p–ISSN: 2723 – 6609 e-ISSN: 2745-5254
Vol. 5, No. 12, December 2025 http://jist.publikasiindonesia.id/

Service Performance of Transjakarta City Bus Public Transportation System Corridor 1, 3 And 9

Siti Kagiarin[1*], Ruchyat Deni Djakapermana[2], Arif Wicaksono[3]
Universitas Pakuan Bogor, Indonesia
Email: Sitikagiarin@gmail.com
*Correspondence

Keywords: trans-Jakarta bus corridor, transportation service performance, smart mobility.

ABSTRACT

Transjakarta has implemented smart mobility i.e. information technology (IT) and artificial intelligence (AI), and therefore this study focuses on discussing the performance of its smart mobility practices. The measurement of smart mobility performance in Transjakarta was carried out using in-depth analysis for each of the variables such as load factor, travel speed, headway, frequency, waiting time, service time, and circulation time. The perception of Transjakarta passengers was collected using distributed questionnaires in online surveys to obtain public aspirations for smart mobility service performance improvement. A total of 434 respondents filled the questionnaires which were distributed randomly in three bus corridors. As a result, 261 respondents (60,14%) stated that the Passenger Information System (PIS) has given accurate information about the schedule of Transjakarta, while 173 respondents (39,86%) stated otherwise. In conclusion, the service performance in Transjakarta Corridors 1,3, and 9 can be categorized as medium when compared to the official minimum service standard.

Introduction

Development in DKI Jakarta, which has a role and function as a center of economic activities within the city's internal, regional, and even national scope, has attracted residents from outside the city of DKI Jakarta (Sari & Afriandini, 2020). One of the reasons for mobility to and within the DKI Jakarta area is because there are complete and modern transportation infrastructure facilities such as Trans Jakarta, MRT, LRT, KRL, Jaklingko microbuses, taxis, and online transportation, thus facilitating activities (Suprapto, 1988).

City public transportation services such as bus public transportation, rail public transportation (MRT and LRT), public transportation, and other transits must provide the best service as much as possible. Currently, the concept of a smart city is developing (Riawan, 2018). There are six 6 dimensions of smart city implementation in each city, which can focus on one or several dimensions depending on the characteristics of the city and the urgency of the city's problems (Ahvenniemi, Huovila, Pinto-Seppä, & Airaksinen,

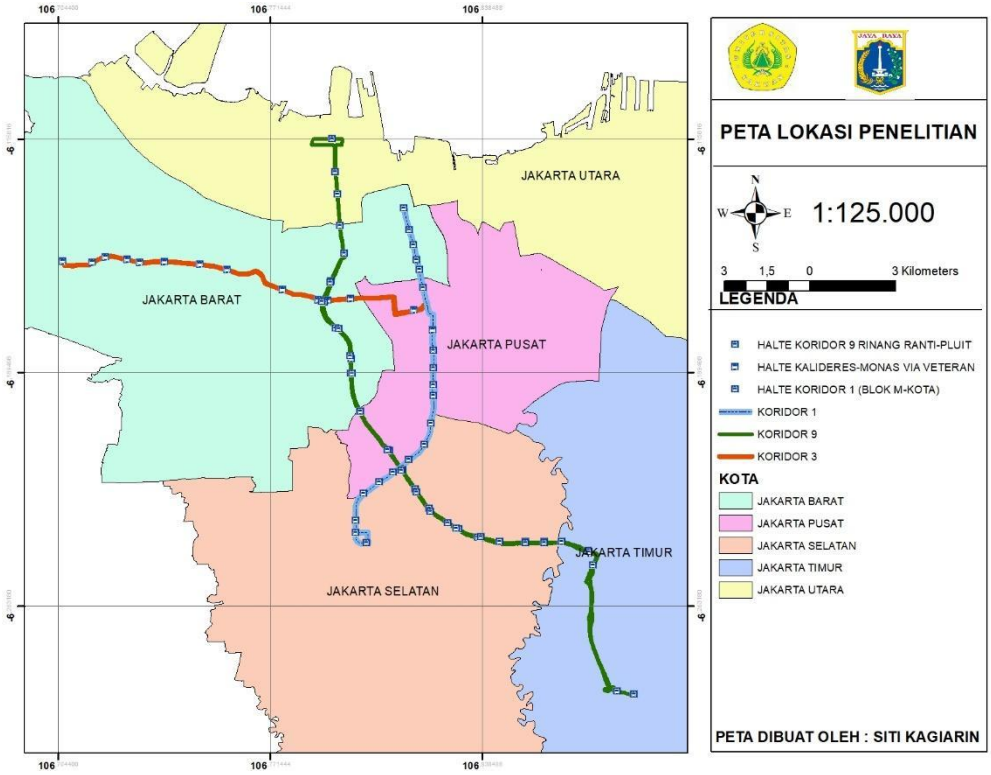
2017). Of the six dimensions of a smart city, this study will focus on one dimension, namely smart mobility.

One of the modes of public transportation as a form of smart mobility in DKI Jakarta is public transportation, namely Transjakarta. Urban bus public transportation is one of the most important and important public services in various cities in the world (Amien, Said, & Syarkawi, 2022). Transjakarta public transportation helps people to support activities and mobility to travel so that people can switch from using private transportation to public transportation. The application of the smart mobility concept (the concept of applying IT and AI) is: (1) providing real-time information on transportation schedules and waiting times) (2) payments are integrated with smart cards and smartphones (3) mobile applications or platforms to provide mobility information (4) the existence of route information (Harahap & Hasibuan, 2021). The concept of implementing the use of smart mobility technology requires a technocratic in-depth analysis of each IT and AI variable (Hariani, Varadila, & Mukhlis, 2023).

In this study, there are two research approaches, namely assessing the performance of Transjakarta which consists of several variables such as load factor, travel speed, headway, frequency, circulation time, service time, waiting time, and smart mobility concept variables comprehensively to determine the performance of Transjakarta public transportation and its development strategy.

Method

This research was conducted for 11 months from September 2023 to August 2024. The location of the research as presented in the Figure below is Corridor 1 from Blok M – Kota, Corridor 9 Pluit – Pinang Ranti, Corridor 3 Kalideres – Monas Via Veteran.



Data types and data sources

This study uses two types of data, namely primary data and secondary data. The primary data used in this study included load factor data, travel speed, headway, frequency, circulation time, service time, and waiting time. Primary data was obtained from field observation of the distribution of questionnaires to TransJakarta Corridor 1, Corridor 9, and Corridor 3 users. Secondary data was obtained from the related agencies the DKI Jakarta Provincial Transportation Office and PT Transjakarta. The determination of the number of respondents uses the Slovin formula, After being calculated using Slovin 400 respondents were obtained, these 400 respondents were then divided into 3 corridors that were selected and divided equally. Corridor 1 from Blok M – Kota as many as 135 passengers, Corridor 9 Pluit – Pinang Ranti as many as 135 passengers, Corridor 3 Kalideres – Monas Via Veteran as many as 135 passengers. The distribution of the questionnaire uses the random sampling method, for the criteria for respondents to answer the questionnaire, namely the age of 15 – 64 years old and have or often used corridors 1, 9, and 3, the questionnaire is distributed using a Google form link.

Results and Discussion

Analysis of Transjakarta Service Performance Corridor 1, 3 and 9

Transjakarta's performance, which consists of several variables such as load factor, travel speed, headway, travel time, service time, frequency, waiting time, and the number of vehicles in operation, can be seen in Table 2. The results of the calculation of each variable in Table 2 are then compared with the minimum service standards (SPM) set by

the Director General of Land Transportation No.SK.687/AJ.206/DRJD/2002 concerning Technical Guidelines for the Implementation of Public Passenger Transportation in Urban Areas in Fixed and Regular Routes, Regulation of the Governor of the Special Capital Region of Jakarta Number 33 of 2017 concerning Minimum Service Standards for Transjakarta Public Transportation Services, and the World Bank (1986).

Table 1
Performance Standards for the Use of Passenger Public Transportation

It	Service Indicators	Unit	Standards of Identification		
			Good 3	**Keep 2**	**Less 1**
1.	*Load factor*	%	100	70 - 100	<70
2.	Cycle Time	Minute	60-90	91-150	>150
3.	Travel speed	Km/h	30-50	30	<30
4.	Headway	Minute	< 7	7-15	>15
5.	Service Hours	Hour	<13	13-15	>15
6.	Frequency	Kend/hour	> 6	3-6	< 3
7.	Waiting time	Minute	1-10	10-20	>20

The weight value using the Likert scale which aims to assess the performance of Transjakarta public transportation can be measured with good criteria, the weight value is 16.30-21.00, the medium criterion has a weight value of 11.60 – 16.20, and while the less criterion can be measured with a weight value of less than 11.60. More details are in the table below (Dwiryanti & Rakhmatulloh, 2013).

Table 2
Standard weight values of public transportation performance

Criterion	Total Weight Value
Good	16,30-21,00
Keep	11,60-16,20
Less	<11.60

The level of public transportation service in Transjakarta Corridor 1 Block M-Kota in the medium category can be seen in Table 4. It can be seen that the load factor service indicators, cycle times, and travel speed in Corridor 1 Block M-Kota are in the poor category (Shafira, 2023). As for the headway service indicators, service time, frequency, and waiting time in Corridor 1 Block M-Kota are in a good category.

Table 3
Recapitulation of the level of public transportation services in Transjakarta Corridor 1 Block M-Kota

It	Service Indicators	Value	Unit	Assessment Standards			Value acquisition
				Good 3	**Keep 2**	**Less 1**	
1.	*Load factor*	43,50	%	100	70 - 100	<70	1
2.	Cycle Time	154,33	Minute	60-90	91-150	>150	1
3.	Travel speed	11,5	Km/h	30-50	30	<30	1
4.	*Headway*	3,05	Minute	< 7	7-15	>15	3
5.	Service Hours	17	Hour	<13	13-15	>15	3
6.	Frequency	20	Kend/hour	> 6	3-6	< 3	3
7.	Waiting time	6-10	Minute	1-10	10-20	>20	3
Total							15
Service performance categories							Keep

It can be seen in Table 4, that the indicators of load factor services, cycle times, and travel speed in the 9 Pinang Ranti-Pluit Corridor are included in the lack category. As for the headway service indicators, service time, frequency, and waiting time on the 9 Pinang Ranti-Pluit Corridor are in a good category. The use of tables and figures should be mentioned in the text by mentioning Table 4; Figure 1 onwards.

Table4
Recapitulation of the level of public transportation services in Transjakarta Corridor 9 Pinang Ranti-Pluit

It	Service Indicators	Value	Unit	Assessment Standards			Value acquisition
				Good 3	**Keep 2**	**Less 1**	
1.	*Load factor*	43,50	%	100	70 - 100	<70	1
2.	Cycle Time	232,7	Minute	60-90	91-150	>150	1
3.	Travel speed	17,5	Km/h	30-50	30	<30	1
4.	Headway	4,87	Minute	< 7	7-15	>15	3
5.	Service Hours	17	Hour	<13	13-15	>15	3

6.	Frequency	12	Kend/hour	> 6	3-6	< 3	3
7.	Waiting time	6-10	Minute	1-10	10-20	>20	3
Total							15
Service performance categories							Keep

In Table 5, the load factor and travel speed indicators in Corridor 3 Kalideres-National Moment Via Veteran are included in the lack category. As for the headway service indicators, service time, frequency, and waiting time on Corridor 3 Kalideres-National Monument Via Veteran are in a good category. The cycle time in Corridor 3 Kalideres-National Moment Via Veteran is in the medium category.

Table 5
Recapitulation of the level of public transportation services in Transjakarta Corridor 3 Kalideres-National Monument Via Veteran

It	Service Indicators	Value	Unit	Assessment Standards			Value acquisition
				Good 3	**Keep 2**	**Less 1**	
1.	*Load factor*	43,50	%	100	70 - 100	<70	1
2.	Cycle Time	109,7	Minute	60-90	91-150	>150	2
3.	Travel speed	24	Km/h	30-50	30	<30	1
4.	Headway	6,45	Minute	< 7	7-15	>15	3
5.	Service Hours	17	Hour	<13	13-15	>15	3
6.	Frequency	9	Kend/hour	> 6	3-6	< 3	3
7.	Waiting time	6-10	Minute	1-10	10-20	>20	3
Total							16 Medium

The processing of TransJakarta public transportation performance data in Corridor 1 and Corridor 9 resulted in a total score of 15 while Corridor 3 produced a total score of 16. These results indicate that the service conditions in Corridor 1, Corridor 3, and Corridor 9 are performing moderately because they are at the standard limit used, which is 11.60-16.20. In Table 6, it can be seen that the cycle time of Corridor 3 is smaller than the cycle time of Corridor 1 in Table 4 and the cycle time of Corridor 9 in Table 5. This is interesting because the Corridor 3 route (19 km) is longer than the Corridor 1 route (12.9 km). This difference is because, on Jl Hayam Wuruk and Jl Gajah Mada Mass Rapid Transit (MRT), construction activities are being carried out, as a result, there is a

narrowing of the road and Transjakarta blends with other vehicles so that when other vehicles stop Transjakarta buses will also stop.

From the analysis of the three Transjakarta corridors carried out, the load factor value is still 43.50% which still does not meet the Minimum Service Standards (SPM). Previous research, (Sari & Afriandini, 2020) suggested increasing the number of stops and diverting transportation routes to routes that are more crowded with passengers. Meanwhile, research conducted by Muhammad, Heriyanto, & Pratomo (2015), revealed that one of the causes of the low load factor in Bus Rapid Transit (BRT) transportation is that the BRT line is still united with city transportation.

Analysis of the use of Smart mobility technology (IT and AI) for Transjakarta Payments Using Smart Card / QRIS

Literature studies show that the improvement of time efficiency and convenience for Transjakarta bus transportation service users using the electronic payment system began to be launched on January 22, 2013. Meanwhile, the implementation of the electronic payment system has been implemented in all Transjakarta corridors since February 21, 2016. Before using smart cards, QRIS, or KUE (Electronic Money Cards), Transjakarta uses a cash payment system with a torn ticket or Tiso as valid proof of payment.

Ticket transactions by tapping in at the Barrier Gate when entering the bus stop were implemented at the beginning of the operationalization of the electronic payment system. On August 17, 2016, customers must also tap out when exiting the bus stop. By doing Tap Out, Transjakarta gets data about the customer's destination location. Through vending machines at all Transjakarta Rapid Transit (BRT) Bus stops, passengers can fill in electronic cards. Payments for electronic card top-ups can be made using QRIS which is also done when topping up an Electronic Money Card (KUE) or can put cash into a vending machine.

In addition to being able to pay using an electronic card, Transjakarta passengers can pay for tickets with QRCode. The use of QRCode will make it easier because passengers no longer need to carry electronic cards but use electronic devices. In addition, this method can be a solution when the electronic card is left behind or does not have an electronic card.

Access To Real-Time Information

Passenger information system

The Passenger Information System (PIS) provides information to public transportation users regarding the situation and conditions of public transportation services through visual, sound, or other media. This information may include predictions of arrival and departure times, as well as information regarding the condition and cause of the disruption. This study also disseminated questionnaires to Transjakarta users in corridors 1,9 and 3, this questionnaire aims to find out whether the passenger information system provides information in real-time.

Table 6
Passenger Information System (PIS) at bus stops

Monitor halte real time	Iya	Tidak	Grand Total
Koridor			
Blok M- Kota	88	69	157
Rinang Ranti-Pluit	80	58	138
Kalideres-Monas Via Veteran	93	46	139
Grand Total	261	173	434

After the distribution of the questionnaire to 434 respondents in the Transjakarta research corridor, it can be concluded that the passenger information system, 261 respondents answered that the passenger information system monitor provides accurate information, but 173 respondents answered that the monitor provides an inaccurate Passenger Information System (PIS). The information listed on the PIS is considered by users to be less convincing information due to the inaccuracy of the arrival time. The delay in the arrival of the bus fleet also has implications for the inaccuracy of the arrival time information listed on the Passenger Information System (PIS) which is also inconsistent with the DKI Jakarta Governor Regulation No. 13 of 2019 where bus arrival time information must have accurate bus arrival and departure information. At the research stop, sometimes the passenger information system does not turn on, as a result, Transjakarta users cannot find out the arrival information of Transjakarta buses in real-time. According to respondents, the estimated delay of the Transjakarta bus from the passenger information system is about 1-5 minutes.

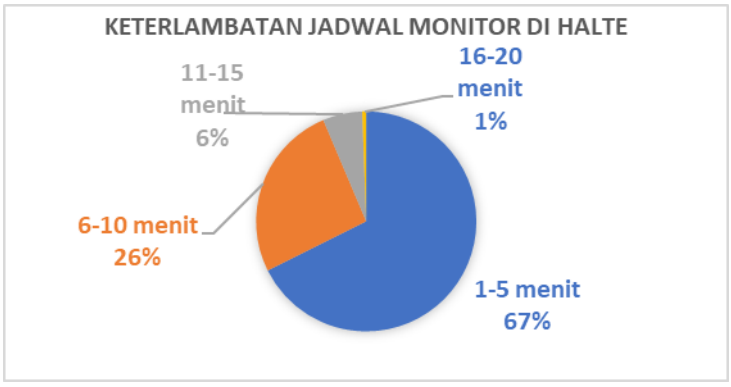


Figure 2 Delay in monitor schedule at Transjakarta bus stop

Transjakarta travel support application

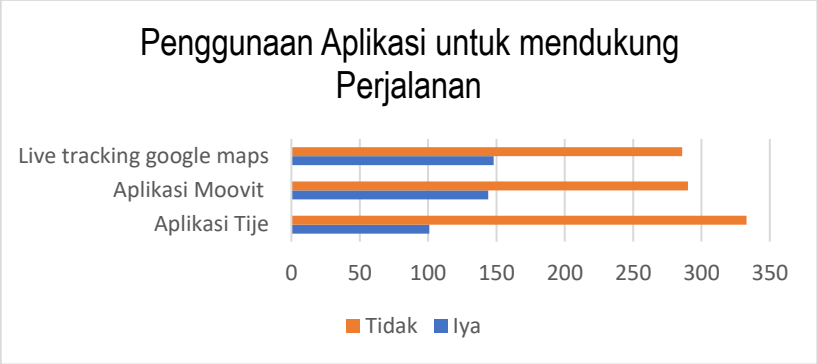
There are several applications to support the travel of Transjakarta users. The Tije application is an application that was first launched in 2021 by PT Transjakarta to try to improve the quality of its service to maintain the trust of users so that they continue to use Transjakarta as daily transportation. As reported by the official website, Tije itself is a modern digital platform with various advanced and simple features that contain

information about Transjakarta services such as ticket purchases, departure schedules, route information, bus stop information, and customer service to make it easier for users to ask questions related to Transjakarta services.

The Moovit app as app offers a public transportation network with GPS navigation that crosses transit modes indirectly and multiple real-time trip planner subterminals, including buses, and rapid transit (metro/subway/rapid transit, etc.). Users can access maps in real-time, and see nearby bus stops and stations based on their current GPS location, as well as plan traffic trips for non-moving modes of transportation based on real-time data. The Moovit application provides information such as routes, vehicle types, estimates, fares, and even the real-time position of public transportation, and estimated travel time.

Live tracking of the position of Transjakarta buses using Google Maps, the addition of this feature is an effort made by PT Transport to improve service to users. The real-time feature on Google Maps allows users to find out when the TransJakarta bus arrives at the departure stop and arrives at the destination stop. During the trip on the Transjakarta bus, users can also see the current position on the intended route.

The researcher distributed the questionnaire to the research corridor, namely corridors 1, 9, and 3, and distributed it randomly to Transjakarta users with the aim of finding out whether respondents used the application to find out related to the travel route, the arrival time of the Transjakarta bus in real-time and information related to the nearest bus stop.



As a result of the distribution of the questionnaire, the majority of Transjakarta users do not use the application. They prefer to see information listed at the bus stop such as travel route maps, and Passenger Information System (PIS) monitors/screens to find out the arrival of the bus, or ask Transjakarta officers or choose to search manually on Google.

Conclusion

From the results of the assessment of the performance of Transjakarta bus services using variable load factors, travel speed, headway, frequency, waiting time, service time, and circulation time, it can be concluded that the service performance of corridors 1, 3, and 9 is in the medium category. The implementation of smart mobility on Transjakarta Corridor 1, 3, and 9 buses has not been optimal, which indicates that there are still delays

in bus arrival schedules at bus stops, and the use of applications to support Transjakarta bus trips has not been maximized.

Bibliography

Ahvenniemi, Hannele, Huovila, Aapo, Pinto-Seppä, Isabel, & Airaksinen, Miimu. (2017). What are the differences between sustainable and smart cities? *Cities, 60,* 234–245.

Amien, Syamsul, Said, Lambang Basri, & Syarkawi, Mukhtar Thahir. (2022). Analisis Tingkat Kepuasan Pengguna terhadap Kinerja Pelayanan Angkutan Teman Bus Koridor III Kampus II PNUP-Kampus II PIP di Kota Makassar. *Jurnal Konstruksi: Teknik, Infrastruktur Dan Sains*, *1*(10), 30–39.

Dwiryanti, Aprisia Esty, & Rakhmatulloh, Anita Ratnasari. (2013). Analisis Kinerja Pelayanan Bus Rapid Transit (BRT) Koridor II Terboyo-Sisemut (Studi Kasus: Rute Terboyo–Sisemut Kota Semarang). *Teknik PWK (Perencanaan Wilayah Kota)*, *2*(3), 756–764.

Harahap, Tuti Khairani, & Hasibuan, Syahrial. (2021). Pelayanan Publik dengan Bus Rapid Transit (BRT) pada Sistem Transportasi Massa di Kota Pekanbaru. *Jurnal Public Policy*, *7*(2), 142–147.

Hariani, Mira Lestira, Varadila, Vanny, & Mukhlis, Jafar. (2023). Evaluasi Kinerja Pelayanan dan Tarif Sistem Angkutan Umum Berbasis Bus di Kota Semarang (Studi Kasus: Bus Trans Semarang Koridor I Rute Terminal Penggaron–Terminal Mangkang). *Siklus: Jurnal Teknik Sipil*, *9*(1), 28–42.

Riawan, Weldy Anugra. (2018). Analisis Pelayanan Bus Rapid Transit Kapasitas Sedang pada Sistem Transportasi Perkotaan [The Service Analysis of Medium Capacity Bus Rapid Transit on the Urban Transportation System]. *Warta Penelitian Perhubungan*, *30*(2), 119–132.

Sari, Cremona Ayu Novita, & Afriandini, Besty. (2020). Evaluasi Kinerja Bus Rapid Transit Trans Jateng Pada Koridor Purwokerto-Purbalingga. *Sainteks*, *17*(1), 53–60.

Shafira, Isyfa. (2023). *Analisis Tingkat Kepuasan Pengguna Layanan Bus Rapid Transit (Brt) Kota Tangerang Sebagai Alat Transportasi Massal (Koridor 3, Rute Tangerang City Mall–Cbd Ciledug)*. Fakultas Teknik Universitas Sultan Ageng Tirtayasa.

Suprapto, Ato. (1988). *Application of a general equilibrium model for agricultural policy analysis: A case study of fertilizer input subsidy in rice production for Indonesia*. Oklahoma State University.