenger satisfaction relationship. A research approach is a quantitative approach with Importance Performance Analysis (IPA) was used to understand the user perception on the performance of online-taxi and Linear Regression Analysis was used to analyze the model of online-taxi service quality and passenger satisfaction relationship online-taxi (GRAB-CAR and GO-CAR) in Surabaya city, Indonesia. The number of respondents for this study is 200, there are 23 items of Online-taxi service quality and five service quality dimensions. Concluded from Importance Performance Analysis the result shows that driver identity that installed at the car dashboard same as a mobile app and the facility for disabled, elderly, pregnant women or baby chair are the items that need to improve. Linear regression found that tangible is the most positive and significant dimension influencing the online-taxi passenger satisfaction.

Keywords: Importance Performance Analysis (IPA), Linear Regression, Online-Taxi, Passenger Satisfaction, Service Quality Performance

1. Introduction

In recent times, ridesharing has become common; online taxi, another name for ridesharing, has been welcomed as a new alternative for urban transportation. Online taxi is also a phenomenon in public transportation that provides more advantages in travel. The benefits that online taxi provide are that customers are able to see the driver and vehicle information from the mobile application, and because of the mobile app, customers can easily find the vehicles they need [1]. Since online taxi is a newcomer to and have been well-responded by users of urban public transportation, online taxi needs to maintain performance by giving high-quality service to passengers, because service quality is related to a series of attributes that describe public transportation services. The five dimensions of service quality included in SERVQUAL are Tangibles, Reliability, Responsiveness, Assurance, and Empathy [2]

Through the Importance-Performance Analysis method to study the service quality and mode choice of online taxi in Malang, it was found that the important attributes from the low performance are the suitability of mobile number with the application, the suitability of vehicle identity with application, the suitability of driver identity with the application, and punctuality (pick-up time) [3]. Since good performance in service is essential and urgent according to passengers, a study on online taxi to obtain user perceptions on the performance of online taxi and to define the relationship between online taxi performance and passenger satisfaction needs to be held. Therefore, the aims of this study are to analyze the performance of online taxi focusing on the minimum service standard aspect, utilizing Importance-Performance Analysis (IPA) and linear regression analysis for the relationship between the model of online taxi service quality and passenger satisfaction.

2. Literature Review

Service quality has become an important issue in the domain of e-commerce. Service quality, along with information quality and system quality, is included in the updated DeLone & McLean IS success model to measure e-commerce success [4]. Measurement of performance in public transportation indicates the achievement of the service provider in providing services to the public [5]. Furthermore, Ministry of



Transportation Regulation No. 46 of Year 2014 has outlined the minimum service standards required for public passenger vehicle transportation with non-fixed routes. These represent the minimum service quality that users must have. The minimum service standards consist of six aspects, which are security, safety, convenience, affordability, equality, and punctuality [6]. In mobile services, the six factors are network, device, contents, security, convenience, and customer support. A study on the most important qualitative factors and assessment of the existing school transport system was conducted in the region of Thessaloniki, Greece through a survey by a questionnaire sent to parents of private high school students. A school transportation satisfaction index was estimated and, by using linear regression analysis, the factors that influence it were determined [7]

To improve service quality and customer satisfaction, one of the widely used analytical frameworks by stakeholders or managers in making related decisions is Importance-Performance Analysis [8]. The method of Importance-Performance Analysis (IPA) has been widely adopted in a variety of business sectors for understanding customer satisfaction, identifying areas for improvement, and prioritizing resource allocation [9]. In conventional IPA, data are collected from customer surveys that measure customer perceptions of the importance of a list of products and/or service attributes, as well as their satisfaction concerning each of the attributes [10]. The data are presented in a matrix, with the X-axis assigned to the attribute of importance and the Y-axis to the attribute of satisfaction or performance, with rankings based on the four quadrants.

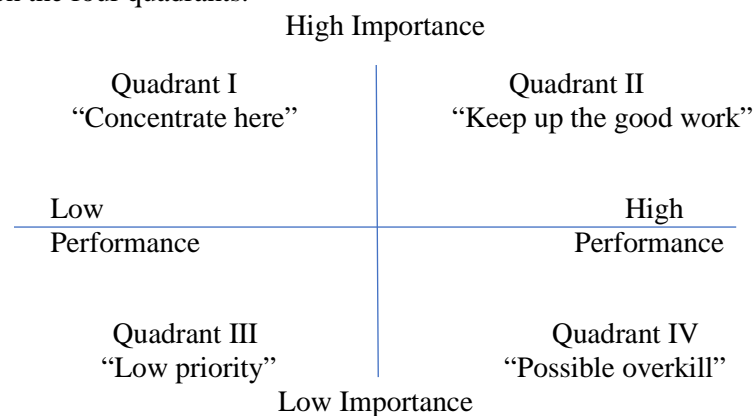


Fig 1. The Importance-Performance Analysis Matrix (Martila and James, 1977)

Attributes located in quadrant I are of high importance but low performance that managers or stakeholders need to concentrate their effort and resources on; quadrant II has attributes with both high importance and performance rankings that managers or stakeholders need to maintain good work on. Attributes in quadrant III are low in importance and performance rankings and are of low priority for resource allocations; finally, those that fall into quadrant IV are low in importance but high in performance and are thus possibly “overkill”, for which managers or stakeholders might direct their resources elsewhere (Lin & Flachos, 2018)

3. Research Method

3.1. Study Location

This research was conducted in the City of Surabaya, Indonesia. The selection of Surabaya as the research location was based on its unique characteristics. Surabaya is known as the capital of the Province of East Java, and is a trading and industrial city. While the city provides public transport, its role has been decreasing. Instead, many people are switching to motorcycles or private cars.

3.2. Data Collection

To achieve the objectives, literature study was conducted on online taxi performance, followed by collection of data and analysis of data using Importance-Performance Analysis (IPA) to obtain user

perceptions on the performance of online taxi as well as Linear Regression Analysis to obtain the model of the relationship between online taxi performance and passenger satisfaction.

The primary data were collected through a questionnaire. The questionnaire consists of questions about perceptions on online taxi and the demographic characteristics of respondents. People as respondents were selected randomly and must have had experience of using online taxi no more than two months, be 15-65 years old, and have the online taxi mobile application as well as experience in using the app.

3.3. Study Variables

Based on Ministry of Transportation Regulation No. 46 of Year 2014 on the minimum service standards for road transportation with non-fixed routes, the variables of the study were developed. The list of variables is shown in Table 1.

Table 1. List of Variables

Code	Item
WF1	Vehicle age of less than ten years
WF2	Vehicle always in clean condition and free from foul odors
WF3	Placement of a sticker that contains a hotline number for complaints
WF4	Placement of driver identity on the dashboard, the same as the mobile app
WF5	Window glass tinting of less than 40%
WF6	Air conditioner (AC) running well
WF7	Availability of luggage storage
WF8	Availability of visibility and audibility
WF9	Placement of "No smoking" sticker in car interior
K1	Availability of a hotline number that users can contact for complaints or criticism
K2	Availability of chatting feature with driver
K3	Online taxi application always running well
DT1	Quick response from the application to facilitate users to order vehicles
DT2	Driver mastery of trip routes and alternative routes
J1	Service delivery by the driver for the agreed-upon route
J2	Provision of accident insurance
J3	Availability of payment alternatives (cash or non-cash)
J4	Fixed prices, as stated in the application
J5	Promotions or other free services
J6	Regulation on the maximum number of passengers
J7	Pick-up time corresponding to the application
E1	Facility for the disabled, elderly people, pregnant women, and infants in vehicles
E2	Drivers who obey traffic laws and communicate well with passengers

3.4. Data Analysis Method

First, descriptive statistics was used to analyze the demographic characteristics of the respondents, to understand the users of online taxi in the City of Surabaya. The data were taken from the respondent demographic characteristics. Next, to understand user perceptions on online taxi performance, Importance-Performance Analysis (IPA) was utilized, and linear regression was utilized to investigate the relationship between online taxi performance and passenger satisfaction, regarding which variables significantly and positively influence passenger satisfaction.

4. Result and Analysis

4.1. Demographic Respondent Characteristic

The Respondent characteristic based on demographic show in table 2.

Table 2. Demographic Respondent Characteristics

Demographic Variable		Number	Percentage(%)
Gender	Male	78	39
	Female	122	61
Age	15 – 22 year	93	46,5
	23 – 45 year	81	40,5
	46 – 54 year	14	7
	55 – 64 year	12	6
Occupation	High-school student	31	15,5
	University student	75	37,5
	Private employees	38	19
	Civil servant	1	0,5
	Entrepreneur	25	12,5
	Teacher/lecturer/others	3	1,5
	Housewife	27	13,5
Education	Elementary/Junior High School	34	17
Level	Senior High School	121	60,5
	Diploma/Bachelor Degree	44	22
	Master/Doctoral Degree	1	0,5
Income/	< Rp.1.000.000	63	31,5
Pocket	Rp.1.000.000-Rp.2.999.999	67	33,5
Money	Rp.3.000.000-Rp.4.999.999	53	26,5
	>Rp.5.000.000	1	0,5
Average	Rp.10.000-Rp29.999	69	34,5
Expenditure/	Rp.30.000-Rp49.999	74	37
Trip	Rp.50.000-Rp.69.000	39	19,5
	>Rp.70.000	18	9

4.2 Service Quality Analysis

Importance-Performance Analysis (IPA) was utilized to analyze the service quality of online taxi based on the minimum standards of service in the City of Malang. From the Importance-Performance Analysis (IPA), variables were identified as being in quadrant I, quadrant II, quadrant III, or quadrant IV. The results showed that the variables that need improvement (quadrant II) are driver identity and facilities for the disabled, the elderly, pregnant women, or infants, as well as driver identity placed on the dashboard, the same as the mobile application. The detailed IPA analysis is shown in the figure below.

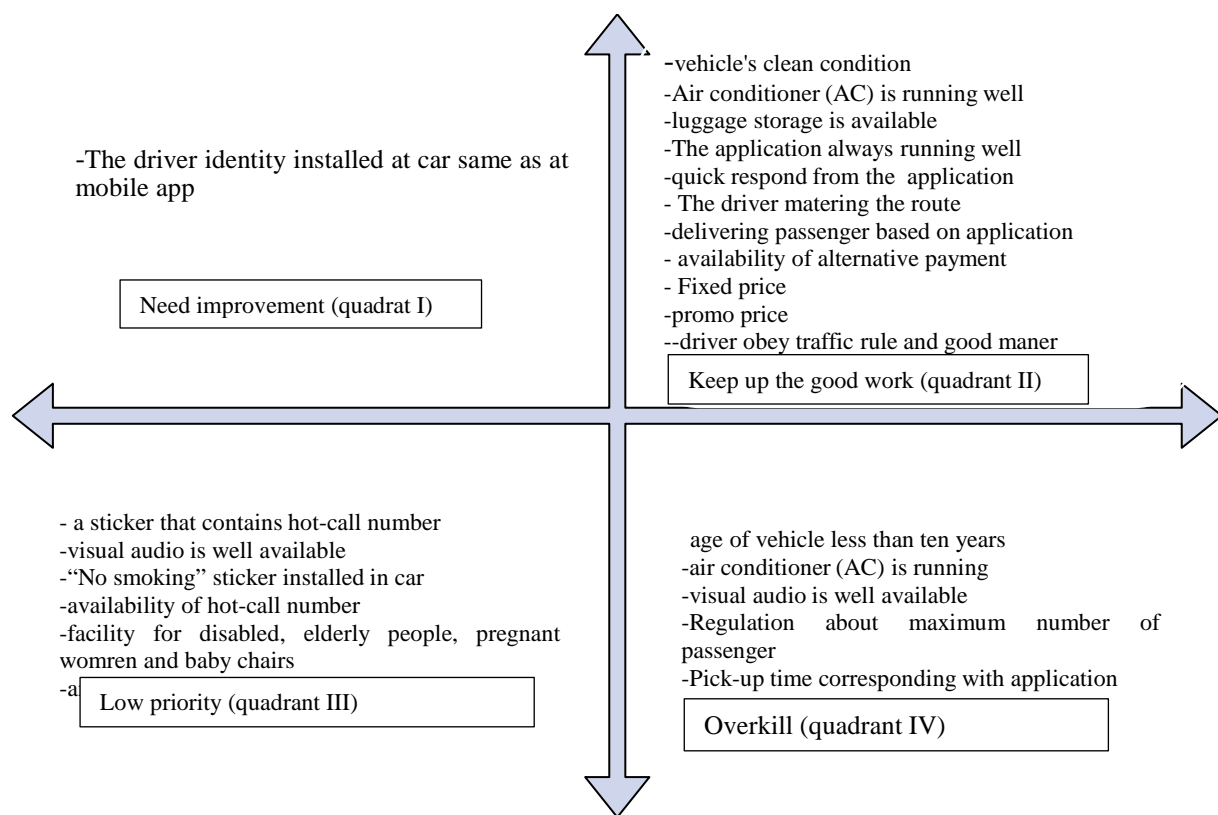


Figure 2. IPA Matrix of Online-taxi Performance

4.3. Online-Taxi Performance and Passenger Satisfaction

Linear regression was used to understand the relationship between online taxi performance and passenger satisfaction. Tangibles (X1), reliability (X2), responsiveness (X3), assurance (X4), and empathy (X5) are the dimensions influencing passenger satisfaction (Y). The SPSS 22 software was used to define the model of the relationship between online taxi performance and passenger satisfaction.

Table 3. Composition of the Linear Regression Model

Model Summary									
Model	R	R Square	Adjusted R Square	Standards Error Of The Estimates	R Square Change	F Change	df1	df2	Sig.F Change
1	.964 ^a	.930	.928	1.48318	0.930	514.514	5	194	.000

^a Predictors: (Constant), X5, X3, X4, X1, X2

Table 4. Composition of Linear Regression Coefficients

Model	Unstandardized Coefficients			Standardized Coefficient Beta	t	Sig.
	B	Standard Error				
1	(Constant)	.402	.747		.538	.591
	X1	1.270	.066	.439	19.250	.000
	X2	1.110	.098	.286	11.314	.000
	X3	.537	.064	.177	8.374	.000
	X4	.893	.079	.255	11.376	.000
	X5	1.044	.164	.156	6.360	.000

From the table 4 found the model of relationship between online-taxi service quality performance and passenger satisfaction:

$$Y = 0.402 + 1.270 X_1 + 1.11 X_2 + 0.537 X_3 + 0.893 X_4 + 1.044 X_5$$

Tangibles (X1), reliability (X2), responsiveness (X3), assurance (X4), and empathy (X5) are the dimensions that significantly and positively influence passenger satisfaction (Y). Tangibles has the highest value (1.270) and significant influence on passenger satisfaction and responsiveness is the dimension with the lowest value, in the relationship between online taxi performance and passenger satisfaction.

5. Implication

The study showed that the variables that need to be improved to satisfy online taxi users are placement of driver identity on the dashboard being the same as the mobile app, and facilities for the disabled, the elderly, pregnant women, or infants, as the indicators of reliability. These variables make up the dimension of reliability, the second research dimension that positively and significantly influences passenger satisfaction. Previous research by Awasthi showed that passenger satisfaction is influenced by the five service quality dimensions of tangibles, reliability, responsiveness, assurance, and empathy.

6. Conclusion

This paper is a study of the service quality of online taxi and passenger satisfaction. Linear regression was utilized to develop the relationship model between service quality of online taxi and passenger satisfaction. Importance-Performance Analysis was utilized to understand the performance of online taxi, focusing on the minimum service standards aspects. The following conclusions are drawn, based on the results:

1. The results indicated that travelers of a young age, who are university students, or who do not have private vehicles prefer to choose online taxi as their personalized travel mode.
2. Facilities for the disabled, the elderly, pregnant women, or infants, and placement of driver identity on the dashboard being the same as the mobile application are the variables that need to be improved to fulfill passenger satisfaction for online taxi service quality. To accommodate this finding, stakeholders and driver partners must agree on the requirement to place driver identity on the dashboard being the same as the mobile application, and to add facilities for the disabled, the elderly, pregnant women, or infants as optional facilities.
3. Tangibles/physical conditions is the most positive and significant dimension influencing passenger satisfaction, and thus the online taxi company with driver partners must provide vehicles that are in good physical condition and clean.

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