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THE EFFECT OF SERVICE QUALITY, SERVICE RECOVERY, AND BRAND IMAGE ON RIDERSHIP LOYALTY MEDIATED BY RIDER SATISFACTION (STUDY ON MRT JAKARTA PASSENGERS)

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ABSTRACT

This study aims to determine the effect of service quality, service recovery, and brand image on ridership loyalty through rider satisfaction among MRT Jakarta users. The analytical technique used in this research was descriptive quantitative analysis with data analysis techniques using SmartPLS software version 3.2.9. Data was collected by distributing questionnaires via google form to 125 respondents. Data testing included measurement models (outer models), structural models (inner models), and mediation tests. The results show that service quality has a positive and significant effect on rider satisfaction, Service recovery has a positive and significant effect on rider satisfaction and, brand image has a positive and significant effect on rider satisfaction. Meanwhile, rider satisfaction has a positive and significant effect on ridership loyalty and, service quality has a positive and significant effect on ridership loyalty, Service recovery has a positive and significant effect on ridership loyalty, while the brand image has a positive and significant effect on ridership loyalty. Furthermore, service quality has indirect influence on ridership loyalty through rider satisfaction, service recovery has indirect effect on ridership loyalty through rider satisfaction, as well as the brand image has a direct effect on ridership loyalty through rider satisfaction.

Keywords*: Brand Image, Ridership Loyalty, Rider Satisfaction, Service Quality.*

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1. Introduction

Transportation is the need for the most primary means for various activities. Transportation has meaning as the movement of goods or people from the place of origin to the destination (Shariff *et al.*, 2016). Along with the development and construction of transportation infrastructure, the need for the use of transportation develops into several modes such as; land, sea, air, and even rail. The use of trains is one example of transportation that utilizes rail and is a solution to transport passengers in a short time and in large quantities (mass). People who live in densely populated areas, especially in urban areas, need transportation facilities and infrastructure to support their mobilization needs. Urban trains such as MRT (Mass Rapid Transit) is a solution

to transportation problems in big cities that have large-scale residents such as DKI and the surrounding buffer areas (agglomeration).

The increase of transportations users shows public confidence in the Jakarta MRT service as a transit-based public transportation service mode. So that in its operation, MRT Jakarta needs to improve services in order to be able to maintain passenger loyalty. One of the recent incidents experienced by the Jakarta MRT transportation service is a power technical problem. This incident was handled, before finally a similar disturbance occurred after a while. From this incident, the operator of the Jakarta MRT transportation service provider needs to make efforts to restore and develop services. From this incident, PT. MRT Jakarta needs to improve its services to mitigate all forms of similar disturbances so that they do not occur in the future. Mitigation will be a preventive action to overcome the problem. One of the mitigation efforts that need to be implemented is in the form of service recovery. In line with research conducted by (Shen & Aun, 2015) it was found that there was an effect of service recovery in the event of a service failure, so this would have an impact on passenger satisfaction of the Klang Valley MRT.

Congestion is a reflection of problems that must be followed up in big cities, such as DKI Jakarta. Congestion will cause several effects that will have an impact on the environment, especially in terms of exhaust emissions. Data found by ICEL (Indonesia Center of Environmental Law) shows that in 2019 the largest contribution of emissions in DKI Jakarta came from the transportation sector with a percentage of 46%. Another factor that influences the operation of MRT Jakarta is from a social and economic perspective. What happens when the construction of a project begins is the emergence of community concerns that will threaten the social and economic patterns they do. So that this matter received special attention from PT. MRT Jakarta to convince the public that this condition is not as bad as they imagine.

From this phenomenon, the author will conduct further research to find out how much influence and impact it has on passenger loyalty (Ridership Loyalty) so that they always use the services of MRT Jakarta, the existence of loyal passengers certainly has an influence on operators to always provide the best service. Ridership loyalty will increase if the public transport service manager can develop several integrated factors such as vehicle elements, service systems, and vehicle output factors (Park *et al.*, 2021).

Several things that can support passenger loyalty are by improving service quality, service recovery, and brand image. Service quality, which can also be called SERVQUAL, is influential as a medium for monitoring service quality on public transportation, so it is necessary to improve service quality and attract people to use public transportation as the main choice (Suria *et al.*, 2019). Service Recovery shows customer ratings of the services they receive, so this has a direct effect on the level of customer satisfaction (Nyagadza *et al.*, 2022). Service quality and brand image will increase the good perception of the service users, because through the brand image a positive message will be conveyed from the company, and improve the company's service quality, so that companies do not only benefit from the activities they do (Lin *et al.*, 2021). To determine the extent of the influence of the above description on passenger loyalty (Ridership Loyalty), it will be mediated with passenger satisfaction (Rider Satisfaction) as a mediating variable. Rider Satisfaction needs to be measured so that the performance of public transport services can be assessed directly from passengers as users, the extent of the role of service attributes, and to determine which services should be improved and prioritized (Zheng *et al.*, 2021).

Several factors can influence the tendency of using public transportation. Marketing Management is an activity of analyzing, planning, implementing, and controlling activities that are structured to formulate, build, and maintain profits derived from exchange through target markets in order to achieve company goals in the future period (Assauri, 2008). At the

same time, Consumer Behavior is something that influences public transportation users to use the available services and is adjusted to the level of mobility or the level of daily travel needs of these users (Elkanova *et al.*, 2022). Transportation is an activity to move or to transport something from one place to another, where this is not the final destination but a form of derived demand that arises due to the demand for goods or services (Makmun & Wijaya, 2020).

The elements in transportation that have an important role are (Gunawan, 2014):

- Roads. Roads are supporting infrastructure and play an essential role in transportation. If there are no roads, transportation and logistics traffic will not be carried out, as well as transportation services for its users.
- Vehicles. Vehicles and means of transport can be interpreted as important means of the road. The means of transportation is a series of machines that were created to transport. As time develops, roads and means of transportation act as two interconnected elements, so that their use cannot be separated.
- Motives Power. Is a propulsion tool as a source of pull to move the load of people and goods, acting as a tool to encourage transportation so that it can run. Currently some propulsion includes gasoline engines.
- Terminal. It is the place where the journey begins and ends. Besides that, it is also used as a place for gathering goods and people so that departures/arrivals are easier to control.

Transportation Management is the process of managing activities in the context of the movement of products and services from one place to another, and this movement pattern will refer to a transportation network. This network will be used as a solution to move products from the initial location of production to where consumers are located, where this is a gap to overcome long-distance conditions (Nasution, 2015). Land transportation management, namely the type of transportation vehicle that moves on the road, is used to serve the transportation of goods and/or people, and the journey comes from one place to another on the mainland (Prima, 2012). Mass Rapid Transit, hereinafter abbreviated as MRT, is a mass transit railway that uses heavy trains, and electric operating system, and operates on its path that is inaccessible to pedestrians and other vehicles (Peraturan Menteri Perhubungan Republik Indonesia Nomor PM 63 Tahun 2019 Tentang Standar Pelayanan Minimum Angkutan Orang Dengan Kereta Api) (Harahap *et al.* 2022). In its operation, MRT Jakarta is included in the urban railway, namely the train that serves the movement of people in urban areas and/or round trips.

2. Methodology

This study used quantitative methods with a descriptive approach. Quantitative Research Methods is a research method based on the philosophy of positivism, used to examine certain populations or samples, data collection using research instruments, to describe and test predetermined hypotheses (Rahmayani & Nofrialdi, 2022). The analysis was done using SmartPLS software version 3.2.9. The population is all passengers who use the MRT Jakarta Phase 1 route line Lebak Bulus-HI, with identified characteristics. The research period was between August-September 2022. In this study, it is not known with certainty the number of populations hence purposive sampling was used to determine the number of potential respondents.

Ab Malek *et al.* (2021) said with a non-probability sampling approach, the determination of the sample by not giving the opportunity to each member of the population to be part of the research sample. Within this approach, the purposive sampling is chosen as a sampling technique based on certain considerations so that respondents can be obtained according to research criteria (Kresnamurti *et al.*, 2022) and according to research data targets (Turner, 2020). To determine the number of research samples, the formula developed by Hair in Suliyanto (2018), namely by multiplying 5-10 times on parameters (indicators), and the number of sample sizes is 100-200 subjects. Based on these provisions, with the number of research parameters as many as 25 questions, a minimum of 125 samples was obtained.

Based on the literature, three variables, Service Quality (X_1), Service Recovery (X_2) and Brand Image (X_3) are hypothesized to have an effect on Rider Satisfaction (Z) which then ensures Ridership Loyalty (Y) among the passengers of the MRT Jakarta Phase 1.

Service Quality (X_1), Service Recovery (X_2), Brand Image (X_3) and Rider Satisfaction (Z) were assessed using ten, six and three items. In this study for each question, respondents were asked to indicate their perception of the service provided by the MRT using a Likert scale which anchored from 1 (strongly disagree) to 7 (strongly agree).

3. Results and Discussion

3.1 Measurement Model (Outer Model)

In this stage there is the term convergent validity which means validity testing in two categories, namely the outer loading of each indicator and the Average Variance Extracted (AVE). Valid provisions are if the results of the outer model measurement values for each component/indicator reach a value > 0.70 (high) or reach a value of 0.5 to 0.6 (enough). In addition, for AVE if the measurement value results reach a value of 0.50 (or more) (Abdillah & Hartono, 2015). In this study, the value of outer loading with Average Variance Extracted (AVE) was generated from each indicator in each research variable as in Table 1.

From the results of the data processing listed in Table 1, it can be concluded that each indicator in the research variable already has an outer loading value above > 0.7, only the variables on the indicators X1.3, X1.10, and Y2 are located. in the range of 0.6 this is sufficient to meet the validity requirements, so that it has been fulfilled according to convergent validity and the indicators are feasible and valid to be used in research. The AVE value for all variables is by the convergent validity requirements or is above > 0.5, so the variables are valid and feasible to be used in research.

Table 1. Details of convergent validity values (AVE).

Variable	AVE	Description
Service Quality (X_1)	0.533	Valid
Service Recovery (X_2)	0.891	Valid
Brand Image (X_3)	0.750	Valid
Rider Satisfaction (Z)	0.666	Valid
Ridership Loyalty (Y)	0.557	Valid

The results of the data processing are listed in Figure 1 which is a path diagram derived from the results of measuring data through a convergent validity test using SmartPLS software version 3.2.9. has shown the value of the calculation between latent variables for

each indicator that is by the conditions set by convergent validity with a greater outer loading value > 0.7 and an AVE value < 0.5.

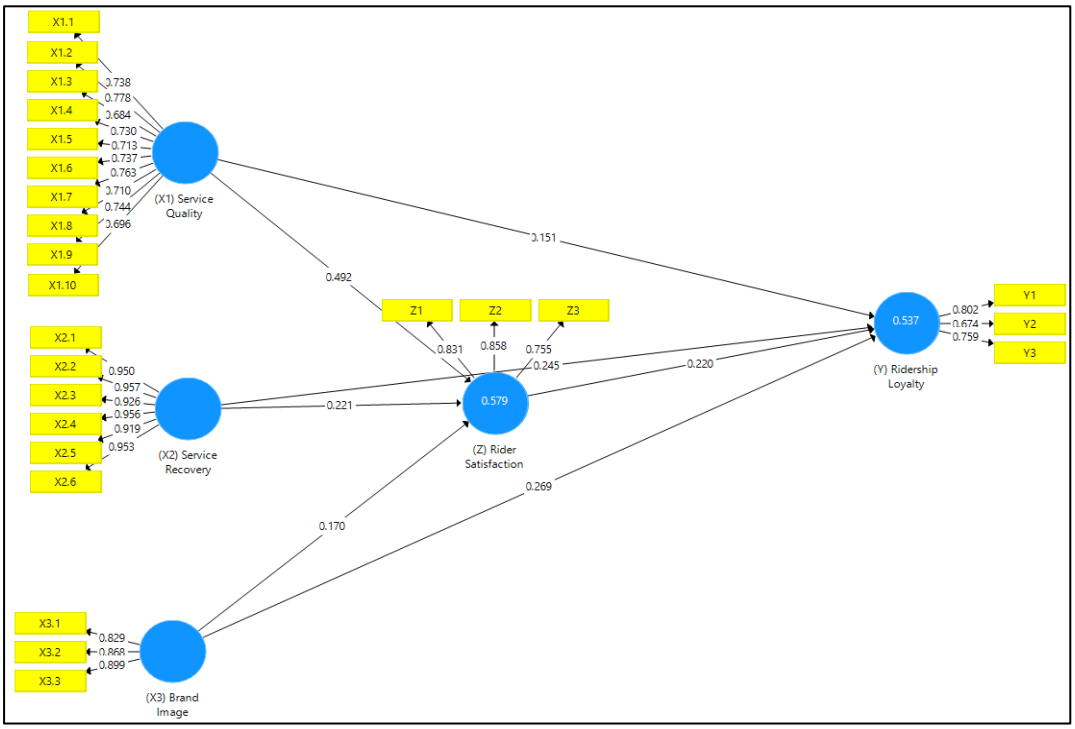

Figure 1. Path Diagram of the results Convergent Validity test measurement.

Cronbach's Alpha is a method for measuring the lower limit of reliability in a construct. The general rule (Rule of Thumb) on the alpha value is 0.7 although the value of 0.6 is still acceptable (Abdillah & Hartono, 2015). Composite Reliability is a method for measuring the actual value of reliability on a construct. The general rule (Rule of Thumb) at this value is 0.7 with 0.6 which is still acceptable. Table 2 shows Cronbach's Alpha and Composite Reliability values.

Table 2. Tabulation of Cronbach's Alpha and Composite Reliability values.

Variable	**Cronbach's Alpha**	**Composite Reliability**	**Description**
Service Quality (X_1)	0.902	0.919	Reliable
Service Recovery (X_2)	0.975	0.980	Reliable
Brand Image (X_3)	0.832	0.900	Reliable
Rider Satisfaction (Z)	0.606	0.790	Reliable
Ridership Loyalty (Y)	0.749	0.856	Reliable

Based on Table 2, it can be concluded that the value of Cronbach's Alpha and Composite reliability on each measured latent variable is > 0.7, only for the Rider Satisfaction variable (Z) the magnitude of Cronbach's Alpha value is in the range 0.6 and this is sufficient

to meet the reliability requirements. So that it can be interpreted that all the variables of this study have a good reliability value.

R-Square is used in measuring the level of variation of changes in exogenous variables to endogenous variables, in other words looking at the value of the magnitude of influence between variables in the model. If the R-square value is close to 1, it means that variations in changes in endogenous variables occur due to high variations in changes in exogenous variables (Abdillah & Hartono, 2015). The value of the R-square is summarised in Table 3. From the table, it can be concluded that the R-Square value on the Rider Satisfaction variable is 0.579. This means that all exogenous constructs, such as Service Quality (X1), Service Recovery (X2), and Brand Image (X3) variables simultaneously have an effect on the Rider Satisfaction variable of 57.9%. In addition, it can be concluded that the R-Square value on the Ridership Loyalty variable is 0.537. This means that all exogenous constructs, such as Service Quality (X1), Service Recovery (X2), and Brand Image (X3) variables simultaneously influence the Ridership Loyalty variable by 53.7%.

Table 3. The value of R Square.

Variable	R-Square	R-Square Adjusted
Rider Satisfaction (Z)	0.579	0.569
Ridership Loyalty (Y)	0.537	0.521

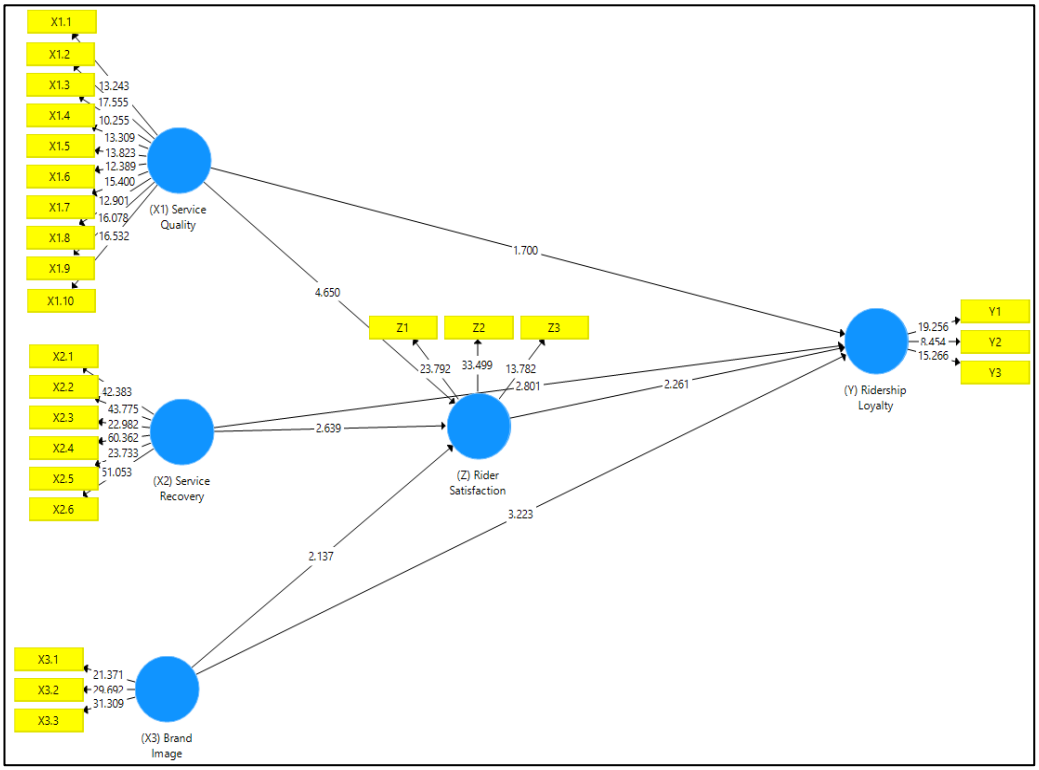

Figure 2. Path diagram from bootstrapping test results.

In this stage it can be obtained by looking at the magnitude of the coefficient value (path coefficient) and the t statistic value obtained by bootstrapping testing. What is meant by path coefficient is a model to describe the relationship between hypothesized constructs (temporary conjecture). If the path coefficient is > 0 on the path being measured, then a positive influence is found between the two variables, otherwise if the path coefficient is < 0

on the path being measured, a negative influence is found between the two variables. Through bootstrapping we will get the value of t statistics. If it is greater than 1.96 (> 1.96) at the 5% level of significance and greater than 1.64 (> 1.64) at the 10% significance level in each path. Figure 2 shows the path coefficient and t statistic for each research variable. Hypothesis testing in this study was obtained by evaluating the t statistics and p values generated through bootstrap testing. The conditions that must be met are the value of t statistic > t table (1.96) and the value of P values 0.1 or alpha 10%. Table 4 provides the path coefficient values and t statistics.

Table 4. Path coefficient and t statistic.

Path	Original Sample	Standard Deviation	T Statistic	P Values	Description
X1 → Z	0.492	0.106	4.65	0.000	Significant
X2 → Z	0.221	0.084	2.639	0.009	Significant
X3 →Z	0.17	0.079	2.137	0.033	Significant
Z → Y	0.22	0.097	2.261	0.024	Significant
X1 → Y	0.151	0.089	1.7	0.090	Significant
X2 → Y	0.245	0.088	2.801	0.005	Significant
X3 → Y	0.269	0.083	3.223	0.001	Significant

Based on the data in Table 4, the data and evaluation results of the bootstrapping test are obtained as follows:

- Service quality (X1) to Rider satisfaction (Z), t statistic is 4.650 (t count > t table, significance level 10% = 1 ,64). The magnitude of the P-Value is 0.000 with a magnitude less than 0.1. It means that service quality has a positive and significant effect on Rider Satisfaction.
- Service recovery (X2) and Rider satisfaction (Z), t statistic value is 2.639 (t count > t table, significance level 10% = 1.64). The magnitude of the P-Value is 0.009 with a magnitude less than 0.1. It means that service recovery has a positive and significant effect on Rider Satisfaction.
- Brand image (X3) on Rider satisfaction (Z), t statistic is 2.137 (t count > t table, significance level 10% = 1 ,64). The magnitude of the P-Value is 0.033 with a magnitude smaller than 0.1. It means that brand image has a positive and significant influence on Rider Satisfaction.
- Rider Satisfaction (Z) and Ridership loyalty (Y), t statistic is 2.261 (t count > t table, significance level 10% = 1 ,64). The magnitude of the P-Value is 0.024 with a magnitude smaller than 0.1. It means that Rider satisfaction has a positive and significant effect on Ridership loyalty.
- Service quality (X1) against Ridership loyalty (Y), t statistic is 1.7 (t count > t table, significance level 10% = 1 ,64). The magnitude of the P-Value is 0.090 with a magnitude smaller than 0.1. It means that service quality has a positive and significant effect on Ridership loyalty.
- Service recovery (X2) and Ridership loyalty (Y), t statistic value is 2.801 (t count > t table, significance level 10% = 1.64). The magnitude of the P-Value is 0.005 with a magnitude less than 0.1. It means that service recovery has a positive and significant effect on Ridership loyalty.
- Brand image (X3) against Ridership loyalty (Y), t statistic value is 3,223 (t count > t table, significance level 10% = 1.64). The magnitude of the P-Value

is 0.001 with a magnitude smaller than 0.1. It means that brand image has a positive and significant influence on Ridership loyalty.

3.2 Mediation Test

In this stage, a test will be carried out to determine the indirect effect between variable X (Quality of service, service recovery, and brand image) with variable Y (Ridership loyalty). The researchers used the Smart PLS software version 3.2.9.The mediation criteria if the P values <0.1 then the results are significant and have an indirect effect. This means that the intervening variable (Z) has a mediating role in the relationship between exogenous variables and endogenous variables. On the other hand, if the P values > 0.1 then the result is not significant and has a direct effect. The intervening variable (Z) does not play a role in mediating the relationship between exogenous variables and endogenous variables. In addition, the value of the t statistic after will be compared with the t table. If the results of the t arithmetic t table (1.64), it can be concluded that the intervening variable influences the variables tested in the study.

Based on the results in Table 5, it can be concluded that the data from the indirect effects test results that Service quality (X1) to Ridership loyalty (Y) through Rider satisfaction (Z), the resulting t statistic is 1.934 (t count > t table, significance level 10% = 1.64). The magnitude of the P-Value is 0.054 with a magnitude greater than 0.1. It means that service quality (X1) has an indirect influence on Ridership loyalty (Y) through Rider satisfaction (Z). Service recovery (X2) against Ridership loyalty (Y) through Rider satisfaction (Z), the resulting t statistic is 1.720 (t count > t table, 10% significance level = 1.64). The magnitude of the P-Value is 0.086 with a magnitude greater than 0.1. It means that service recovery (X2) has an indirect effect on Ridership loyalty (Y) through Rider satisfaction (Z). Brand image (X3) on Ridership loyalty (Y) through Rider satisfaction (Z), the resulting t statistic is 1.525 (t count < t table, 5% significance level = 1.64). The magnitude of the P-Value is 0.128 with a magnitude greater than 0.1. It means that brand image (X3) has a direct effect on Ridership loyalty (Y) through Rider satisfaction (Z).

Table 5. Indirect effects.

Variable	Original sample	T statistic	P value
X1 → Z → Y	0.108	1.934	0.054
X2 → Z → Y	0.049	1.720	0.086
X3 → Z → Y	0.037	1.525	0.128

4. Conclusion and Discussion

As the final result of this research, conclusions are obtained which include the fact that there is a positive and significant influence between the service quality variable (X1) on the Rider satisfaction variable (Z). There is also a positive and significant effect between the service recovery variable (X2) on the Rider satisfaction variable (Z). In addition, there is a positive and significant effect between the brand image variable (X3) on the Rider Satisfaction variable (Z). There is a positive and significant effect between the Rider satisfaction (Z) variable on the Ridership loyalty variable (Y). There is a positive and significant effect between the service quality variable (X1) on the Ridership loyalty variable (Y). There is a positive and significant effect between the service recovery variable (X2) on the Ridership loyalty variable (Y). There is a positive and significant effect between the brand image variable (X3) on the Ridership loyalty variable (Y).

There is an indirect effect between the service quality variable (X1) on the Ridership loyalty variable (Y) through the Ridership satisfaction variable (Z). There is an indirect effect between the service recovery variable (X2) on the Ridership loyalty variable (Y) through the Ridership satisfaction variable (Z). There is a direct influence between the brand image variable (X3) on the Ridership loyalty variable (Y) through the Ridership satisfaction variable (Z). By knowing the results of the mediation effect test, it can be concluded that in this study there is perfect mediation because there are two indirect effects, and only one direct effect.

4.1 Recommendation and Implications

Research results can be a source of information for MRT Jakarta operators to support marketing management strategies, especially in improving service quality, service recovery steps, and brand image which will be able to increase the satisfaction and loyalty of MRT Jakarta passengers. Operators of MRT Jakarta service providers need to make continuous efforts in MRT Jakarta services so that they can become public transportation that can overcome problems such as economics, social phenomena, traffic problems such as congestion, and environmental sustainability. Provider operators and stakeholders should be more concerned about the problems. If these problems are not addressed carefully, they will have a bad impact in the future. Further research can be conducted, through different variables in order-to create a complex variety of information or become a guide to obtain other variables after knowing the influence of service quality, service recovery, brand image, rider satisfaction, and ridership loyalty.

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Author Contribution

Author1 prepared the literature review and oversaw the article writing. Author2 wrote the research methodology and performed fieldwork. Author3 conducted the statistical analysis and interpreted the results.

Conflict of Interest

The authors have no conflicts of interest to declare.

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