The Influence Of Service Quality And Price Perception On The Loyalty Of Mass Rapid Transit (Mrt) Jakarta Passengers Mediated By Passenger Satisfaction

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Abstract:

In metropolitan cities like Jakarta, the presence of public transportation can help alleviate traffic congestion. However, the majority of the population in Jakarta and its surrounding areas still commute using private vehicles. To address this issue, it is essential to develop mass transportation that provides efficient services and meets the community's needs. One such solution is the Mass Rapid Transit (MRT), which has been operational in DKI Jakarta since 2019. This research aims to investigate the influence of service quality and price perception on the loyalty of MRT Jakarta passengers through passenger satisfaction. The research adopts a descriptive quantitative approach. A survey method is employed by distributing closed-ended questionnaires, resulting in 200 respondents. Descriptive statistical analysis and modeling are conducted using SmartPLS 4.0 software. The research findings indicate that service quality and price perception have a positive impact on passenger loyalty. Passenger satisfaction also positively influences passenger loyalty. Additionally, service quality positively affects passenger satisfaction, and price perception positively influences passenger satisfaction. Overall, service quality and price perception have a positive impact on passenger loyalty through passenger satisfaction.

Background:In 2019, the Jakarta Provincial Government, through PT MRT Jakarta (Perseroda), launched a rail-based mass transportation system called MRT, now known as an integrated rapid mode, to meet the evolving transportation needs of the city and support various economic sectors. Aligned with the government's policy to increase public transportation usage, there is a need for a high-quality mass transit system that encourages private vehicle users to shift to public transportation. MRT Jakarta is expected to become a high-quality mass transit system when compared to other mass transportation options in Jakarta, such as the Jabodetabek Commuter Line (KRL), Transjakarta Bus Rapid Transit (BRT), or even the Jakarta Light Rail Transit (LRT).

In the passenger count report of MRT Jakarta throughout the year 2023, there were several months with a decrease in the target number of passengers. The target adjustment in April decreased by 2% compared to March, which reached 10%. Then, in May, there was another decrease, reaching -1% from the previous 2% in April. Although there was an increase in June by 11%, in the subsequent months, there was a decline again. This is evident in July (3%), October (0%), and December (-1%). This serves as evidence that the loyalty of MRT Jakarta passengers has not yet reached its maximum potential. Based on several previous studies, factors or variables that can influence customer or passenger loyalty include price perception, service quality, and passenger satisfaction

Materials and Methods: This research uses quantitative methods to analyze the relationship or influence between several variables, or it can be called multivariate analysis. Data analysis is divided into several parts, namely descriptive statistical analysis, measurement model analysis (outer model) and structural model analysis (structural model). Descriptive statistical analysis aims to determine the characteristics of respondents by describing data in variables. For measurement models and structural models using Structural Equation Modeling - Partial Least Square (SEM PLS) using Smart-PLS 4.0 software.

Results: Based on the findings of the study, service quality is the variable that most affects the loyalty of MRT Jakarta passengers. The results of the study conveyed a path coefficient value of 0.326 (<0.05) proving that service quality has a positive and significant influence on passenger loyalty while stating that service quality is still an important factor in terms of MRT Jakarta service operations and maintaining MRT Jakarta passenger loyalty.

Conclusion:Service quality, price perception and passenger satisfaction have a positive and significant impact on the loyalty of MRT Jakarta passengers. Service quality and price perception has a positive and significant impact on passenger satisfaction. Service quality and price perception has a positive and significant impact on the loyalty of MRT Jakarta passengers through passenger satisfaction.

I. Introduction

The transportation system is a fundamental element of infrastructure that influences the patterns of urban development[1]. The development of transportation and land use planning plays a crucial role in government policies and programs. While infrastructure development in the transportation sector may incur high costs, the involvement of the community and the private sector in the improvement or restructuring of the transportation field becomes an urgent necessity. Transportation in the current era has become an essential basic need, especially among urban communities[2]. The function of transportation in urban activities has a crucial role that affects various aspects or sectors of life. In general, people heavily rely on public transportation as a means of supporting their daily activities to meet their needs. The phenomenon of public transportation is related to the principles of modernization and capitalism. Solving public transportation issues in major cities cannot be achieved solely through technical solutions[3]. The shift in societal behavior that arises with the introduction of mass transportation, such as bus rapid transit or trains, can be interpreted as a significant change in people's transportation preferences. For transportation service users, the existence of mass transit reflects changes in the population's mobility patterns and their transportation behavior.

Modal transportation transition occurs when passengers switch from one mode of transportation to another or switch between two similar transportation services. If the intermodal transition can be made easier, affordable, fast, efficient, and comfortable, the integration and flexibility of the entire transportation network will experience rapid development. People choose to switch modes when there are no direct, affordable, and comfortable routes or transportation service options for their journey, or by making a modal transition, their journey can become faster and more convenient. Public transportation modes in urban environments are designed to provide the public with various schedule options[4]. This is due to the absence or lack of public transportation that provides direct services, making modal transition a continued necessity for the community. Public transportation is one of the transportations means collectively used by the community by paying a specific fare. Public transportation becomes an essential necessity for the community in carrying out mobility or movement. The growth of the population in an area plays a crucial role in the activities of movement and the economy of the community [5]. The need for the availability of transportation facilities and infrastructure is increasing. Conceptually, the provision of public transportation serves two different interests: the service users (demand) and the operators (supply). On one hand, demand receives a good level of service, while on the other hand, the provision gains significant benefits.

Public transportation plays a crucial role in supporting community mobility and reducing traffic congestion due to its significant carrying capacity. Furthermore, the efficient use of public transportation can diminish reliance on private vehicles. However, all these benefits can only be realized through effective and proper handling and management. The public transportation situation in several developing countries has not yet reached adequate standards due to several issues and obstacles. Factors such as subsidies in the transportation sector, insufficient support for transportation infrastructure and facilities, a shortage of human resources, and the discipline levels of vehicle operators, passengers, and road users pose significant challenges [5]. Additionally, the comfort and security levels for the public using public transportation services are still not guaranteed. This situation can lead to a low level of public transportation usage, which, in turn, can disrupt the overall urban system, impacting both the fulfillment of community mobility and the quality of life in the city.

To address the issues, it is necessary to develop public transportation or mass transit with well-connected and integrated networks, especially in the Province of DKI Jakarta and its surrounding cities. The development of safe, comfortable, punctual, and well-scheduled mass transportation can attract public interest in reducing the use of private vehicles for daily activities[6]. This, in turn, can help alleviate traffic congestion.For the government, the implementation of public transportation involves the government's role in designing transportation policies, encompassing technical, social, and political aspects such as land acquisition, spatial planning, capital financing, and so forth. This process involves government interaction with capital forces. To build a sustainable public transportation system, revitalization is needed in all aspects related to public transportation[5]. The government plays a key role in the planning and implementation of public transportation policies. Various policies impacting transportation issues need to be synchronized to operate harmoniously, such as programs that promote the use of mass transit and initiatives to reduce single-passenger car travel. The importance of improving transportation integration and land utilization planning needs to be considered.

One form of mass transportation that has a large carrying capacity, is fast, safe, scheduled, energy-efficient, environmentally friendly, and requires relatively little land is the train. The Jakarta Provincial Government is currently developing rail transportation, especially urban rail, with routes passing through economic activity centers, aiming to shift private vehicle users to trains. Urban rail is expected to become the backbone of transportation in the Jakarta Province. Urban rail is organized to facilitate the mass movement of

people safely, securely, comfortably, quickly, on time, in an orderly, organized, and efficient manner. One urban rail system currently being developed in the Jakarta Province is the Mass Rapid Transit (MRT)[7].

In 2019, the Jakarta Provincial Government, through PT MRT Jakarta (Perseroda), launched a rail-based mass transportation system called MRT, now known as an integrated rapid mode, to meet the evolving transportation needs of the city and support various economic sectors. Aligned with the government's policy to increase public transportation usage, there is a need for a high-quality mass transit system that encourages private vehicle users to shift to public transportation. MRT Jakarta is expected to become a high-quality mass transit system when compared to other mass transportation options in Jakarta, such as the Jabodetabek Commuter Line (KRL), Transjakarta Bus Rapid Transit (BRT), or even the Jakarta Light Rail Transit (LRT).

In the passenger count report of MRT Jakarta throughout the year 2023, there were several months with a decrease in the target number of passengers. As seen in Table no 1, the target adjustment in April decreased by 2% compared to March, which reached 10%. Then, in May, there was another decrease, reaching -1% from the previous 2% in April. Although there was an increase in June by 11%, in the subsequent months, there was a decline again. This is evident in July (3%), October (0%), and December (-1%). This serves as evidence that the loyalty of MRT Jakarta passengers has not yet reached its maximum potential.

Table no 1 Daily average passenger recapitulation for MRT
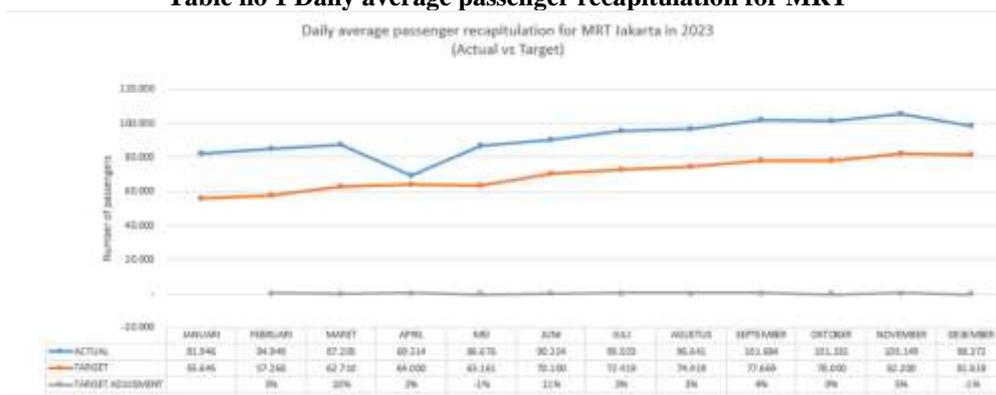
Based on several previous studies, factors or variables that can influence customer or passenger loyalty include price perception, service quality, and passenger satisfaction.

II. Material And Methods

This research uses a quantitative approach method. Several stages in conducting the research include the following:

Study Design: Quantitative

Study Location: MRT Jakarta

Study Duration: November 2023 - December 2023.

Sample size: 185respondents.

Sample size calculation: The sample size for this study is: Sample = (Number of question indicators) x 5 = (37) x 5 = 185 MRT Jakarta passenger respondents.

Subjects & selection method: A sample is a representative portion of data from a certain population in an area that is used for research purposes. If the population has a large scale and the author is not possible to study it all, perhaps due to constraints such as limited funds, human resources, and time, the author can use a sample that represents part of the population. What is learned from the sample, the conclusion will be applicable to the population. For this reason, the sample taken from the population must be truly representative (representative). Based on the explanation above, to determine the sample of the Jakarta MRT passenger population, the author uses probability sampling techniques with a simple random sampling system, namely taking random samples from a predetermined population.

Inclusion criteria:
1. MRT Jakarta passengers

2. Either sex
3. Aged ≥ 18 years

Procedure methodology

This research uses a quantitative approach method. Several stages in conducting the research include the following:

1) The preparation stage, starting with conducting a literature study, namely collecting literature and information related to the research title, then continuing with problem identification, problem limitation, and problem formulation in research, determining the objectives and benefits of research. The next step is to study relevant theories and literature reviews from previous research as a basis for conducting research related to the research title. Based on the formulation of the problem, theories and literature review from previous research, the author will determine the variables and formulate hypotheses to try to answer (provide solutions) during research.

2) The implementation stage, carried out by collecting data using the questionnaire method. The aim is to obtain supporting data in accordance with the research variables and indicators.

3) The questionnaire data processing stage, namely by processing and analyzing all the data that has been collected. Data analysis was carried out descriptively and modeling multiple linear regression analysis using SmartPLS 4 tools.

4) The explanation stage, namely by explaining / discussing the results of data analysis. The relationship between variables obtained from data analysis is further discussed, including an explanation of the influence of each variable and also compared with theory or previous research to sharpen the results of the study.

5) The conclusion stage, namely the author provides conclusions and recommendations and policy implications of the research results. The conclusion is the result of hypothesis testing whether the hypothesis is accepted or rejected. Recommendations are useful suggestions addressed to relevant parties based on the conclusions and discussion of the research results. Policy implications explain the consequences if the relevant parties do not implement the policy according to the conclusions and recommendations.

Data collection in this study was carried out online through Google Form media in data collection using a questionnaire method. The research time was carried out for two months, namely in November 2023 - December 2023.

Statistical analysis

This research uses quantitative methods to analyze the relationship or influence between several variables, or it can be called multivariate analysis. The definition of multivariate analysis is the analysis of several variables in one relationship or a series of relationships. Data analysis is divided into several parts, namely descriptive statistical analysis, measurement model analysis (outer model) and structural model analysis (structural model). Descriptive statistical analysis aims to determine the characteristics of respondents by describing data in variables. For measurement models and structural models using Structural Equation Modeling - Partial Least Square (SEM PLS) using Smart-PLS 4.0 software. According to [8], the measurement model represents how indicators represent their variables, while the structural model shows how constructs/variables are related to one another.

III. Result

a. Validity Test Analysis

The validity test in this study was carried out using Smart-PLS 4.0 software which consists of convergent validity and discriminant validity. Convergent validity can be determined based on the loading factor, in this study the loading factor value on all statement indicators is above 0.5 so that it meets the minimum requirements[9]. Therefore, it can be concluded that all indicators have met the convergent validity criteria, because the indicators for all variables have not been eliminated from the model.

Table no 1 Convergent validity

Variable	Indicator		Loading factor	Description
Service Quality (X1)	X1a1	MRT Jakarta accessible transportation	0.722	Valid
	X1a2	MRT Jakarta is reliable	0.790	Valid
	X1a3	MRT Jakarta on time	0.798	Valid
	X1a4	MRT Jakarta fast in service	0.772	Valid
	X1b1	MRT Jakarta officers help passengers in need	0.781	Valid
	X1b2	MRT Jakarta is quick to respond to passenger complaints	0.752	Valid
	X1b3	Jakarta MRT officers prioritize handling passenger complaints over other work	0.700	Valid

Variable		Indicator	*Loading factor*	Description
	X1b4	MRT Jakarta service officers show empathy to passengers' problems	0.677	Valid
	X1b5	MRT Jakarta translate can provide all kinds of information about MRT precisely	0.818	Valid
	X1c1	I can rely on MRT Jakarta staff when I have a complaint	0.721	Valid
	X1c2	MRT Jakarta service officers carry out the SOP well	0.753	Valid
	X1c3	MRT Jakarta service officers are professional in serving passengers	0.799	Valid
	X1c4	MRT Jakarta can guarantee passenger comfort	0.692	Valid
	X1d1	MRT Jakarta facilitates passengers with disabilities	0.729	Valid
	X1d2	MRT Jakarta operating hours are adjusted to passenger activities	0.683	Valid
	X1d3	MRT Jakarta understands passenger needs	0.707	Valid
	X1d4	MRT Jakarta continues to improve services	0.878	Valid
Price Perception (X2)	X2a1	MRT Jakarta ticket prices are affordable for me	0.831	Valid
	X2b1	MRT Jakarta ticket prices are in accordance with the facilities obtained	0.819	Valid
	X2c1	MRT Jakarta ticket prices are competitive with other public transportation	0.864	Valid
	X2d1	MRT Jakarta ticket prices are in line with the service benefits provided	0.850	Valid
Passenger Satisfaction (Z)	Za1	The services provided by the MRT Jakarta are in line with my expectations	0.807	Valid
	Zb1	I give a good rating to the overall service provided by the MRT Jakarta.	0.830	Valid
	Zc1	Overall, I am happy with the service provided by the MRT Jakarta.	0.821	Valid
	Zd1	I am satisfied with my decision to choose the MRT Jakarta as my mode of transportation.	0.827	Valid
	Ze1	MRT Jakarta meets my transportation needs	0.790	Valid
Passenger Loyalty (Y)	Ya1	I will always use the MRT Jakarta when I want to use public transportation.	0.871	Valid
	Ya2	I will continue to use the MRT Jakarta in the future	0.830	Valid
	Yb1	At the mention of the name "MRT Jakarta" I think of fun things	0.871	Valid
	Yb2	MRT Jakarta left a positive impression on me	0.853	Valid
	Yc1	I would recommend the MRT Jakarta to my relatives or family if they want to use public transportation	0.722	Valid

In addition to loading factors, convergent validity can also be seen based on the Average Variance Extracted (AVE) value. The acceptable rule of thumb for AVE according to [9] is 0.50 or higher. Based on analysis through SmartPLS, all AVEs of each variable are above 0.5 Table 3, so the convergent validity of all variables in this study has been fulfilled. One method to see discriminant validity is through cross loading, namely with the cross loading value of a construct indicator greater than the cross loading value of the construct on other constructs.

Table no 2 Cross loading

Indicator	Passenger Satisfaction (Z)	Service Quality (X₁)	Passenger Loyalty (Y)	Price Perception (X₂)
X1a1	0.650	0.694	0.652	0.608
X1a2	0.649	0.687	0.583	0.547
X1a3	0.590	0.632	0.470	0.484
X1a4	0.612	0.704	0.484	0.511
X1b1	0.621	0.719	0.518	0.574
X1b2	0.586	0.717	0.551	0.533
X1b3	0.555	0.701	0.627	0.587
X1b4	0.609	0.722	0.621	0.533
X1b5	0.682	0.790	0.690	0.672
X1c1	0.650	0.798	0.680	0.685
X1c2	0.604	0.772	0.653	0.655
X1c3	0.652	0.781	0.644	0.676
X1c4	0.643	0.752	0.689	0.644
X1d1	0.625	0.700	0.617	0.618
X1d2	0.626	0.677	0.547	0.526

Indicator	Passenger Satisfaction (Z)	Service Quality (X₁)	Passenger Loyalty (Y)	Price Perception (X₂)
X1d3	0.719	0.818	0.756	0.673
X1d4	0.661	0.721	0.567	0.583
X1d5	0.661	0.753	0.657	0.667
X1e1	0.719	0.799	0.699	0.682
X1e2	0.552	0.692	0.545	0.560
X1e3	0.641	0.729	0.590	0.626
X1e4	0.622	0.683	0.572	0.599
X1e5	0.634	0.707	0.621	0.606
X2a1	0.648	0.682	0.667	0.878
X2b1	0.718	0.733	0.698	0.831
X2c1	0.602	0.652	0.675	0.819
X2d1	0.704	0.739	0.723	0.864
Ya1	0.666	0.682	0.790	0.650
Ya2	0.654	0.672	0.871	0.716
Yb1	0.692	0.742	0.830	0.684
Yb2	0.731	0.739	0.871	0.684
Yc1	0.728	0.712	0.853	0.705
Za1	0.850	0.758	0.641	0.639
Zb1	0.807	0.705	0.580	0.592
Zc1	0.830	0.709	0.709	0.671
Zd1	0.821	0.696	0.770	0.685
Ze1	0.827	0.730	0.693	0.673

In Table 3, it can be seen that the cross loading value of each indicator on the construct variable (in the shaded part) is greater than the loading value on other construct variables for each indicator. This shows that the indicators have met the discriminant validity requirements.

b. Reliability Calculation Analysis

Reliability calculation is one of the outer model analysis which aims to prove the accuracy, consistency and accuracy of the instrument in measuring a variable. According to [10] the most used reliability measure is internal consistent reliability. Examples are Cronbach's Alpha and Composite Reliability. All reliabilities exceeding 0.70 indicate adequate reliability. In this study, the overall Cronbach's Alpha and Composite Reliability (rho_c) values are above 0.7 and consistently the Composite Reliability (rho_c) value is greater than Cronbach's Alpha, thus indicating adequate reliability Table 4.

Table no 3 AVE value

Variable	*Cronbach's alpha*	*Composite reliability (rho_a)*	*Composite reliability (rho_c)*	*Average variance extracted (AVE)*
X₁	0.957	0.958	0.961	0.539
X₂	0.870	0.871	0.911	0.719
Y	0.898	0.899	0.925	0.712
Z	0.885	0.886	0.915	0.684

c. Structural Model Analysis (Inner Model)

This analysis is an inner model analysis, namely a model that connects between constructs (latent variables) that are built. The inner model consists of an assessment of the Collinearity Statistic, R-Square, Effect Size (f2), Q-Square (Q2), and the significance of the path coefficient. The first step in assessing the structural model is to check the predictor constructs for collinearity or Collinearity Statistic using the Variance Inflation Factor (VIF) value. According to [9] the VIF value must be less than 5, because if it is more than 5, it indicates that there is collinearity between constructs. In this study, the inner VIF value of each variable is obtained below 5, so there is no multicollinearity problem Table 5.

Table no 4 CollinearityStatistic – Inner Model

	X₁	X₂	Y	Z
X₁			4.839	
X₂			3.539	
Y				
Z	3.263	3.263	3.953	

The next step is to determine the coefficient of determination (R^2) which aims to measure how much variation in the dependent variable can be explained by all the independent variables. According to [10] R2 is a measure of the proportion of variance in endogenous constructs explained by predictor constructs. The value of R2 ranges from 0 to 1, with a value of 0 indicating no relationship and a value of 1 indicating a perfect relationship. R2 values of 0.75, 0.50 and 0.25 indicate that the model is strong, moderate and weak.

In Table 4.9, the value of R2 based on the results of the analysis, the value of R^2 jointly or simultaneously influencing the service quality variables (X1) and price perceptions (X2) on passenger loyalty (Y) is 0.770 with an adjusted R-Square value of 0.774. So, it can be explained that all exogenous latent variables (X1 and X2) simultaneously affect Y (passenger loyalty) by 0.774 or 77.4%. Because this value is above 0.75, it can be stated that the effect of service quality (X1) and price perception (X2) on passenger loyalty (Y) is strong.

Furthermore, the R^2 value of the joint or simultaneous influence of service quality variables (X1) and price perceptions (X2) on passenger satisfaction (Z) is 0.747 with an adjusted R-Square value of 0.744. So it can be explained that all exogenous latent variables (X1 and X2) simultaneously affect Z (passenger satisfaction) by 0.744 or 74.4%. Because this value is still below 0.75, it can be stated that the effect of service quality (X1) and price perception (X2) on passenger satisfaction (Z) is moderate.

Table no 5 R-Square (R^2)

	R-square	R-square adjusted
Passenger Loyalty (Y)	0.774	0.770
Passenger Satisfaction (Z)	0.747	0.744

The next assessment is to look at the Effect Size (f^2) or f-Square to assess the magnitude of the influence between variables. According to [10], the f-Square value of 0.02 as small, 0.15 as medium and 0.35 as large. Values less than 0.02 can be ignored or considered to have no effect. In Table 7, it can be seen that there is no f-Square value below 0.02, which indicates that the influence between variables can be categorized as a large influence.

Table no 6 f-Square (f^2)

	X_1	X_2	Y	Z
X_1			0.097	0.483
X_2			0.111	0.085
Y				
Z			0.109	

The next assessment criterion is cross-validated redundancy or Q-Square (Q^2), which is used to assess the predictive power of the model, also known as predictive relevance. According to [10], a Q^2 value greater than 0 for a particular endogenous construct indicates that the path model predictions are accurate and acceptable for that construct. At the same time, values less than 0 indicate a lack of predictive relevance. Determination of the Q^2 value in SmartPLS 4.0 using PLS Predict with the value obtained above 0 Table 8 which means it indicates that the path model prediction is accurate and acceptable for that variable, in other words, the independent variable used to predict the dependent variable is correct.

Table no 7 Q-Square (Q2)

	Q² predict
Passenger Loyalty (Y)	0.740
Passenger Satisfaction (Z)	0.732

The last criterion involves assessing the size and significance of the path coefficient. This assessment is the basis for hypothesis testing, which is the value of the path coefficient or the magnitude of the relationship / influence of latent variables. The assessment is analyzed using a bootstrapping procedure to obtain significance. In addition, bootstrapping is also used to see t-statistics and p-value as part of hypothesis testing. According to [36], the bootstrapping process uses standard errors to calculate t and p values for the path coefficients. The path coefficient is significant at the 0.05 level and if 0 does not fall within the 95% confidence interval (bias-corrected and accelerated). According to [8], in terms of relevance, path coefficients are typically between -1 to +1, with coefficients closer to +1 representing a strong positive relationship, and those closer to -1 indicating a

strong negative relationship (note that values below -1 and above +1 can technically occur, for example, when collinearity is at a critical level).

By using bootstrapping, the overall result of the path coefficient is positive[11]. This shows that if the greater the path coefficient value on one independent variable on the dependent variable, the stronger the influence between the independent variables on the dependent variable. Regarding significance, it can be seen in Table 9 that almost all path coefficients are in a significant positive relationship / effect because the path coefficient> 0.05 and 0 is not included in the 95% confidence interval.

Table no 8 *Path Coefficient, Confidence Interval Bias Corrected*

Model	*Original sample* (O)	*Sample mean* (M)	*Bias*	2.5%	97.5%
Z -> Y	0.312	0.318	0.007	0.111	0.500
X₁ -> Z	0.632	0.630	-0.001	0.476	0.787
X₁ -> Y	0.326	0.328	0.002	0.137	0.536
X₂ -> Z	0.264	0.268	0.004	0.083	0.433
X₂ -> Y	0.298	0.290	-0.008	0.118	0.469

d. Hypothesis Test Analysis

Hypothesis testing is carried out to prove whether the hypothesis that has been prepared is accepted or rejected. This test looks at whether there is an influence or relationship between the variables being analyzed. Hypothesis testing in SEM-PLS uses the bootstrapping method. To see whether the hypothesis is accepted or rejected, including by looking at the t-statistic value and p-value. For the probability value, the p-value with 5% alpha is less than 0.05. The t-table value for alpha 5% is 1.96. So the criteria for accepting the hypothesis is when the t-statistic> t-table.

Table no 9 Path coefficient, t-Statistics and p values

Model	*Original sample* (O)	*Sample mean* (M)	*Standard deviation* (STDEV)	*T statistics* (|O/STDEV|)	*p values*
Z -> Y	0.312	0.318	0.099	3.147	0.002
X₁ -> Z	0.632	0.630	0.079	7.983	0.000
X₁ -> Y	0.326	0.328	0.103	3.178	0.001
X₂ -> Z	0.264	0.268	0.090	2.946	0.003
X₂ -> Y	0.298	0.290	0.089	3.340	0.001

In this study, there are 7 hypotheses consisting of 5 direct influence hypotheses and 2 indirect influence hypotheses. The entire hypothesis will be tested by paying attention to the path coefficient value, t-statistic and p value to see how strong the influence of the independent variable is on the dependent variable, besides that it can also be seen from the largest to the smallest influence.

a. Direct Effect Testing

The direct effect between variables consists of 5 hypothesis. The results of hypothesis testing for direct effects between variables can be seen in Table 4.14.

Table no 10 Direct Effect Test Results Path Coefficient

Model	*Original sample* (O)	*t statistics*	*p values*
Service Quality -> Passenger Loyalty (X₁ -> Y)	0.326	3.178	0.001
Service Quality -> Passenger Satisfaction (X₁ -> Z)	0.632	7.983	0.000
Price Perception -> Passenger Loyalty (X₂ -> Y)	0.298	3.340	0.001
Price Perception -> Passenger Satisfaction (X₂ -> Z)	0.264	2.946	0.003
Passenger Satisfaction -> Passenger Loyalty (Z -> Y)	0.312	3.147	0.002

Based on Table 11, it can be seen that the greatest influence is on the effect of service quality variables on passenger satisfaction (t-statistic = 7.983), then the second is the effect of price perceptions on passenger loyalty (t-statistic = 3.340), the third is the effect of service quality on passenger loyalty (t-statistic = 3.178), the fourth is passenger satisfaction on passenger loyalty (t-statistic = 3.147) and the last is price perception on passenger satisfaction (t-statistic = 2.946). For more details regarding hypothesis testing, it can be conveyed as follows:

1) The Effect of Service Quality on Passenger Loyalty
   The hypothesis (H1) is that there is a positive effect of service quality on passenger satisfaction. Based on Table 4.14, the p value is 0.001 and has a value <0.05, it can be concluded that hypothesis H1 is accepted.
2) The Effect of Price Perception on Passenger Loyalty
   Hypothesis (H2) is that there is a positive effect of price perception on passenger loyalty. Based on Table 4.14, the p value is 0.001 and has a value <0.05, it can be concluded that hypothesis H2 can be accepted. This is in line with research [12] which states that price perceptions have a positive and significant effect on the loyalty of Lion Air airline passengers at KalimaruBerau Airport. The results of this study differ from research conducted by [13] where the price perception variable has no significant effect on passenger satisfaction and loyalty.
3) The Effect of Passenger Satisfaction on Passenger Loyalty
   Hypothesis (H3) is that there is a positive effect of passenger satisfaction on passenger loyalty. Based on Table 4.14, the p value is 0.002 and is <0.05. Based on these results it can be concluded that the third hypothesis can be accepted. This is in line with research [14] which states that customer satisfaction has a positive and significant effect on customer loyalty to a product.
4) Effect of Service Quality on Passenger Satisfaction
   The hypothesis (H4) is that there is a positive effect of service quality on passenger satisfaction. Based on Table 4.14, the p value is 0.000 and has a value <0.05. Based on these results it can be concluded that hypothesis H4 can be accepted. These results are in accordance with research [15], [16], [17] which state that service quality has a positive and significant effect on passenger satisfaction and loyalty.
5) The Effect of Price Perception on Passenger Satisfaction
   The hypothesis (H5) is that there is a positive effect of price perception on passenger satisfaction. Based on Table 4.14, the p value is 0.003 and is <0.05. Based on these results it can be concluded that hypothesis H5 can be accepted.

b. Testing the Indirect Effect
   The results of hypothesis testing for indirect effects between variables can be seen in Table 12. The greater influence is on the effect of service quality variables on passenger loyalty through passenger satisfaction (t-statistic = 2.884), then the effect of price perceptions on passenger loyalty through passenger satisfaction (t-statistic = 2.102).

Table no 11 Testing results of indirect influence

Model	*Original sample* (O)	*t statistics*	*p values*
Service Quality -> Passenger Satisfaction -> Passenger Loyalty (X_1 -> Z -> Y)	0.197	2.884	0.004
Price Perception -> Passenger Satisfaction -> Passenger Loyalty (X_2 -> Z -> Y)	0.082	2.102	0.036

1) The Effect of Service Quality on Passenger Loyalty through Passenger Satisfaction
   Hypothesis (H6) is that there is a positive effect of service quality on passenger loyalty through passenger satisfaction. Based on Table 4.16, the p value is 0.004 and is <0.05. Based on testing, hypothesis H6 can be accepted. The results of this study are in line with research conducted by [18] which also states that passenger loyalty can be positively influenced by passenger satisfaction.
2) The Effect of Price Perception on Passenger Loyalty through Passenger Satisfaction
   The hypothesis (H7) is that there is a positive effect of price perception on passenger loyalty through passenger satisfaction. Based on Table 4.16, the p value is 0.036 and has a value> 0.05. Based on the test results, hypothesis H7 can be accepted. This is in line with research [12] which states that price perception has a positive and significant effect on the loyalty of Lion Air airline passengers at KalimaruBerau Airport.

IV. Discussion

Based on the findings of the study, service quality is the variable that most affects the loyalty of MRT Jakarta passengers. The results of the study conveyed a path coefficient value of 0.326 (<0.05) proving that service quality has a positive and significant influence on passenger loyalty while stating that service quality is still an important factor in terms of MRT Jakarta service operations and maintaining MRT Jakarta passenger loyalty.

In this research, it is conveyed that service quality has a positive and significant impact on passenger satisfaction. This can be interpreted as the improvement in the service quality of MRT Jakarta being associated with an increase in perceived value, meaning that MRT Jakarta passengers feel they benefit from a service that is of high quality and worth the ticket cost. These findings align with previous studies [15], [19], which state that service quality has a positive and significant influence on passenger satisfaction and loyalty.

In line with service quality, the next finding is that price perception has a significant impact on the loyalty of MRT Jakarta passengers. This indicates that currently, price perception is one of the issues for MRT Jakarta passengers in enhancing their loyalty. This is consistent with the study [12] stating that price perception has a positive and significant influence on the loyalty of Lion Air passengers at KalimaruBerau Airport.

The research results, indicating that passenger satisfaction has a positive and significant impact on the loyalty of MRT Jakarta passengers, prove that for MRT Jakarta passengers, loyalty is formed when passenger satisfaction is achieved. In a study [14], it is conveyed that customer satisfaction has a positive and significant influence on customer loyalty to a product.

The presence of the customer satisfaction variable can serve as an intervening variable for the quality of service and price perception on passenger loyalty[20]. This is certainly related to the need for PT. MRT Jakarta (Perseroda) to provide MRT services with good quality so that MRT Jakarta passengers feel they are benefiting adequately from the quality of service received compared to the ticket price, thus leading to passenger satisfaction. Research conducted [18] supports this finding, also stating that customer satisfaction can positively mediate the influence of service quality on customer loyalty.

The last thing that needs attention is the need for improvement in service quality, as this variable has been proven in several studies to be one of the most influential variables in passenger satisfaction and loyalty. This is to ensure that in the future, the quality of MRT Jakarta's services can be maintained and even increased, so that passenger satisfaction remains high and can foster passenger loyalty.

V. Conclusion

Based on the analysis of data and the discussion of research findings, it can be generally concluded that:

1. Service quality has a positive and significant impact on the loyalty of MRT Jakarta passengers. This simultaneously indicates that service quality remains a crucial factor in the operational aspects of MRT Jakarta services, contributing to the enhancement of passenger loyalty.
2. Price perception has a positive and significant impact on the loyalty of MRT Jakarta passengers. Passengers' perceptions of the ticket prices for MRT Jakarta have a significant influence on loyalty. If passengers have a positive perception of MRT ticket prices, it will lead to passenger loyalty. Conversely, if passengers have a negative perception, they are likely to discontinue using MRT Jakarta services.
3. Passenger satisfaction has a positive and significant impact on the loyalty of MRT Jakarta passengers. The research results indicate that when MRT Jakarta passengers experience satisfaction with the services provided by MRT Jakarta, it leads to the emergence of loyalty among MRT Jakarta passengers.
4. The service quality of MRT Jakarta has a positive and significant impact on passenger satisfaction. This can be interpreted as the higher the service quality of MRT Jakarta, the higher the satisfaction experienced by passengers. This means that MRT Jakarta passengers perceive benefits from a service that is of high quality and commensurate with the ticket price paid.
5. Price perception has a positive and significant impact on passenger satisfaction. This implies that it is crucial for PT. MRT Jakarta (Perseroda) to provide ticket prices that are affordable for passengers, allowing them to enjoy good services from MRT Jakarta at reasonable ticket prices.
6. Service quality has a positive and significant impact on the loyalty of MRT Jakarta passengers through passenger satisfaction. This means that PT. MRT Jakarta (Perseroda) needs to provide MRT services with good quality, ensuring that MRT Jakarta passengers perceive benefits commensurate with the quality of service received compared to the ticket price, thereby leading to passenger satisfaction.
7. Price perception has a positive and significant impact on the loyalty of MRT Jakarta passengers through passenger satisfaction. This implies that it is crucial for PT. MRT Jakarta (Perseroda) to provide ticket prices that are affordable for passengers, allowing them to enjoy good services from MRT Jakarta at reasonable ticket prices. Consequently, passengers can experience satisfaction with the provided services, leading to passenger loyalty to MRT Jakarta.

8. The research results indicate that the variable with the strongest influence on the loyalty of MRT Jakarta passengers is X2a1 (Price Perception) with a loading factor of 0.878. Meanwhile, the variable with the weakest influence is X1a3 (Service Quality) with a loading factor of 0.632.

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