PUBLIC TRANSPORTATION SERVICE PERFORMANCE ASSESSMENT APPLICATION FOR BUS RAPID TRANSIT(BRT) TRANS SEMARANG

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Abstrak

Analisis kinerja layanan melalui kuesioner yang didistribusikan kepada penumpang BRT adalah proses yang rumit , kurang efektif dan efisien karena menggunakan banyak perangkat dan sumber daya manusia. Sebuah aplikasi penilaian kinerja layanan BRT menggunakan metode Importance Performance Analysis (IPA) diusulkan untuk menyelesaikan masalah ini yang dibangun menggunakan metode waterfall (analisis, desain, pengkodean, dan pengujian). Aplikasi penilaian kinerja layanan transportasi umum dapat menghasilkan analisis dan diagram kartesian untuk menilai kinerja dan pentingnya layanan BRT secara otomatis dan waktu nyata. Aplikasi tersebut diuji menggunakan pengujian blackbox pada 7 kasus uji untuk admin dan 5 kasus uji untuk responden dengan hasil yang valid atau sesuai dengan harapan.Aplikasi ini digunakan untuk menganalisis kinerja layanan di Koridor 4 BRT Trans Semarang yang diisi langsung oleh 100 penumpang (responden) dengan hasil kuadran I dari diagram Kartesius tentang pengemudi yang tertib berlalu lintas dan mengutamakan keselamatan (pernyataan 5), serta bus yang memiliki peralatan keselamatan (pernyataan 6) dapat diprioritaskan dalam layanan.Manajer BRT Trans Semarang dapat menggunakan aplikasi yang dihasilkan untuk meningkatkan efektivitas dan efisiensi analisis kinerja layanan, mengidentifikasi aspek layanan yang perlu diprioritaskan, dan mendukung pengambilan keputusan berbasis data untuk manajemen transportasi umum (BRT).

Kata Kunci: *BRT; Kinerja Layanan; Transportasi Umum, Waterfall*

Abstract

Analysis of service performance through surveys distributing questionnaires to BRT passengers is a complicated process which results in it being less effective and efficient due to using many devices and human resources. A BRT service performance assessment application using the Importance Performance Analysis (IPA) method is proposed to solve this problem which is built using the waterfall method (analysis, design, coding and testing). The public transport service performance assessment application can produce analysis and cartesian diagrams for assessing the performance and importance of BRT services automatically and in real time. The application was tested using black box testing on 7 test cases for admins and 5 test cases for respondents with valid results or in line with expectations. The application is used to analyze service performance in Corridor 4 BRT Trans Semarang which is filled directly by 100 passengers (respondents) with the results of quadrant I of the Cartesian diagram about drivers who are orderly in traffic and prioritize safety (statement 5), and buses have safety equipment (statement 6) can be prioritized in service. BRT Trans Semarang managers can use the resulting application to improve the effectiveness and efficiency of service performance analysis, identify service aspects that need to be prioritized, and support data-based decision making for public transportation (BRT) management.

Keywords*:Waterfall; Service Performance; BRT; Public Transportation*

INTRODUCTION

Passenger public transportation plays a crucial role in supporting public mobility in urban areas with high density [1]. Mass transportation using public transportation can reduce congestion, reduce air pollution levels, and provide a more economical transportation alternative compared to private vehicles [2]. Various types of public transportation (buses, city transportation, trains, and application-based modes) available have their own advantages and challenges. Bus Rapid Transit (BRT) is a mass transportation system designed to increase the efficiency and comfort of public transportation in urban areas [3]. BRT is a solution to overcome the problems of congestion and air pollution compared to conventional buses. The BRT system has been implemented in various large cities to encourage people to switch to public transportation and support a more sustainable transportation system in urban areas [4].

BRT service is a public transportation system designed to provide solutions to urban mobility problems [5]. The characteristics of BRT services include special lanes, integrated payment systems, structured and comfortable stops, scheduled departure frequencies, modern and comfortable fleets, security and safety, and integration with other modes of transportation [6]. The existence of BRT services is expected to provide significant benefits in terms of travel efficiency and improving air quality in urban areas. Some BRT services that are often complained about by passengers include punctuality of departure and arrival, condition of bus stop facilities and fleets, comfort during the trip, and quality of service from drivers and officers. If these problems are not handled properly, the level of user satisfaction will decrease and can have an impact on reducing public interest in using BRT [7]. BRT service performance is a major factor in determining the effectiveness of a public transportation system [8]. BRT service performance is a key factor in determining the success of a public transportation system as an urban mobility solution. BRT service performance refers to the ability to meet user expectations in various operational aspects and travel comfort [9].

BRT service performance analysis is an important aspect in evaluating system effectiveness and determining necessary improvement steps. BRT service performance analysis is an evaluation process to assess whether the service meets quality standards and user needs. The application of the Importance Performance Analysis (IPA) model is used to analyze the service performance of Suroboyo Bus [10], City Bus in Addis Ababa Ethiopia [11], PO. Widji Lestari and PO. Mutiara Indah Murni [12], BRT Trans Jogja [13], BRT Trans Mebidang (Medan-Lubuk Pakam) [14], Public Buses in Bangkok [15], dan BRT Corridor I

Trans Semarang [16] to find aspects of operator service and customer satisfaction that need to be improved. Analysis of BRT Transjakarta infrastructure services during the large-scale social restrictions in DKI Jakarta using the CSI-IPA model obtained customer satisfaction index results of 75.54% (CSI) and 98.54% (IPA) with the Satisfaction criteria [17]. Analysis of public transport service performance using the Importance Performance Analysis (IPA) method can produce passenger perceptions of service performance [18].

The analysis of the performance assessment of BRT public transportation services using manual methods faces various problems and challenges [10], [18]. The limitations of accuracy and consistency resulting from the vulnerability of human error that often occurs (errors in recording, calculation, or interpretation) and the consistency of the assessment is difficult to maintain (different evaluators) [16], [19]. The process takes a long time based on data collection from various sources that takes a long time and the analysis process is also slower [12], [20]. The difficulty of managing large data in data storage and processing can increase the risk of data loss or duplication. Decision making related to service improvements is not optimal with limitations in the speed and accuracy of analysis [11], [21]. The absence of an automated system for historical comparison makes it difficult to determine the effectiveness of improvements that have been made [13], [14].

This problem also occurs in BRT Trans Semarang which has 18 routes/corridors. The study that has been done is only to implement the IPA model to analyze services based on gender. The application for assessing the performance of public transportation services was built to solve this problem. The application that was built is able to conduct surveys and display the results in the form of scores and Cartesian diagrams in real time and up to date by adopting the IPA model. The application can simplify, accelerate, and improve the process of assessing the analysis of transportation service performance to achieve more effective and efficient activities, and can reduce costs, time and human resources. Contributions in the field of safety also increase the implementation of transportation service performance analysis.

METHODS

The Waterfall method is used to create the proposed application design. The method is adopted because it is linear and sequential, meaning that each stage must be completed before proceeding to the next stage. This creates a clear structure, easy to manage, fits clear needs, and can minimize risk or errors. The Waterfall method consists of 4 sequential stages, namely analysis, design, coding and testing (Figure 1).

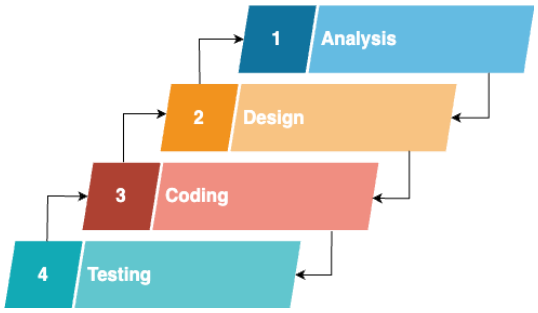


Figure 1. Waterfall Method[22]

Analysis is done to identify functional and non-functional requirements. Functional requirements are specifications that must be met by the system so that it can operate according to the expected goals. Non-functional requirements refer to the devices needed in creating the application [23]. The design consists of use case diagrams, activity diagrams, and class diagrams. Use case diagrams are behavioral models to describe the interaction between actors and applications [24]. Activity diagrams describe how an object works with a structured flow from the starting point to the end point [25]. Class diagrams describe the state of a system and offer services to manipulate the state [26]. The design also includes calculating the performance analysis of the Trans Semarang BRT service using the Importance Performance Analysis (IPA) method. The IPA method was chosen because it is able to evaluate satisfaction or service performance based on the level of importance and level of performance. The steps that can be taken are as follows:

1. Data Collection
   a. Find the score for each performance statement
   b. Find the score for each importance statement
2. Scoring Calculation
   a. Determine the total score for each performance statement

$$\sum p = (VGx4) + (Gx3) + (NGx2) + (VNGx1) \quad (1)$$

   b. Determine the total score for each importance statement

$$\sum i = (VIx4) + (Ix3) + (NIx2) + (NUx1) \quad (2)$$

   c. Find X performance

$$X = \frac{\sum p}{number\ respondents} \quad (3)$$

   d. Find Y importance

$$Y = \frac{\sum i}{number\ respondents} \quad (4)$$

   e. Find the average performance statement value

$$\bar{X} = \frac{x}{number\ statements} \quad (5)$$

f. Find the average importance statement value

$$\bar{Y} = \frac{\text{Y}}{number\ statements} \quad (6)$$

3. Cartesian Diagram Creation
   a. $\bar{X}$ = for vertical line
   b. $\bar{Y}$ = for horizontal line
4. Quadrant Analysis

A total of 13 statements were contained in the questionnaire that had been validated and had been used [27] (Table 1).

Coding is done by creating applications by implementing designs according to process and data modeling. The MVC (Model, View, and Controller) development pattern is used in the program framework [28] using the PHP programming language with the CodeIgniter 4 Framework. Testing uses black box testing to verify the suitability of the application being built and can be tested on a device without having to pay attention to the application design [29]. Testing is done to produce all valid which means the application is ready to use.

The application that has been produced is used to assess the performance of the BRT Trans Semarang Corridor 4 (Cangkiran-Tawang) public transportation service. Corridor 4 has 19 stopping points which has the most passengers and problems which are much higher than other corridors. The sample used was 100 respondents using the purposive sampling method from passengers for 7 days (17/03/2024-23/03/2024) by searching for and meeting directly with BRT Trans Semarang Corridor 4 passengers.

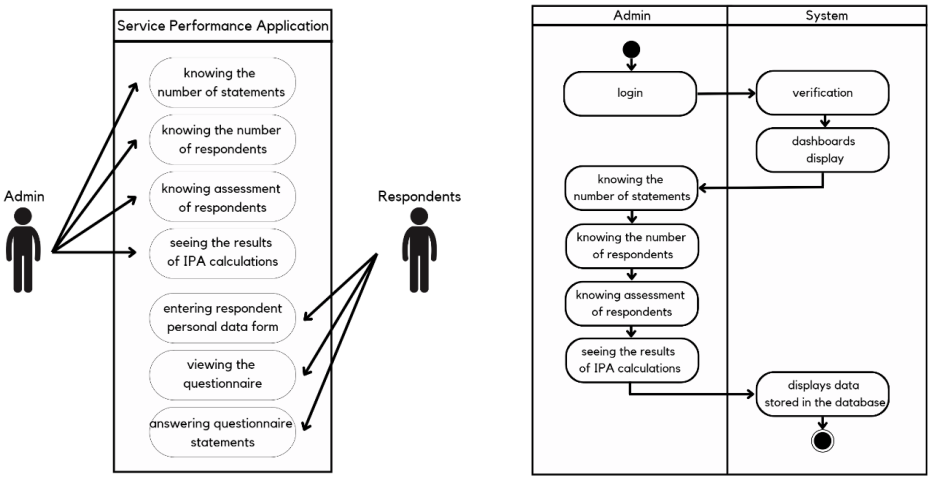
Table 1. Service Performance Statement

No.	Statement
1.	Ticket purchases are made safely
2.	Goods are protected from theft and being exchanged
3.	The vehicle crew's identification information helps passengers recognize the driver
4.	On the bus there is information in the form of a sticker containing an emergency telephone number for complaints
5.	Drivers are orderly in traffic and prioritize safety
6.	The bus has safety equipment (glass breaking device, fire extinguisher and lighting)
7.	The bus provides health facilities in the form of first aid kit
8.	Passenger entry and exit access is easy to use
9.	Inside the bus there are handrails for standing passengers
10.	Availability of good safety belt facilities
11.	The rates provided are more flexible for certain groups, such as the elderly, people with disabilities and pregnant women
12.	There are priority services available for certain groups, such as the elderly, people with disabilities and pregnant women
13.	Announcements during the trip provide clear and understandable information

RESULTS AND DISCUSSION

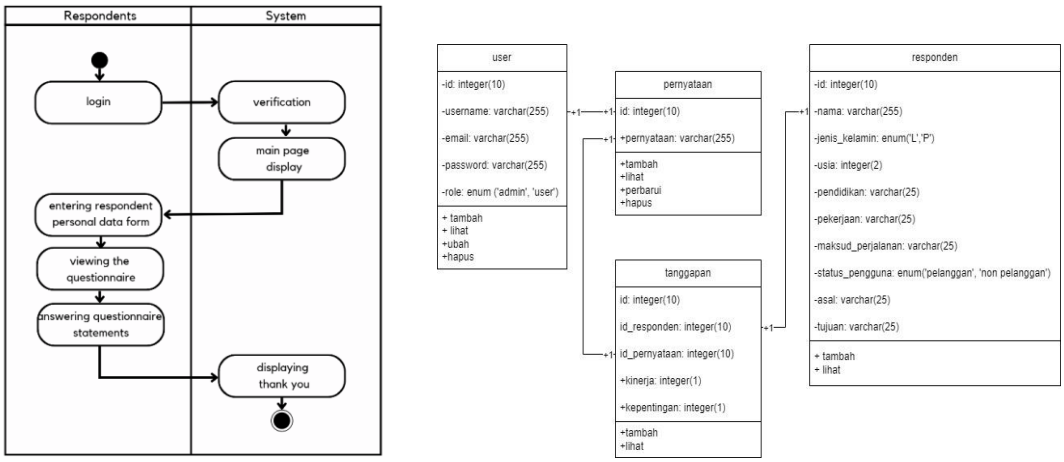
Analysis becomes the first stage covering functional and non-functional needs. Functional needs include the function of filling out statement questionnaires, calculating the performance of BRT public transportation services, and making Cartesian diagrams automatically and in real time. Non-functional needs include hardware and software such as Laptops, Mouse, Mobile Phones, Laragon and Visual Studio Code. Use case diagram consists of 2 actors (admin and respondent) with each process. Admin has 4 processes, namely knowing the number of statements, knowing the number of respondents, knowing the assessment of respondents and seeing the results of the IPA calculation. Respondents with 3 processes, namely entering the respondent's personal data form, seeing the questionnaire, and answering the questionnaire statements (Figure 2.a). The design includes use case diagrams, activity diagrams, and class diagrams. Activity diagram is done between admin and respondent with application in more detailed stage. Admin logs in at the starting point and then the system responds by providing verification to be able to proceed to the next stage. The application will display dashboard and data analysis of transportation service performance (Figure 2.b).

Respondents log in at the starting point and then the system responds by providing verification to be able to proceed to the next stage. The system will display the main page and a thank you display after the respondent has finished answering the statement (Figure 3.a). Class diagram contains 4 database tables, namely user, statement, response and respondent with each data type, specification and action. Each table can be interrelated which will describe the database design that the application will use (Figure 3.b).



(a) (b)

Figure 2. (a)Use Case Diagram (b)Activity Diagram Admin



(a) (b)

Figure 3. (a) Activity Diagram Responden, (b) Class Diagram

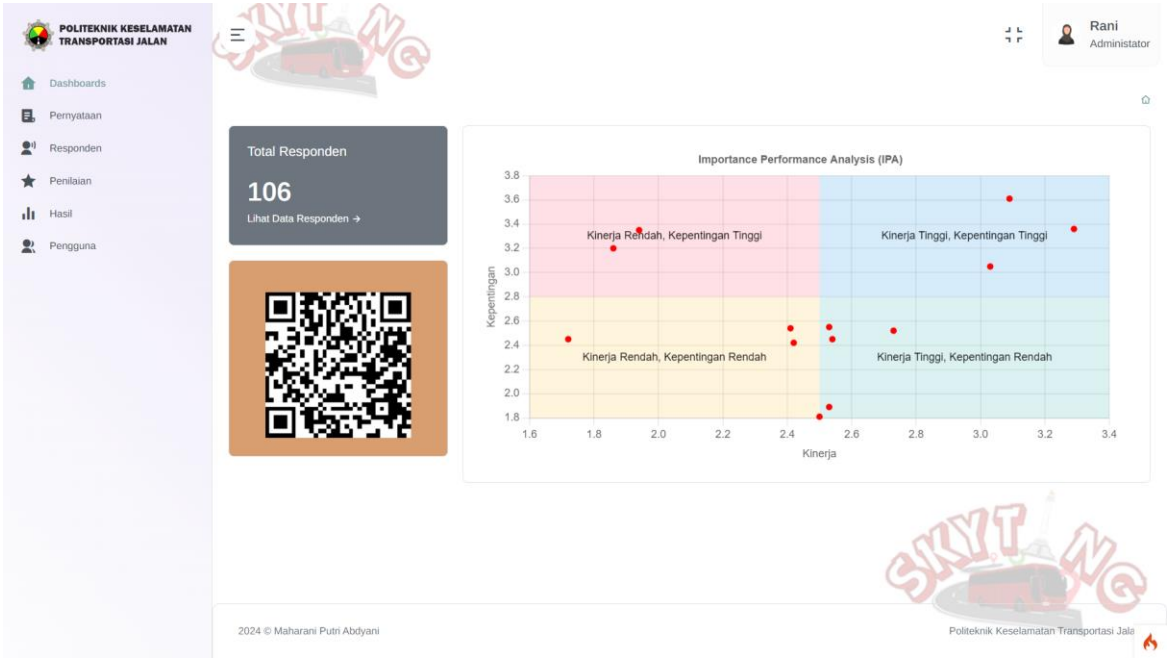


Figure 4. Dashboards Page

Coding is done by translating the application design that has been done into an application using the PHP programming language with the CodeIgniter 4 Framework. The editor application used is Visual Studio Code. The application is implemented on a website page that has 2 website accesses (admin and respondent). Respondent access can be via a link or barcode provided by the admin. Admins who have email and passwords can access the dashboards page and access other tabs intended for admins (Figure 4).

Respondents who have received the link or barcode will go directly to the home page which contains an introduction and how to fill out the questionnaire and then will move on to the respondent's personal data entry page. If the personal data entry is complete, it will continue to the statement page. Respondents are directed to be able to choose the available statements according to the actual conditions related to the performance and interests of BRT public transportation services. Give a star to each statement for performance and interests followed by clicking the send button to save it (Figure 5).

Figure 5. Statement Page

Table 2. Black Box Testing Results for Admin

No	Test Scenarios and Test Cases	Expected	Test
1.	Empty file in Login	An error message appears and the system will reject the login request.	Valid
2.	The file is filled in at Login	Enter the dashboards page.	Valid
3.	Clicking the “Pernyataan”	A list of statements displayed in the questionnaire appears.	Valid
4.	Clicking the “Responden”	Data on respondents who have filled out the questionnaire appears.	Valid
5.	Clicking the “Penilaian”	A bar chart appears regarding the assessment scores.	Valid
6.	Clicking the “Hasil”	The final result appears in the form of a Cartesian diagram for each statement	Valid
7.	Clicking the “Pengguna”	The user data registered by the system appears.	Valid

Table 3. Black Box Testing Results for Respondents

No	Test Scenarios and Test Cases	Expected	Test
1.	Clicking the “Tampilkan Barcode”	A barcode appears which can be scanned by other respondents.	Valid
2.	Clicking the “Mulai Survei”	A personal data form appears for respondents to fill in.	Valid
3.	Empty file in personal data form	An error message appears and the system will reject the login request.	Valid
4.	Files are filled in on the personal data form	Appears on the statement page filled in by the respondent.	Valid
5.	Select all statements according to conditions and wishes, and click send	A thank you page appears as the closing of the questionnaire.	Valid

Testing was carried out by admin and respondents with 1 experimenter each. Admin with 7 test cases produced 7 suitability and respondents with 5 test cases produced 5 suitability. The test results obtained from black box testing are 100% conformity between the test scenario or test case and the expected results or the test case is valid. Black box testing results for admins and respondents can be seen in Table 2 and Table 3.

The test results obtained that the system has a 100% suitability level, which means that each test scenario runs according to the specified specifications, so that the proposed application is feasible to use. A 100% suitability level explains that the system has successfully met the functional requirements tested in all test cases carried out by the admin and respondents. These results strengthen the reliability of the system in carrying out its functions without any anomalies or inconsistencies with the designed test scenarios. All test results are valid because the system has been well designed, testing is carried out systematically, there are no changes in specifications that cause inconsistencies, and the scale of testing is still limited.

The performance analysis of manual calculation services of corridor 4 BRT Trans Semarang produces an average value for each performance and interest statement. The average value of each performance is 2.5 which is obtained from dividing the number of X into vertical lines on the Cartesian Diagram. The average value of each interest is 2.7 which is obtained from dividing the number of Y into horizontal lines on the Cartesian Diagram. The intersection point between the vertical and horizontal lines will make 4 parts depicted in the Cartesian Diagram for 13 statements (Table 4).

Calculation of service performance analysis using the application can display service performance scores. The calculation results will be displayed for each statement on the assessment page in the form of a bar chart. The assessment page contains the number of

respondents' frequencies on each Likert scale for performance and importance. Data comes from the results of respondents' assessments related to performance and importance in real time and automatically according to the input of statements from respondents (Figure 6).

Table 4. Performance and Importance Analysis Results

Statement Number	Performance						Importance					
	Number of Scores				Total Score	X	Number of Scores				Total Score	Y
	1	2	3	4			1	2	3	4		
1	29	40	60	124	253	2,53	24	44	78	112	258	2,58
2	26	60	66	88	240	2,40	23	46	84	104	257	2,57
3	11	78	114	48	251	2,51	37	96	33	16	182	1,82
4	25	40	90	100	255	2,55	36	92	30	32	190	1,90
5	32	104	42	8	186	1,86	0	2	222	100	324	3,24
6	28	110	36	20	194	1,94	0	10	150	180	340	3,40
7	39	108	21	0	168	1,68	34	26	78	108	246	2,46
8	0	28	126	176	330	3,30	0	18	126	196	340	3,40
9	4	24	153	132	313	3,13	0	8	78	280	366	3,66
10	27	58	66	88	239	2,39	28	46	75	96	245	2,45
11	16	68	90	80	254	2,54	29	40	75	104	248	2,48
12	6	74	96	100	276	2,76	22	52	81	100	255	2,55
13	2	52	108	144	306	3,06	3	12	213	80	308	3,08
					Number X	32,65					Number Y	35,59
					Average Value of Each Performance Statement	2,50					Average Value of Each Importance Statement	2,70

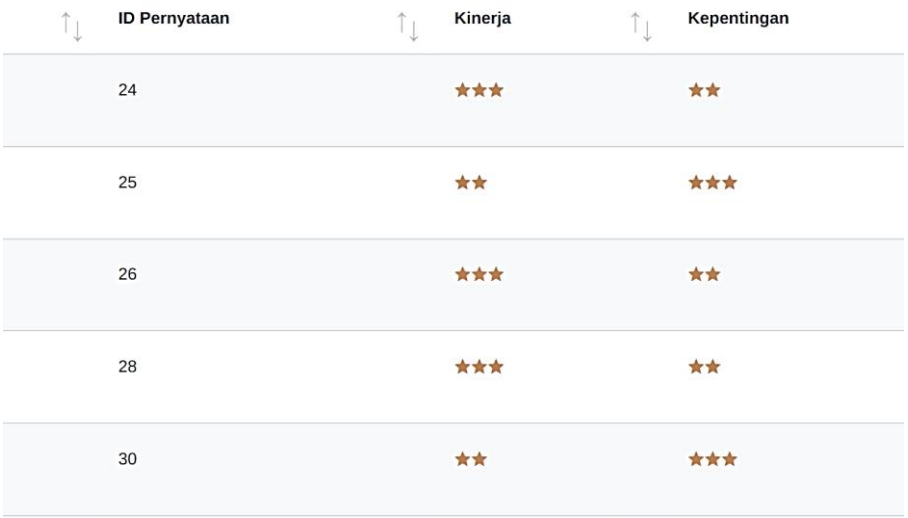


Figure 6. Statement Score in App

Data will automatically change on the results page in the form of a Cartesian diagram with a center line. The Cartesian diagram has 4 quadrants with each quadrant having a different color, for quadrant 1 it is red, quadrant 2 is blue, quadrant 3 is yellow and quadrant 4 is green. Average value of each statement X for performance 2.5 and Y for importance 2.7, will be used as the divider or center line in determining the quadrants on the Cartesian diagram. Quadrant 1 with information about low performance and high importance, which means that the performance of the services provided has not been fulfilled but is included in the quadrant that is considered important by users so that it needs to be improved and corrected. The statements that are included in quadrant 1 are statement number 5 and statement number 6. Quadrant 2 with information about high performance and high importance which means that the performance provided is in accordance with the user's wishes so it only needs to be maintained. The statements that are included in quadrant 2 are statement number 8, number 9 and statement number 13. Quadrant 3 with information about low performance and low importance means that performance is considered not optimal and not important enough for users to be improved in the short term, but service awareness still needs to be considered for better service. The statement that is included in quadrant 3 is statement number 2, number 3, number 7 and number 10. Quadrant 4 with information about high performance and low importance, which means that service performance has exceeded expectations because of its low importance. The statements included in quadrant 4 are statements number 1, number 4, number 11, and number 12 (Figure 7).

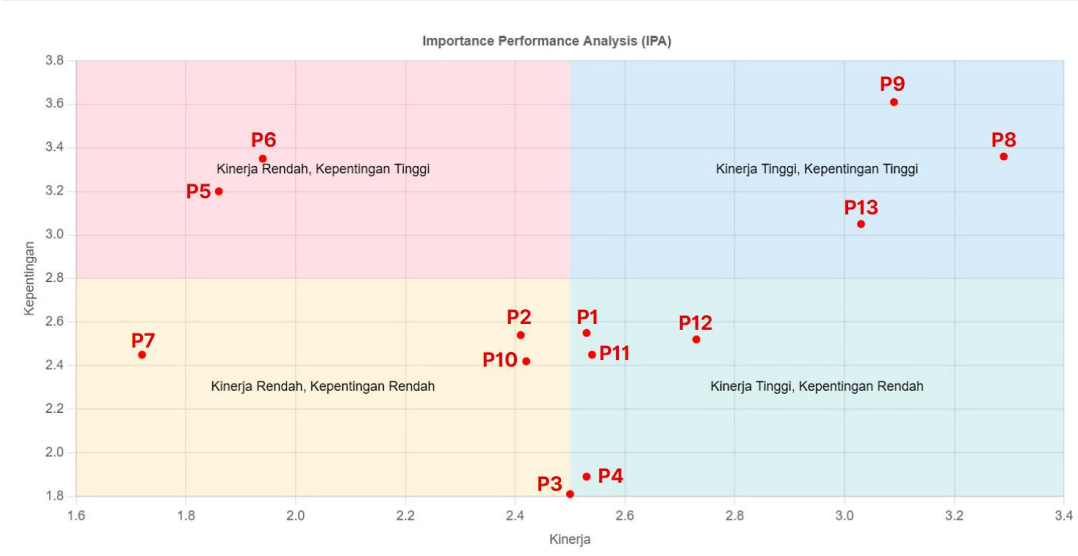


Figure 7. Cartesian Diagram in Applications

Quadrant Analysis is located on the results page in the form of conclusions for each quadrant. Quadrant Analysis on the Cartesian diagram comes from the points generated from the average performance value (X-axis) and importance (Y-axis). Quadrant 1 means low performance high importance (2 statements), quadrant 2 means high performance and importance (3 statements), quadrant 3 means low performance and importance (4 statements) and quadrant 4 means high performance low importance (4 statements). The lowest performance value and highest importance included in quadrant 1 are statements number 5 (X-axis=1.86, Y-axis =3.2) and number 6 (X-axis=1.94, Y-axis=3.35). Statement number 5 is that drivers are orderly in traffic and prioritize safety. Statement number 6 is that buses have safety equipment (glass breakers, light fire extinguishers and lighting). These 2 statements are the priority types of services that must be improved by the management of corridor 4 BRT Trans Semarang (Figure 8).

No	Pernyataan	X	Y	Kuadran
1	Pembelian tiket dilakukan secara aman	2.53	2.55	Kinerja Tinggi, Kepentingan Rendah
2	Barang terhindar dari pencurian dan tertukar	2.41	2.54	Kinerja Rendah, Kepentingan Rendah
3	Informasi tanda pengenal awak kendaraan membantu penumpang mengenali pengemudi	2.5	1.81	Kinerja Rendah, Kepentingan Rendah
4	Di dalam bus terdapat informasi berupa stiker berisi nomor telepon darurat untuk pengaduan	2.53	1.89	Kinerja Tinggi, Kepentingan Rendah
5	Pengemudi tertib lalu lintas dan mengutamakan keselamatan	1.86	3.2	Kinerja Rendah, Kepentingan Tinggi
6	Bus memiliki peralatan keselamatan (alat pemecah kaca, alat pemadam api ringan dan penerangan)	1.94	3.35	Kinerja Rendah, Kepentingan Tinggi
7	Di dalam bus menyediakan fasilitas kesehatan berupa P3K	1.72	2.45	Kinerja Rendah, Kepentingan Rendah
8	Akses keluar dan masuk penumpang mudah digunakan	3.29	3.36	Kinerja Tinggi, Kepentingan Tinggi
9	Di dalam bus terdapat fasilitas pegangan tangan bagi penumpang berdiri	3.09	3.61	Kinerja Tinggi, Kepentingan Tinggi
10	Tersedianya fasilitas sabuk keselamatan yang baik	2.42	2.42	Kinerja Rendah, Kepentingan Rendah
11	Tarif yang disediakan lebih fleksibel terhadap kelompok tertentu, seperti lansia, disabilitas dan ibu hamil	2.54	2.45	Kinerja Tinggi, Kepentingan Rendah
12	Adanya layanan prioritas yang tersedia untuk kelompok tertentu, seperti lansia, disabilitas dan ibu hamil	2.73	2.52	Kinerja Tinggi, Kepentingan Rendah
13	Pengumuman selama perjalanan memberikan informasi yang jelas dan dapat dimengerti	3.03	3.05	Kinerja Tinggi, Kepentingan Tinggi

Figure 8. Discussion of Quadrants in App

The results of the analysis provide a mapping that helps in determining service improvement priorities, especially in the BRT Trans Semarang corridor 4 transportation system. 2 statements in quadrant 1 state that Passengers feel that the service in this aspect is still not optimal, while this aspect is very much needed in improving the quality and safety of BRT services. The aspects of driving safety by drivers and the availability of safety equipment on the bus are the main priorities for improvement in the BRT Trans Semarang corridor 4 service. User satisfaction and trust in transportation services can increase, and support the creation of a safer, more secure, comfortable, and sustainable transportation system with improvements in these two aspects [16]. Systematic and sustainable improvement efforts will ensure that BRT services are increasingly qualified and meet the expectations of the community as the main users of public transportation [9], [11].

Calculation of service performance analysis using the application built has steps similar to manual calculations, but is done automatically. The calculation of the IPA method is displayed with a new display to make it easier for admins to read the results. Analysis processing produces the same data as manual calculations or there is no difference. The application for assessing the performance of public transportation services for corridor 4 BRT Trans Semarang has achieved its goals and can be used to save time and human resources. The application is useful for simplifying, accelerating and improving the process of assessing the analysis of transportation service performance in order to achieve more effective and efficient activities [7].

Corridor 4 BRT Trans Semarang still often experiences accidents caused by reckless drivers [30]. The results of the service performance analysis in quadrant I regarding the service of corridor 4 BRT Trans Semarang need to improve services related to drivers who are still less orderly in traffic. Safety equipment on buses is still incomplete, but basically passenger safety and security are the main priorities [31]. Passenger entry and exit services function well on every corridor in BRT Trans Semarang because passenger access is always assisted by the bus conductor to open the door. Travel information about the route will always be available throughout the trip using audio so that it can be heard by passengers from the back seat of the bus. Handrail facilities are appropriate and function well because they help passengers maintain balance on the bus [8]. Services that have been met and in accordance with expectations need to be maintained to maintain the quality of bus services [10].

Tight security between male and female passengers is one of the factors that causes theft to be rare. Vehicle crew information is not completely necessary because it is not considered that important for passengers [17].

The provision of health facilities on buses is underused because they are dominated by passengers who travel short distances so travel sickness rarely occurs. Safety belts are not provided because passengers are not required to do so. Services can be completed in the long term because they are not yet a priority [15]. Passengers are not allowed to enter before handing over tickets that have previously been purchased at the halter or bus stop, so that there are no passengers without tickets on the bus. Stickers containing emergency telephone numbers can be used by passengers to make service complaints [14]. The rates provided by corridor 4 BRT Trans Semarang are implemented well because they are easily adjusted to certain groups such as children who carry student cards, the elderly and workers. Seats near the door are a form of priority service on buses for the elderly and people with disabilities [12]. The service becomes excessive because it exceeds expectations and has low interest for passengers.

CONCLUSION

The BRT Trans Semarang public transportation service performance assessment application was built by adopting the Waterfall method and analysis using the IPA method. The application is able to manage statement questionnaires and display analysis results in the form of calculation scores and Cartesian diagrams automatically and in real time. There are 2 statements(Drivers are orderly in traffic and prioritize safety and the bus has safety equipment) in quadrant 1 (Main Priority) stating that passengers feel that the service in this aspect is still not optimal, even though it is really needed to improve the quality and safety of services for corridor 4 BRT Trans Semarang. These 2 statements are types of service priorities that must be improved by managers. Managers can quickly and easily obtain the results of public transportation service performance analysis which can be used as a basis for creating strategies to improve the quality of services for the main priority type (Quadrant I in the Cartesian Diagram). The addition of features for assessing the operational performance of BRT public transportation is the next development that will be carried out.

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