



Analysis of Trans Metro Pekanbaru's Operational Score in Pandemic of Covid-19

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Abstract. Indonesia has experienced the Covid 19 pandemic from 2020 to 2022, including Pekanbaru. This has an impact on the limited services, especially on Trans Metro Pekanbaru public transportation during this situation. This strategy is in line with Pekanbaru's effort to establish a new normal during the transition era. This research aimed to evaluate about the efficiency of Trans Metro Pekanbaru for its service during the pandemic of Corona Virus. The operational performance data from the COVID-19 period as well as the passenger perception data from the same period were analysed. Based on seat occupancy, headway, and frequency indicators, the study's findings demonstrate that Trans Metro Pekanbaru public transportation's operational performance during the COVID-19 epidemic was deemed poor. Every route has an average headway value of more than ten minutes; the Ramayana – Unilak lines have the greatest average, at sixty-three minutes. All routes have an average frequency value of only 1-3 vehicles per hour, with the Ramayana route - Pandau having the highest average of 5 vehicles per hour. The quality of Trans Metro Pekanbaru's public transport services during the COVID-19 pandemic was deemed good by passengers, according to their perception. The average assessment score of 74.86% among the responders indicates this value.

Keyword. Pekanbaru, Covid 19, Operational, Public transport, Perception

INTRODUCTION

The global community was confronted with an unprecedented challenge in 2019 when the coronavirus (COVID-19) emerged in Wuhan, China, and the World Health Organization (WHO) proclaimed the outbreak a pandemic for 2020[1]. SARS-CoV-2 is the causative agent of the COVID-19 virus outbreak, which poses a severe threat to human health[2]. The spread of this disease at the pandemic level by the WHO has had a broad global impact, including on the public transport sector. One of the losses felt is the decrease in passengers. There are various types of public transportation, such as buses, trains, ships, and airplanes. Research conducted by [3] indicates that public transport development in Stockholm is indicated by a decrease in public transport by 60% compared to the previous time. This is generally due to the policy of restricting community activities and maintaining physical distance. People are required to complete tasks remotely or online. This results in a substantial revenue loss for public transportation. This directly threatens the continuity of transportation company operations and the employment of employees in this industry.

Trans Metro Pekanbaru (TMP) is a component of Pekanbaru City's mass transit system that facilitates the mobility of its residents. TMP has conducted transportation operations since 2009 and continues to do so today. As a mode of

public transportation, TMP plays a vital role in facilitating the mobility of Pekanbaru's residents. Figure 1 depicts the community service activities of TMP along the applicable route. ,



FIGURE 1. Trans Metro Pekanbaru

As mentioned earlier, the consistency of TMP activities is also strongly impacted by the presence of Covid-19. In response to the COVID-19 pandemic, Trans Metro Pekanbaru implemented restrictions on bus operations and passenger volume. These provisions are applicable to every aspect of Pekanbaru City services and are governed by City Regulation Number 104/2020 about Guidelines for New Living Behavior of Productive and Safe Communities in the Prevention and Control of COVID-19. This study was intended to evaluate the performance of the public transportation system Trans Metro Pekanbaru. Special case for this research was the research would evaluate services of Trans Metro Pekanbaru amidst the COVID-19 pandemic. Theoretically, alterations in the performance of public transportation in Pekanbaru City will have an impact on the confidence of the general public in selecting TMP as a mode of transportation [4].

The performance of public transport can be broadly classified into two parts: operational performance and passenger service performance. The former is an assessment of the public transport system in relation to its operational goals. The efficiency, efficacy, and quality of services rendered by providers in relation to technical performance are assessed as components of the operational performance of public transportation. The technical efficacy of public transport can be assessed using various parameters, such as headway, frequency, and seat occupancy.

Typically expressed as a percentage, the seat occupancy compares the offered and consumed capacity for a specific journey. Comfort and service providers whose financial gains can be attained by public transportation and linked to its operating costs are two major seat occupancies that have an impact on passenger service. When a public transport service provider achieves a seat occupancy of 100%, their maximum profit is realised. Headway is defined as the duration, measured at a specific point in time, between the entrance of the initial vehicle and the subsequent vehicle [5]. Headway is one of the operational parameters that indicates how long passengers wait to board the bus to their destination. Bus frequency parameter [6] was an additional operational performance measure for buses. The quantity of vehicles in operation within a single hour is denoted by the term "frequency." The higher the frequency of vehicles, it can be said that the service of the transportation route [7].

Apart from operational performance, the quality of public transportation [7] was assessed based on perceptions from public transportation users. Perception according to Zamroni (2013) adapted by [8] stated the process of individuals being able to recognize about the objects or facts using individual tools. A person's perception of an object was influenced by several factors both from within and from outside himself. In addition, according to [9], quality perception is a consumer assessment of the overall superiority of a product or service in terms of its function.

RESEARCH METHODOLOGY

The aforementioned study was carried out in 2021, specifically amidst the COVID-19 crises. Implementing this policy is intended to promote uniformity with regard to the operations of the Trans Metro Pekanbaru public transport system. The data needed in this study is secondary data obtained from the Pekanbaru City Transportation Office. The information collected pertains to the capacity of Trans Metro Pekanbaru public transport, including fleet count, passenger count, rite count, and fleet number throughout the Covid-19 pandemic, with a particular focus on 2021. With the purpose of determining the operational performance of Trans Metro Pekanbaru as measured by seat occupancy, headway, and frequency, the data analysis procedure is executed.

All of these results are then compared with quality standards determined by applicable rules as quality standards for public transport services. The expected quality standards are seen in the table below, the value of the assessed parameters is a comparison with the actual value generated from the analysis of the data obtained.

TABLE 1. Bus Operational Performance Indicators

No	Parameter	Standard	Regulatory Standards
1	<i>Seat occupancy</i>	70%	Decree of the Minister of Transportation No. 35 of 2003
2	<i>Headway</i>	5-10 minutes (average) 2-5 minutes (maximum)	SK.687/AJ.206/DRJD/2002
3	Frequency	Minimum 4 vehicles/hour Maximum 6 vehicles/hour	SK.687/AJ.206/DRJD/2002
4	Public Transport Availability	80%-90%	1986 World Bank Policy Study on Urban Transport

It has been explained that in addition to operational performance, Trans Metro Pekanbaru services during a pandemic are determined by user assessments. The collection of perception data was carried out through sampling methods that had also been carried out by previous studies, such as those conducted by Baskoro Adi [9] and Handayani [10]. One sampling method used to determine the number of samples is using the Slovin formula. The formulation in the Slovin method is explained as follows:

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

with, n : Number of Samples ; N : Total Population ; e : Error Tolerance (0.1)

The collection data was taken by random sampling technique with the population at the time of the study, namely the number of passengers in November 2021, which has total passengers about 22.278 passengers. This data obtained from the Pekanbaru City Transportation Office. Therefore, the intended sample of public transportation passenger data is as many as 100 samples. This calculation has been calculated with Slovin method for determination of sample size. The service measurement scale uses the Likert scale. This psychometric scale is commonly applied in questionnaires and is most often used for research in surveys, including descriptive survey research. The qualification criteria for respondents' answers used the following formula: [11]

$$TCR = \frac{Rs/n}{100} \quad (2)$$

Where, TCR = Respondent's Achievement Level ; rs = average score ; n= Maximum Score, which is 5.

The interpretation of the TCR results is adjusted according to the criteria stated by Nazir [11] a distance interval from the lowest 0% to the highest 100%. In detail, the interpretation is as follows:

TABLE 2. TCR interpretation table

No.	Range Interval (%)	Interpretation
1	0-24	Very Bad
2	25-49.99	Bad
3	50-74.99	Good
4	75-100	Very Good

RESULT AND DISCUSSION

Trans Metro Pekanbaru Profile

Trans Metro Pekanbaru is one of the mass transportation provided through the Decree of the Minister of Transportation Number 111 of 2009, which includes Pekanbaru as one of the pilot cities for mass transportation in that year. Trans Metro Pekanbaru has an initial fleet of 20 buses serving 2 corridors until now, as many as 95 bus fleets [12] with 12 routes as shown in the table 3 below.

TABLE 3. Trans Metro Pekanbaru Operational Route Table

No.	Corridor	Route
1	1	Ramayana_Pandau
2	1A	Early Bros-Airport
3	2	BRPS-Kulim
4	3	Early Bros-UIN
5	4A	Ramayana-P.Tangor
6	4B	BRPS-Ramayana
7	4C	Mayor of Sudirman-Mayor of Tenayan
8	6	BRPS-Pandau
9	8A	Mayor-Std.Tassel
10	8B	Unilak-Palas Kingdom
11	9	BRPS-UIN
12	10	Ramayana-Unilak

Operational Performance and Perception

The data used in this study is secondary data from the Pekanbaru City Transportation Office. This was done because the research was conducted after covid 19 cases in Indonesia decreased, and there were limitations in research during the covid 19 pandemic, including limitations in field data collection. The parameters taken are Trans Metro Pekanbaru operational data. Based on standard rules imposed by the Ministry of Transportation of the Republic of Indonesia, the average seat occupancy for each urban bus public transportation should not be below 70 percent. This also applies to Trans Metro Pekanbaru, even though it is in the conditions of the Covid-19 pandemic. Based on the secondary data that has been obtained, the average seat occupancy is produced whose overall route is below 70 percent. In fact, some routes such as the Bandar Raya Payung Sekaki (BRPS) – State Islamic University (UIN), Awal Bros – Airport, and Unilak – Palas Raya routes, have an average seat occupancy below 10%. This means that there is a very significant decrease in the number of passengers using Trans Metro Pekanbaru during the pandemic. A decrease in passenger volume during the COVID-19 pandemic may result in a low seat occupancy value, which results in a significant disparity between the number of passengers utilising the Trans Metro Pekanbaru bus and the bus's passenger capacity during the aforementioned period. Furthermore, throughout all routes of the Trans Metro Pekanbaru public transportation system amidst the COVID-19 pandemic, the average headway value deviated by over

10 minutes from the Directorate General of Land Transportation in Indonesia's standard headway value under dynamic conditions. It can be said that the value of the headway during the COVID-19 pandemic was below standard. Regarding the operational routes amidst the pandemic, certain routes, including the Mayor of Sudirman-Mayor Tenayan, Bandar Raya Payung Sekaki (BRPS)-Universitas Islam Negeri (UIN), and Ramayana-Unilak routes, have accumulated a headway value exceeding 60 minutes. The reduction in the number of Trans Metro Pekanbaru buses in operation during the COVID-19 pandemic may result in a dearth of significant headway value. This reduction increases the duration between the first and last bus arrivals and departures. A policy pertaining to Trans Metro Pekanbaru public transport was implemented by the government, which involved a 35% reduction in the number of fleets in operation. Broadly speaking, the level of operational performance exhibited by Trans Metro Pekanbaru amidst the Covid-19 pandemic is detailed in Table 4.

TABLE 4. Average Value of Operational Performance During the COVID-19 Pandemic

No.	Corridor	Route	Seat occupancy (%)	Headway (Min)	Frequency (veh/hour)
1	1	Ramayana_Pandau	42	12.23	5
2	1A	Early Bros-Airport	6	51.52	1
3	2	BRPS-Kulim	28	23.57	5
4	3	Early Bros-UIN	25	15.33	4
5	4A	Ramayana-P.Tangor	30	21.02	3
6	4B	BRPS-Ramayana	23	31.28	2
7	4C	Mayor of Sudirman-Mayor of Tenayan	12	82.01	1
8	6	BRPS-Pandau	15	23.49	3
9	8A	Mayor-Std.Tassel	30	19.99	3
10	8B	Unilak-Palas Kingdom	2	59.03	1
11	9	BRPS-UIN	6	62.83	1
12	10	Ramayana-Unilak	10	62.83	1

Other parameters related to Trans Metro Pekanbaru services can also be seen from the parameters of travel frequency for each hour. Table 4 above also shows that the hourly Trans Metro Pekanbaru trip for all travel routes is in the range of 1 to 5 vehicles per hour. This affects the value of the travel headway, where koridore 1 and 2 have the highest travel frequency with 5 trips per hour. A reduction in the number of Trans Metro Pekanbaru buses in operation during the COVID-19 pandemic, which consequently decreased the number of vehicles operating in a single hour, may have contributed to both the occurrence of poor frequency values and headways. The findings from the data analysis of one hundred participants indicate that, on the whole, passengers hold favourable opinions regarding the quality of public transport services provided by Trans Metro Pekanbaru amidst the Covid-19 pandemic. The average score of 74.86% obtained from the respondents' evaluation serves as evidence for this.

Based on the results of the perception value of service performance during the Covid-19 pandemic, waiting times for public transportation and the need for it are categorized as unfavourable parameters. Because there is a need for less operational public transportation, there may be lengthy wait times, so these parameters are closely related. The evaluations of Trans Metro Pekanbaru's performance by passengers are shown in Table 5 below. This was done after the government issued a policy on the public transportation system, which resulted in a 35% decrease in the number of fleets operating on Trans Metro Pekanbaru. These findings demonstrate that Trans Metro Pekanbaru's services, which received a score of 74.86 out of 100, are still in good standing. Even with the difficulties brought on by the Covid-19 pandemic, Trans Metro Pekanbaru services continue to offer the same accessibility to public transportation routes, pricing, and seat availability. Furthermore given is comprehensive information about these routes. Enhancements to various services, like the Trans Metro Pekanbaru travel time, which is still considered excessively slow, could potentially improve this performance. Due to the public transportation's still excessively long travel time, people are still unable to transition from private to public transportation.

TABLE 5. Passenger Perception of Trans Metro Pekanbaru

No	Question	Responde Score Rate	Category
1	Appearance on public transport	85.25	Excellent
2	Seating comfort	78	Excellent
3	Public transport cleanliness	79.5	Excellent
4	Number of seats reserved	83.25	Excellent
5	Comfort temperature of air conditioning	75.75	Good
6	Travel time	68	Good
7	Fee Rates	84.75	Excellent
8	Public transport waiting time	49	Not Good
9	Public transport needs	48.75	Not Good
10	Clarity of public transport travel route information	83.5	Excellent
11	Courtesy of officers when speaking to passengers	74.5	Good
12	How drivers drive public transport	76.25	Excellent
13	A sense of security against crime	77.25	Excellent
14	Neatness of dressing on officers	78.5	Excellent
15	Officers are willing to lift excess passenger luggage	78.5	Excellent
16	Officer concerned for disabled, elderly, pregnant women.	77	Excellent
Average		74.86	Good

CONCLUSION

According to the preceding analysis and debate, this study finds that the Covid 19 epidemic has had a significant impact on the services provided by Trans Metro Pekanbaru. This impact can be observed in both the operational indicators and the assessment of passengers who use this public transportation. The operational statistics of the Trans Metro Pekanbaru bus service indicate that the seat occupancy of this conveyance is less than 70 percent. This has a significant negative impact on bus operations as it directly influences the current operational expenses. The term "70 peren" denotes the minimal figure set by the Indonesian Ministry of Transportation for the seat occupancy. Nevertheless, the field value indicates that the seat occupancy for the entire route is below 50 percent. Furthermore, the headway value in this bus transportation service is deemed inadequate, with a maximum allowable headway of 10 minutes. Nevertheless, the data from services provided during the epidemic indicate that the average delay for the entire journey exceeds 10 minutes. Additionally, there are other routes that have a headway value that is around 60 minutes. This is highly disadvantageous for travelers as it negatively impacts the waiting time required to utilize this public transit. Passengers generally perceive the quality of Trans Metro Pekanbaru's public transport services during the COVID-19 pandemic as favorable. This is evidenced by the mean rating of 74.86 out of 100 points obtained from the participants.

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