

EVALUATION OF PUBLIC TRANSPORT IN KENDARI WITH IMPORTANCE PERFORMANCE ANALYSIS (IPA)

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ABSTRACT

This research aims to assess the public transportation service quality in Kendari, South East Sulawesi. Importance Performance Analysis (IPA) was used to analyze the quality of urban transportation services from users' perspectives in this study. The twenty-nine elements were classified into seven separate aspects involving Safety, Convenience, Security, Rates, Pollution, Regularity, Smoothness and Accuracy using a five-point Likert scale to assess service quality. A face-to-face survey using 440 respondents was conducted using a five-point Likert scale to understand the users' expectations and perceptions of service quality. The IPA, a strategic tool, is divided into four quadrants: (1) Concentrate Here; (2) Keep up the Good Work; (3) Low Priority: and (4) Possible Overkill, to identify the service attributes that need to be improved straight away, as well as those that aren't as important right now, those that are overrated, and the satisfactory criteria. Finally, the data visualization aid government authorities/agencies in identifying priority zones to improve public transportation service quality.

KEYWORDS: Importance-Performance Analysis, Service Quality, Users' Expectations, Users' Perceptions, User Satisfaction, Kendari

Article History

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INTRODUCTION

Kendari, the capital city of South East Sulawesi, is the one of developing cities in Sulawesi. The city's population growth rate is 3.42 % annually (Badan Pusat Statistik, 2020). It is noticed that the increase of GDP per capita creates the main challenge of urban transport in Kendari City resulting in traffic congestion and traffic accidents that become the most serious issues in the city. To confront this problem, many various modes of public transport have been considered by the government especially Bus Rapid Transit (BRT) (Dewi, Rakhmatulloh, & Anggraini, 2018).

Service quality and customer satisfaction have been concerned by the government progressively in recent years. It might be helpful for both customers and the government, notably for passengers and travellers. It would therefore be beneficial to attract more users by improving service quality and user satisfaction. Furthermore, by progressively reducing the usage of private automobiles, this technique aids in minimizing issues such as traffic congestion, air, noise pollution, parking issues, and energy consumption(Nocera, 2011). In this regard, it is very significant to enhance service quality and user satisfaction.

The enhancement in service quality doesn't mean focusing only on cost-effectiveness but also on the ranking, which attributes/indicators affect the quality of service based on the customer viewpoints, resulting in better services to attract users/customers. Therefore, one of the major ways to strengthen customer loyalty is keeping the customer delighted/satisfied with the service (Dabestani, Shahin, Saljoughian, & Shirouyehzad, 2016).

According to (Boley, McGehee, & Tom Hammett, 2017), customer satisfaction plays a critical role in business destiny and success. It stems from the fact that customers are approved to be the "judges" of the service. It would logically evaluate service based on customers' expectations and standards that they need. The researchers suggest that in measuring the service quality, it would be useful to take everything that might affect appreciation of customers(Chou, Liu, Huang, Yih, & Han, 2011). Recently, to evaluate the service quality, it is mainstream to quantify the gap between customers' expectations and their impressions of the service they received(Wang, Wang, & Zhao, 2007).

Based on the literature, many techniques have been conducted to measure service quality. One concern with many techniques is that they are not often based on customer evaluation(Dabestani et al., 2016). This author mentions that the best ways for determining quality are either asking consumers about their perceptions of service quality or asking and probing about consumer preferences, or both.

This research explores the gap between users' expectations and perception by identifying the strengths and weaknesses of the urban public transport service in Kendari. The data was collected from the urban public transport users to rate the satisfaction levels of various aspects, namely: Safety, Convenience, Security, Rates, Pollution, Regularity Smoothness, and Accuracy (Cao & Cao, 2017); (Güner, 2018); (Basak & Siddique, 2018); (Goh, Currie, Sarvi, & Logan, 2014); (Miskeen et al., 2019); (Agung, 2014); (Putra, Jinca, Yamin, Riyanto, & Mulyono, 2014); (Duwadi, Marsani, & Tiwari, 2019); (Deb & Ahmed, 2018); (Ratanavaraha, Jomnonkwao, Khampirat, Watthanaklang, & Iamtrakul, 2016). In addition, the IPA technique is used in this research since many transport company managers suggested (Wu, Y.T, & Shyu, 2010); (Figler, Sriraj, Welch, & Yavuz, 2011). This is since IPA; the simplified and graphical tool can provide perceptive hints for authorities to pay attention to the vital attributes of service.

This research aims to recognize the strengths and weaknesses of the urban public transport service in Kendari. The result will further hint to the authorities/service providers about those aspects of service they must address urgently and the ones that are not very concerned.

LITERATURE REVIEW

Satisfaction

Satisfaction results from a customer's expectations and perception of the actual performance they received whenever they make the purchase and use a service. Based on the Disconfirmation Model of Customer Satisfaction, it can be seen that customer satisfaction is extremely affiliated to confirmation/disconfirmation of pre-purchase expectations. In other words, customers have their own mainstream in consideration before purchasing/using the service (expectations). After perceiving the actual performance of service, the satisfaction evaluations are made by comparing their perceptions and what they need/want. According to (Machado-León, de Oña, Baouni, & de Oña, 2017), the satisfaction evaluation is marked unfavourable disconfirmation if the expectation is better than actual service, favourable disconfirmation if the expectation is better than actual service meets the expectation. Therefore, it is significant to consider a level of satisfaction because it can point out the strengths, weaknesses, and productivity of that service.

Factors Influencing Public Transit Service Quality

In the last several years, the quality of transit service has become an interesting topic among scholars. According to the literature, numerous previous studies have been involved thoroughly in determining the factors and contributors to the efficiency of public transport, resulting from the users' point of view on the service quality. The prior related studies which have involved in the measurement of service quality with many various multivariate data analysis techniques are outlined concisely in Table 1. Based on these aforementioned studies, it has been highlighted that there were homogeneous and heterogeneous factors influencing the quality of public transit service by applying different statistical analysis approaches. This is related to the fact that customers have different expectations and perceptions of the service quality because of their society, individuality, and mainstream toward similar service.

As a result, it can be concluded that seven main factors are influencing urban public transport service quality consisting of Safety, Convenience, Security, Rates, Pollution, Regularity, Smoothness and Accuracy. Moreover, Table 1 reveals that Safety and Pollution had the most significant frequency, Security was the second-highest factor; Convenience, Rates, and Regularity were also related to Smoothness and Accuracy.

	Factors						
Author(s) (Year)	Safety	Convenience	Security	Rates	Pollution	Regularity	Smoothness and Accuracy
Cao & Cao (2017)							
Güner (2018)					\checkmark	\checkmark	
Basak & Siddique (2018)		\checkmark			\checkmark		
Goh et al. (2014)		\checkmark			\checkmark	\checkmark	\checkmark
Miskeen et al. (2019)		\checkmark					
Agung (2014)					\checkmark	\checkmark	
Putra et al. (2014)		\checkmark			\checkmark	\checkmark	
Duwadi et al. (2019)							
Deb & Ahmed (2018)					\checkmark	\checkmark	
Ratanavaraha et al. (2016)		\checkmark					\checkmark
Djeri, Stamenković, Blešić, Milićević, & Ivkov (2018)	\checkmark		\checkmark	\checkmark		\checkmark	
Figler et al. (2011)							
Guizzardi & Stacchini (2017)	\checkmark		\checkmark		\checkmark		
Rodriguez-Valencia, Rosas-Satizabal, & Paris (2019)	\checkmark	\checkmark			\checkmark	\checkmark	
Shaaban & Khalil (2013)							

Table 1: Summary of Factors Influencing Urban Public Transport Service Quality

Importance-Performance Analysis (IPA)

The IPA is a visual tool used for better understanding customer satisfaction and identifying the most critical attributes/ items for improvement (Frauman & Banks, 2011). Based on(H.-S. Jang & Kim, 2013), IPA is composed of the twodimensional graph that the vertical axis represents Customers Satisfaction or Performance, and the horizontal axis represents the Importance of service, which is broken into four quadrants as shown in Figure 1:

"Concentrate here" denotes the area where items are essential and where the performance levels are high. The entrepreneurs should maintain recent activities.

"Keep up the Good Work" denotes the area where items are essential and where the performance levels are high. The entrepreneurs should maintain recent activities.

"Low Priority" represents the area where items are of low importance and low-performance levels. It means that it is not necessary to improve this area.

"Possible Overkill" denotes the area where performance levels are high, but the items are not defined as important. This quadrant can minimize the improvement to these items.

According to the literature, IPA has been broadly applied in various fields such as Tourism (Weldearegay, 2017);(Azzopardi & Nash, 2013); (Djeri et al., 2018); (Boley et al., 2017); (Guizzardi & Stacchini, 2017), Public administration (Wong, Hideki, & George, 2011);(Van Ryzin & Immerwahr, 2007); (Rizq, Djamaludin, & Nurhadryani, 2018), Food industry (Tzeng & Chang, 2011); (S. Jang, Ha, & Silkes, 2009), Healthcare (Shen & Li, 2010); (Mohebifar, Hasani, Barikani, & Rafiei, 2016), Restaurant (Irma, Ridwan, & Kasim, 2020);(Chen & Chen, 2010), and more interestingly in Public transportation (Rodriguez-Valencia et al., 2019); (Shaaban & Khalil, 2013).



METHODOLOGY

Data was collected through a questionnaire first to assess the users' expectations of the service, which is made before getting the service. Secondly, evaluate the users' perceptions of the service, which is made after getting the service. The questionnaire was composed of two main sections consisting of i) Questions concerning users' demographics such as gender, age, education level, etc. ii) bus users were asked 29 questions/items to rate the service quality on the measurement of satisfaction by using a five-point Likert scale, where 1 = very poor, 2 = poor, 3 = fair, 4 = good, and 5 = very good(Deb & Ahmed, 2018); (Djeri et al., 2018); (Cao & Cao, 2017). The 24 items were grouped into 7 different factors concerning Safety, Convenience, Security, Rates, Pollution, Regularity, Smoothness and Accuracy to evaluate the service quality, as indicated in Table 2.

_	Table 2. Factors and Variables of Service Quanty				
Factor	Variable	Question			
Safety	V1	The ability of the driver to operate the vehicle			
	V2	The driver is ready and alert in operating the vehicle			
	V3	The driver knows the road conditions and the environment of the route			
	V4	Traffic discipline driver			
Convenience	V5	The driver is responsive if there is a problem on the way			
	V6	The condition of the vehicle is suitable for use			
	V7	Clean and comfortable vehicle			
	V8	The driver is neat and clean			
	V9	The window is still functioning properly			
	V10	Adequate lighting, and the availability of a layer of window film to reduce direct sunlight			
Security	V11	Complete driver and vehicle identity			
	V12	The number of passengers does not exceed the vehicle capacity			
	V13	The driver drops the passengers at a safe place			
	V14	There is a first aid kit in the vehicle			
	V15	There was a fire extinguisher in the vehicle			
	V16	Window film that didn't darken			
Rates	V17	Affordability of the rates paid			
	V18	The rates are set according to the facilities available			
	V19	The rates are set according to the services provided			
Pollution	V20	Vehicle air pollution			
	V21	Non-vehicle air pollution			
	V22	Vehicle noise pollution			
	V23	Non-vehicle noise pollution			
Regularity	V24	Frequently used transportation has a schedule			
	V25	Frequently used transportation on time			
	V26	The suitability of the route travelled			
Smoothness and Accuracy	V27	Travel speed and time on the way			
	V28	Ease of reaching the destination			
	V29	Easy to switch routes			

Table 2: Factors and Variables of Service Quality

Questionnaire Design and Data Collection

Data were gathered in Kendari by using questionnaires and oral interviews. Users (both waiting at stops and being onboard) were the target population in this study. They would be best able to provide their viewpoints for evaluating the existing public transportation services and levels of satisfaction with those services in Kendari. The simple Random Sampling Technique was used as the tool to collect data. Participants who used bus services in the city and were between the ages of 15 and 70 were selected, resulting from 440 respondents.

Importance-Performance Analysis (IPA)

In this study, IPA was used to analyze the variables that were utilized to measure the quality of the government-managed bus service. In total, grouped 29 items in the questionnaire into each of the four Quadrants which were constructed by the two-dimensional graph that on the vertical axis, Users Satisfaction or Performance calculated from the average of General Satisfaction of each attribute and on the horizontal axis, Importance of service calculated from the average of General Important Degree of each attribute as well. As a result, by using the importance and performance of each attribute, IPA can be plotted graphically.

FINDINGS

Sample Characteristic

According to Table 3, can be observed that most of the respondents were men, 61.10 %, and 38.90 % were women. In term of age, it was grouped into five years interval, and it has been found that 384 participants (87.13 %) were under the age of 30, 54 (12.30 %) were between 31 to 50 years old, and only 2 people (0.5%) who were older than 50 years old. Regarding education level, the majority of the respondents were Upper Secondary 42.00%, followed the bachelor's degree 25.70 %, Diploma 12.50 %, Master 6.10 %, Lower Secondary 5.20 %, Doctor 0.20 %, and other 8, 20 %. Furthermore, there are no tourists to participate in this survey, so 100 % of the sample was indigenous. About the Purpose of travel, 58.90 % of passengers have an educational purpose, 14, 5 % for business/work, 10.9 % for shopping, 9.80 % for family, and 5,90 % for others.

Socio-Demographic Characteristics Percentage					
Gender	Men	61,14			
	Women	38,86			
Age	10 - 20	40,91			
	21 - 30	46,36			
	31 - 40	9,32			
	41 - 50	2,95			
	50+	0,45			
Education level	Lower Secondary	5,23			
	Upper Secondary	42,05			
	Diploma	12,50			
	Bachelor	25,68			
	Master	6,14			
	Doctor	0,23			
	Others	8,18			
Purpose of travel	Business/work	14,55			
	Family	9,77			
	Education	58,86			
	Recreation	1,82			
	Shopping	10,91			
	Others	4,09			

able 3: Socio-Demograp	hic Charac	teristics o	of Users
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Descriptive Statistics

Table 4 illustrates the information about the importance and performance of each variable. Regarding Importance, it has been observed that Convenience had the highest mean of importance at 4.037, while the second most important factor was Pollution at the mean value of 4.033. On top of that, Security was the third most important factor at the mean value of 4.022, and the fourth most important one was Rates at the mean value of 3.943. Moreover, the lowest mean of importance was Regularity at the mean value of 3.843.

In terms of performance, it has been noted that Rates also had the highest mean of satisfaction at 3.287, followed by Smoothness and Accuracy, Safety, Convenience, and Regularity were at the mean satisfaction of 2.993, 2.698, 2.688, and 2.543, respectively. More interestingly, if we take a closer look at table 4, it is worth highlighting that the users considered V17 (Affordability of the rates paid), V18 (The rates are set according to the facilities available), V19 (The rates are set according to the services provided), V28 (Ease of reaching the destination) as the most important variables/ items that lead them to use the bus service and feel satisfied with it. In addition, V14 (There is a first aid kit in the vehicle)

and V15 (There was a fire extinguisher in the vehicle) was the item that makes users dissatisfied with the current service. Furthermore, the mean average importance of all the 29 items was calculated at 2.679, while the average mean satisfaction was at 3.976. Therefore, if the importance and performance were plotted on the IPA grid, it would be useful for authorities to quickly evaluate the areas that need urgent attention and those that do not need to focus on.

Fastar	Variable	N	Performance		Importance	
ractor	variable	19	Mean	Mean of Factor	Mean	Mean of Factor
Safety	V1	440	2,75	2,698	3,89	3,923
	V2	440	2,74		3,86	
	V3	440	3,12		3,94	
	V4	440	2,18		4,00	
Convenience	V5	440	2,77	2,688	4,02	4,037
	V6	440	2,75		4,20	
	V7	440	2,73		4,09	
	V8	440	2,45		3,85	
	V9	440	2,70		4,01	
	V10	440	2,73		4,05	
Security	V11	440	2,61	2,463	4,08	4,022
	V12	440	2,73		4,12	
	V13	440	3,04		4,10	
	V14	440	1,92		4,02	
	V15	440	1,92		3,95	
	V16	440	2,56		3,86	
Rates	V17	440	3,52	3,287	3,96	3,943
	V18	440	3,20		3,93	
	V19	440	3,14		3,94	
Pollution	V20	440	2,53	2,383	4,03	4,033
	V21	440	2,14		4,13	
	V22	440	2,41		4,01	
	V23	440	2,45		3,96	
Regularity	V24	440	2,76	2,543	3,79	3,843
	V25	440	2,47		3,91	
	V26	440	2,40		3,83	
Smoothness and Accuracy	V27	440	2,89	2,993	3,92	3,920
	V28	440	3,06		3,94	
	V29	440	3,03		3,90	
Average			2,679		3,976	

Table 4: Descriptive Statistics of Variables / Items

Importance-Performance Analysis (IPA)

The intersection in this IPA grid is constructed by utilizing the mean average of importance at 3.960 and the mean average of performance at 3.556. The variables are plotted on the IPA grid using their mean values; consequently, the graphical results are illustrated in Figure 2 and briefly summarized in Table 5.

From Figure 2 and Table 5, it has been observed that variable such as (V4), (V11), (V14), (V20), (V21), and (V22) which falls into quadrant 1, Concentrate Here, which means that the users considered this variable as very important, but the performance level is under an average. Government authorities should prioritize this critical variable for improving the service quality provided. Therefore, it needs an imperative concentration for improvement in this quadrant.

Variables such as (V5), (V6), (V7), (V9), (V10), (V12), and (V13) are positioned in quadrant 2, Keep up the Good Work, which classified by stating high importance and performance level is also high. In addition, the variable which has the highest importance is (V6). The condition of the vehicle is suitable for use. Even though these variables are the

service's strength, the government agencies should keep up the good work to satisfy the users. On the contrary, these variables might take a chance to run into quadrant 1. For instance, (V5) The driver is responsive if there is a problem on the way, (V6) The condition of the vehicle is suitable for use, (V7) Clean and comfortable vehicle, (V9) The window is still functioning properly, (V10) Adequate lighting. The availability of a layer of window film to reduce direct sunlight and (V12) The number of passengers does not exceed the vehicle capacity in this research.

Some of the variables are considered Low Priority, "Low important, and the performance levels are also low" and fall directly into quadrant 3, namely: (V8) The driver is neat and clean, (V15) There was a fire extinguisher in the vehicle, (V16) Window film that didn't darken, (V23) Non-vehicle noise pollution, (V25) Frequently used transportation on time, and (V26) The suitability of the route travelled.

In quadrant 4, Possible Overkill, the variable such as (V1), (V2), (V3), (V17), (V18), (V19), (V24), (V27), (V28), and (V29). The users considered this variable as low importance, and the performance levels are high. Thus, the improvement in this area would be ineffective since the users are satisfied with the service already. On the contrary, these variables might take a chance to down run into quadrant 3. For instance, (V1) The ability of the driver to operate the vehicle, (V2) The driver is ready and alert in operating the vehicle, and (24) Frequently used transportation has a schedule.

Furthermore, the strengths and weaknesses of the service were investigated by the level of satisfaction. From Figure 2, it has been revealed that there is some variable which is the weakness of service consist of; i)Safety (V4) Traffic discipline driver, ii) Security (V11) Complete driver and vehicle identity, and (V14) There is a first aid kit in the vehicle, iii) Pollution (V20) Vehicle air pollution, (V21) Non-vehicle air pollution, and (V22) Vehicle noise pollution. Moreover, the strengths of service consist of; i) Convenience (V5) The driver is responsive if there is a problem on the way, (V6) The condition of the vehicle is suitable for use, (V7) Clean and comfortable vehicle, (V9) The window is still functioning properly, and (V10) The condition, ii) Security (V12) The number of passengers does not exceed the vehicle capacity, and(V13) The driver drops the passengers at a safe place.



Figure 2: Importance-Performance Analysis Grid.

Quadrant 1: Concentrate Here	Quadrant 2: Keep Up the Good Work	Quadrant 3: Low Priority (Q3)	Quadrant 4: Possible Overkill (Q4)
(V4) Traffic discipline driver	(V5) The driver is responsive if there is a problem on the way	(V8) The driver is neat and clean	(V1) The ability of the driver to operate the vehicle
(V11) Complete driver and vehicle identity	(V6) The condition of the vehicle is suitable for use	(V15) There was a fire extinguisher in the vehicle	(V2) The driver is ready and alert in operating the vehicle
(V14) There is a first aid kit in the vehicle	(V7) Clean and comfortable vehicle	(V16) Window film that didn't darken	(V3) The driver knows the road conditions and the environment of the route
(V20) Vehicle air pollution	(V9) The window is still functioning properly	(V23) Non-vehicle noise pollution	(V17) Affordability of the rates paid
(V21) Non-vehicle air pollution	(V10) Adequate lighting, and the availability of a layer of window film to reduce direct sunlight	(V25) Frequently used transportation on time	(V18) The rates are set according to the facilities available
(V22) Vehicle noise pollution	(V12) The number of passengers does not exceed the vehicle capacity	(V26) The suitability of the route travelled	(V19) The rates are set according to the services provided
	(V13) The driver drops the passengers at a safe place		(V24) Frequently used transportation has a schedule
			(V27) Travel speed and time on the way
			(V28) Ease of reaching the
			destination
			(V29) Easy to switch
			routes

Table 5: Summarized Results of IPA

DISCUSSION AND CONCLUSIONS

Specifying the strengths and weaknesses of the city bus services has made an essential contribution to the government authorities. A face-to-face survey was conducted in this study to learn about consumers' expectations and impressions to prioritize development areas, with 440 participants strategically. The IPA, a strategic tool, was applied and discussed in this research, providing the government authorities the guideline that rapidly empowers them to comprehend users' demands and desires and evaluate user satisfaction instead of only on performance attributes. Logically, the Concentrate Here quadrant variables are considered the urgent contributors who need urgent attention.

Based on the results of IPA, it has been observed that there are three factors with six variables located in the Concentrate Here quadrant. On the safety side, the driver's awareness of orderly traffic is still low. Law enforcement is often carried out through police operations, and in fact, there are many disciplinary violations by transport drivers. This condition is a threat in itself for the efforts of related parties in reducing the level of congestion on the roads and public transport services. Furthermore, on the security side, the identities of vehicles and drivers are often ignored. Awareness of this impacts the lack of responsibility for drivers to ensure the safety of vehicle users. The identity of the driver is not an obligation to be displayed on the vehicle. However, it remains a concern for transportation users. In addition, vehicle identification information is mandatory to know. So that passengers will feel safer during the trip.

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In terms of pollution, that some vehicles emit pollution to air quality. This is due to a lack of maintenance on vehicles, especially routine engine maintenance. In addition, air pollution from cigarettes and unpleasant odours. Plus, the noise pollution caused by the sound of the vehicle exhaust is quite annoying.

Moreover, it is also important to pay attention to the variables which are closed to the Concentrate Here boundary like Convenience; (V6), (V7), (V9), and Safety; (V12). Variables are placed in the "Low Priority" quadrant concerning Convenience, Pollution, and Regularity. However, the less important variable among all the variables is "Frequently used transportation has a schedule." According to the users, some variables on few factors situated in the Possible Overkill quadrant such as Safety, Rates, Regularity, and Smoothness and Accuracy. The users are not considered it as important; it is thus not necessary to improve this quadrant.

After investigating the results, it is worth highlighting critical issues regarding Convenience and safety. User satisfaction will increase if government authorities establish minimum standards for these factors.

To conclude, this IPA is the strategic tool for the government authorities or researchers to evaluate the public transportation services quality by providing guidelines to prioritize the focus area for improvement. Even though obtaining good responses from 440 participants, it would be better for further research to make it more generalized to the entire population.

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