

Modeling of Rail-Based Public Transportation Services for the Conversion of Private Vehicle Users to Public Transportation

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ABSTRAK

Permasalahan yang menyebabkan kurang populernya transportasi umum adalah jaringan kereta api yang masih sangat terbatas, kualitas pelayanan transportasi umum yang perlu ditingkatkan, dan integrasi penuh yang belum tercapai dan niat untuk menggunakan kembali dalam pelayanan transportasi publik sering kali dipengaruhi oleh faktor yang berdampak pada kepuasan dan kepercayaan penumpang terhadap transportasi publik itu sendiri. Penelitian ini dilakukan untuk mengevaluasi efektivitas model pelayanan angkutan umum dan kebijakan yang diterapkan, oleh karena itu beberapa variabel digunakan dalam penelitian ini. yaitu; Subjective quality; Belief; Commuter Satisfaction; Value perception; Commuter preference; Commuter loyalty; intention repurchase. Untuk lebih memantapkan loyalitas pengguna jasa, Preference sebagai variabel intervening antara Belief dengan loyalty. Metode dalam penelitian ini dengan IPA, dan Structural Equation Model dengan bantuan program SMART PLS, FGD untuk mendalami isu yang sedang dibahas dan penelitian ini menggunakan sampel sebesar 400 responden. Berdasarkan hasil analisis, Subjective quality, kepuasan penumpang, kepercayaan, preferensi penumpang, dan loyalitas penumpang terbukti memberikan dampak positif terhadap loyalitas penumpang serta berpengaruh signifikan terhadap niat untuk membeli kembali. Namun, Value perception tidak memiliki pengaruh signifikan terhadap loyalitas penumpang. Untuk meningkatkan kinerja layanan, operator perlu fokus pada perjalanan kereta yang lancar, tingkat keandalan yang tinggi, integrasi yang baik, serta sistem tiket terpadu.

ABSTRACT

The issues contributing to the unpopularity of public transportation include a limited railway network, inadequate service quality, and incomplete integration. Additionally, the willingness to utilize public transportation is frequently affected by factors influencing passenger satisfaction and trust in the system. This study aimed to assess the efficacy of the public transportation service model, and the policies enacted; hence, multiple variables were utilized in the analysis. Subjective quality; belief; passenger satisfaction; value perception; commuter preference; commuter loyalty; intention to repurchase. Commuter preference serves as an intermediary element influencing the relationship between Belief and Commuter loyalty, hence enhancing loyalty. This study employs Importance and Performance Analysis and Structural Equation Modeling utilizing the SMART PLS program, along with Focus Group Discussions to investigate the topic, based on a sample of 400 respondents. The analysis indicates that subjective quality, satisfaction, trust, preferences, and loyalty positively influence loyalty and significantly affect the intention repurchase. Nonetheless, value perception does not substantially affect commuter loyalty. Operators must concentrate on ensuring seamless train travel, elevated reliability, effective integration, and a cohesive ticketing system to enhance service performance.

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INTRODUCTION

Jakarta is a metropolitan city surrounded by satellite cities such as Bogor, Depok, Tangerang, and Bekasi. According to BPS statistics, the population of DKI Jakarta was 10,562,088 people in 2020, with a density of 14,469 people per square kilometer (Badan Pusat Statistik, 2020). Private cars make up 72.85% of transportation in Jakarta, but public transportation only consists of 27.15%, so there is significant congestion caused by four-wheeled and two-wheeled private vehicles (Irfayanti dkk., 2021). In 2021, Jakarta's congestion rate was 34%, which led to unhealthy air quality. The city's air quality index is 166, placing it as the fourth worst globally (Tomtom Traffic Index, 2021). Urban transportation is complicated due to the diverse modes of transit, the many origins and destinations, and the varied traffic conditions.

The quality of service requiring enhancement, specifically punctuality, employee cordiality, cleanliness of vehicles and infrastructure, and the integration of the public transportation system has not been fully achieved, potentially diminishing customers' intentions to utilize public transportation again (Juliana, 2020). If the quality fluctuates or diminishes with each use, customers may be reluctant to use the service again. Frequent delays and prolonged waiting periods may deter passengers from returning, particularly those dependent on transportation for daily commutes or employment. The absence of comfort and safety significantly impacts public transit. (Giuliano & Hanson, 2017),(Ibrahim et al., 2020).

The national government and the DKI Jakarta administration have instituted various initiatives to promote the usage of public transit among private car users in Jakarta. One of its objectives is to provide dependable, efficient, effective, and environmentally sustainable public transportation, as articulated by railway-based systems. Enhancing public transportation services necessitates the development of transportation networks and their integration to optimize transit operations. (Hayat, 2024)The government aims to address this issue by enhancing the importance of railway-based public transportation through multiple policies, particularly the minimum service standard policy via Infrastructure Maintenance Obligation (IMO), Public Service Obligation (PSO), and Track Access Charge (TAC), alongside initiatives for railway network development and comprehensive integration from the physical and terminal perspectives.

As a result, strategic instruments are needed to evaluate existing passenger happiness and determine management initiatives that can improve commuter satisfaction, meet passenger demand, and promote the use of rail transportation systems. A number of studies have shown that the efficacy of rail-based public transportation systems depends on their capacity to transport and retain people (de Oña dkk., 2016), (Brohi dkk., 2021), (Hakimi Ibrahim dkk., 2021). This study seeks to determine commuter preferences and increase the number of passengers by increasing belief, Commuter Passenger Satisfaction, Subjective Quality, Value Perception, Preferences, Loyalty, and Intention repurchase.

This survey assesses passenger satisfaction with rail-based public transportation services in Jakarta, emphasizing reliability, efficiency, and convenience. This study aims to ascertain commuter preferences that can inform enhancements to public transportation service quality. This report seeks to formulate strategic efforts to enhance belief, contentment, loyalty, and repurchase intention among rail transit consumers.

This study seeks to facilitate the reduction of private car usage by offering satisfactory, dependable, and entertaining public transportation services. Consequently, it is anticipated that individuals will transition to public transportation to alleviate congestion, enhance environmental quality, and promote the advancement of sustainable transportation in Jakarta.

Literature Review

Subjective quality is the result of consumer observation or perception of the products and services offered by rail transportation service providers, related to expectations, including various qualities desired by customers (Hakimi Ibrahim dkk., 2021). Subjective qualities have a positive influence on Belief, Commuter Satisfaction, Value Perception (Hakimi Ibrahim & Barhan, 2020), (Shen dkk., 2016), (Dabholkar & U Sheng, 2014). Confidence is the assurance that customers have about the service provider's ability to provide a profitable product or service. Commuter satisfaction is the emotional reaction of customers to the goods or services offered (Fong dkk., 2023). Furthermore, satisfaction is the level of individual sentiment after assessing the performance of the service against their expectations (Wang dkk., 2020). Value perception is the consumer's total assessment of the utility of a product, determined by the perception of what is received about what is provided (J.-H. Kim & Park, 2019).

Studies indicate that quality significantly contributes to the establishment of belief (H. Kim & Lee, 2023). Consequently, it might affect travelers, including their purchasing preferences or brand loyalty. When public transit passengers see a product or service as high quality, their confidence in the company's ability to match future expectations increases. Trust is established when commuter passengers anticipate a favorable and reliable experience (Ibrahim et al., 2022). Enhanced perceived quality will elevate client satisfaction by fulfilling or surpassing their expectations.

Moreover, superior quality enhances value perception, leading buyers to perceive they are obtaining greater benefits in relation to the price paid. Commuter satisfaction and value perception both promote and reinforce the favorable correlation between quality and commuter loyalty. Subjective quality influences satisfaction and enhances the perception of value, hence affecting customer loyalty to the brand or service (Chung et al., 2022) (de Oña, 2022).

In terms of Commuter preferences, Commuter Preferences are defined as the feeling of preference, selection, or inclination of a Commuter user toward the various possibilities or opportunities provided by the various goods or services now available (Cheng et al., 2011). Commuter preferences can be influenced by Beliefs and can affect Commuter loyalty (Currie dkk., 2019), (Zheng dkk., 2016). Commuter loyalty is so active in long-term purchases that the commitment of the user of the service or product, in this case, the client, to the brand that produces the product or service, the supplier, or the company based on quality and benefits is very active (Chan et al., 2021), (Robustin & Haryana, 2024). Additionally, the level of satisfaction that passengers experience can affect their loyalty (Vanacore dkk., 2021).

Commuter satisfaction, Preferences, and beliefs sustain a reciprocal connection that fosters customer loyalty. Elevated satisfaction will enhance customer preferences and foster confidence. Favorable preferences and convictions subsequently bolster loyalty, enhancing the probability that clients will engage in repeat transactions or utilize the identical service again. Loyalty established through these factors affects repeat purchase intentions, as customers who are satisfied favor a brand and beliefs the company is more inclined to return.

Table 1.
Urban Railway Transportation Service Model

	Article Title					
Items	The Effect of Customer Satisfaction and Service Quality on Reuse Intention in Urban Rail Transit in Tianjin, China (Wang et al., 2020) (Figure 3)	The impact of customer satisfaction and service quality on the behavioral intention of transit passengers. Sevilla (Spain) (Oña dkk., 2016a) (Figure 4)	An evaluation model of urban rail transport passenger satisfaction based on the smallest partial square: A structural equation modeling approach (China's urban railway transit) (Shen et al., 2016) (Figure 5)	The role of service quality, perceived value, satisfaction, and engagement in the behavioral intentions of public transport passengers in Taiwan (Lai & Chen, 2011) (Figure 6)	Structural Equation Modelling to Investigate the Factors Influencing Passenger Satisfaction with Light Rail Transit Services in Kota Alpha: Evidence from Kuala Lumpur, Malaysia (Hakimi Ibrahim dkk., 2021) (Figure 7)	Analysis of Public Transportation User Behavior and the Implementation of Transit-Oriented Development as a Model of Railway-Based City Transportation Services (Service Modeling in Jakarta)
1. Cheap Tariff (Subsidized)	Excluded from discourse	Engage in discourse	Excluded from discourse	Engage in discourse	Engage in discourse	Discussed in detail
2. Creating Comfort and Comfort	Engage in discourse	Engage in discourse	Entering the discussion	Engage in discourse	Engage in discourse	Discussed in detail
3. Short travel time (Integration)	Engage in discourse	Engage in discourse	Entering the discussion	Excluded from discourse	Engage in discourse	Discussed in detail
4. Reach potential zones (Network development)	Excluded from discourse	Excluded from discourse	Excluded from discourse	Excluded from discourse	Excluded from discourse	Discussed in detail
Purpose / Conclusion	This study examines passenger perceptions to enable urban rail transport operators to understand travel demand, improve service quality to passenger demand, and encourage the use of	The purpose of studying the phenomenon that explains the purpose of LRT users is to reuse the transportation system. The study offers a management perspective, which shows that the methodology presented here	The goal is to reduce the use of private cars by advocating for public transportation. Evaluate the efficacy of existing public transportation systems to retain and attract more passengers.	These findings could provide valuable insights for KMRT (Kaohsiung Mass Rapid Transit) to prioritize critical service quality and ensure that service quality meets or exceeds passenger	For LRT service providers to design successful methods to retain existing passengers and attract potential passengers. The services offered should go beyond transportation options such as Grab and MyCar,	

	Article Title					
	public transport.	improves the quality of transportation services.		expectations . For example, special participation in the passenger experience during the utilization of public transport services.	as well as private trips.	

Source: Processed by researchers

RESEARCH METHODS

In this study, the average daily number of passengers traveling by electric train (KRL) is 424,532. The sample selection technique used is random sampling, which is a user/user of electric trains without paying attention to the average of the population. The sample size for the study was determined using the Slovin formula with a margin of error of 5%. The sample used consisted of 400 passengers who would be used as research subjects. The analytical approach uses a structural equation model (SEM) using Smart PLS and Importance-Performance software.

The analysis (IPA) for processing questionnaire data utilizing the Likert scale in the Importance-Performance Analysis (IPA) approach includes computing the mean scores of importance and performance for each attribute. The average results are utilized to position the qualities into an IPA quadrant diagram comprising four quadrants: high priority for enhancement, attributes to be preserved, attributes of moderate priority, and excessive performance. This study identifies critical areas for enhancement based on significance and performance, facilitating optimal resource management. Moreover, qualitative data can be gathered using diverse methods, including interviews, observations, and focus group discussions (FGD), to explore the phenomenon in greater depth. The focus group discussion addresses public transportation systems, particularly railways, with stakeholders. To analyze qualitative data from the focus group discussion (FGD), one must document findings such as ideas or issues and subsequently validate the data by juxtaposing the FGD results with other data sources (interviews, observations). The subsequent phase involves a comprehensive analysis aimed at elucidating the significance of the opinions expressed by stakeholders, including the context and rationale behind these perspectives.

RESULTS AND DISCUSSIONS

Based on the context, objectives, and methodology, the results of this article are as follows:

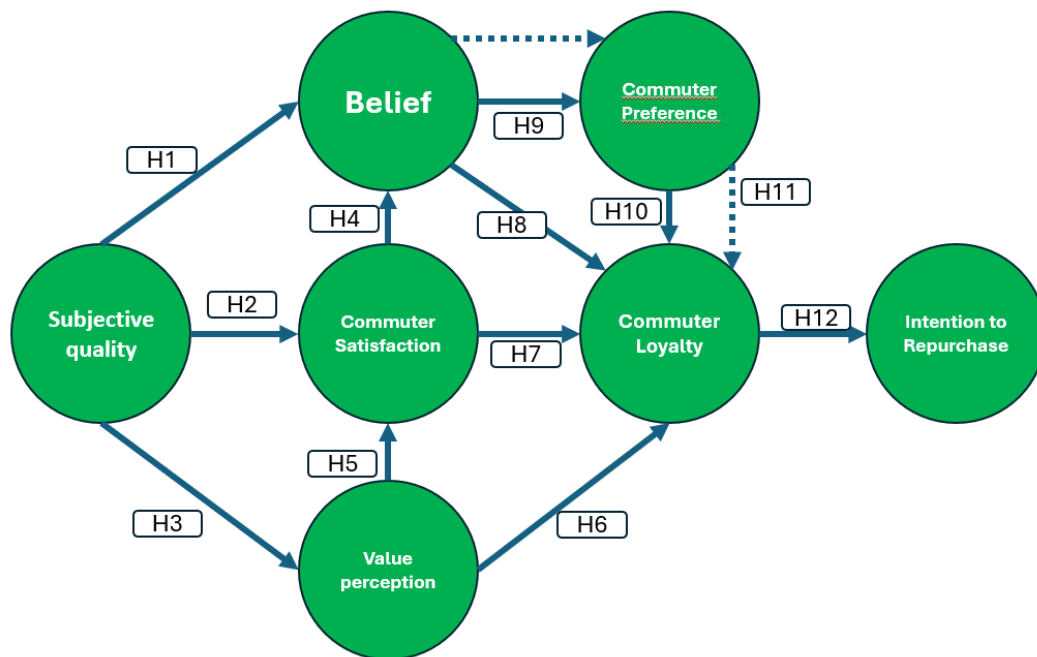
The characteristics of respondents in this study are as follows:

The respondents consisted of 273 men and 127 women. The majority (50%) are 15-25 years old, 22% are 26-35 years old, 13% are >55 years old. High school education (193 people) dominated, followed by Undergraduate/S1 (128 people), and S2 (37 people). The most are students/students (43%), followed by private employees (30%), and retired civil servants/SOEs

(9%). Most (57%) have an income of <5 million rupiah, 28% have an income of 5-10 million, and 15% have an income of >10 million.

A conceptual framework or model of rail-based public transportation services was developed to facilitate the understanding of this study process.

Figure 1.
Mindset



Source: Data processed by researchers

This research employs SEM Smart PLS and Importance-Performance Analysis (IPA) to assess and analyze hypotheses. The subsequent results pertain to the outer model, specifically the evaluations of validity, reliability, and internal model undertaken prior to hypothesis testing.

Validity assessment

In this study, the external loading value or loading factor generated from the calculation with Smart PLS is more than 0.05, showing that the construction for all variables is valid based on the model (Ghozali, 2021). In addition, the extracted mean variance (AVE) will be used to verify the validity of the discrimination.

The findings of the discriminatory validity test obtained by Smart PLS are as follows:

Table 2.
Validity test

Variable	Average Variance Extracted (AVE)
Subjective quality	0.536
Belief	0.609
Commuter satisfaction	0.699
Value perception	0.676
Commuter preferences	0.663

Variable	Average Variance Extracted (AVE)
Intention repurchases	0.767
Commuter loyalty	0.699

Source: Data processed by researchers

This test is carried out to ascertain the extent of the difference between the variables. The test findings showed that the Average Variance Extracted (AVE) for all variables exceeded 0.5. Therefore, it is considered legitimate (Ghozali & Latan, 2015).

Table 3.
Reliability Test

Variable	Cronbach's Alpha	Composite Reliability	Rule of Thumb	Model Evaluation
Subjective quality	0.955	0.960	> 0,60	Reliable
Value perception	0.839	0.893		Reliable
Belief	0.870	0.902		Reliable
Commuter satisfaction	0.938	0.949		Reliable
Commuter loyalty	0.893	0.921		Reliable
Commuter preferences	0.873	0.908		Reliable
Intention repurchases	0.924	0.943		Reliable

Source: Data processed by researchers

Using the results from the Smart PLS estimate, the Alpha Reliability Coefficient and the Cronbach composite were calculated. It is believed that the final number is more than 0.60, which is the threshold for Belief.

Inner model

The inner model, also known as the structural model, is researched to ascertain the existing relationship between the structure, significant value, and R-squared research model.

Table 4.
R-Square

Variable	R Square
Commuter Satisfaction	0,811
Value perception	0,434
Commuter preferences	0,543
Belief	0,711
Commuter loyalty	0,695
Intention repurchases	0,754

Source: Data processed by researchers

This shows that the variables of subjective quality and perception of value account for 81.1% of the variance in Komuter satisfaction, with the remaining 81.1% assigned to factors not explored in this study. The R Square value for the Commuter satisfaction variable was 0.811, which is equivalent to 81.1%.

It can be deduced from the fact that the R Square value for the Confidence variable is 0.711, which is equivalent to 71.1%, that the Subjective quality and Commuter satisfaction variables

are responsible for 71.1% of the variance in the Confidence variable. In comparison, the remaining 71.1% is associated with characteristics not studied in this particular study.

Due to the fact that the R Square value for the Value perception variable is 0.434, which is equivalent to 43.4%, it can be concluded that the Subjective quality variable is responsible for a substantial 43.4% of the Value perception variation. The remaining 43.4% of variance can be attributed to external variables that were not investigated in this study.

This shows that the Confidence and Preference variables significantly account for 69.5% of the Commuter loyalty variance. In contrast, the remaining variance is related to other factors that were not explored in this study. The R Square value for the Commuter loyalty variable is 0.695, which is equivalent to 69.5%.

The R Square value for the Commuter preference variable is 0.543, which is equivalent to 54.3%. This shows that the Confidence variable significantly accounts for 54.3% of the variance in the commuter preference variable. In contrast, the remaining variance is due to external factors that are not included in this study.

The R Square value for the intention repurchase variable is 0.754, which is equivalent to 75.4%. This shows that the Commuter loyalty variable significantly accounts for 75.4% of the variance in the intention repurchase variable. In contrast, the remaining variance is associated with other factors not examined in this study.

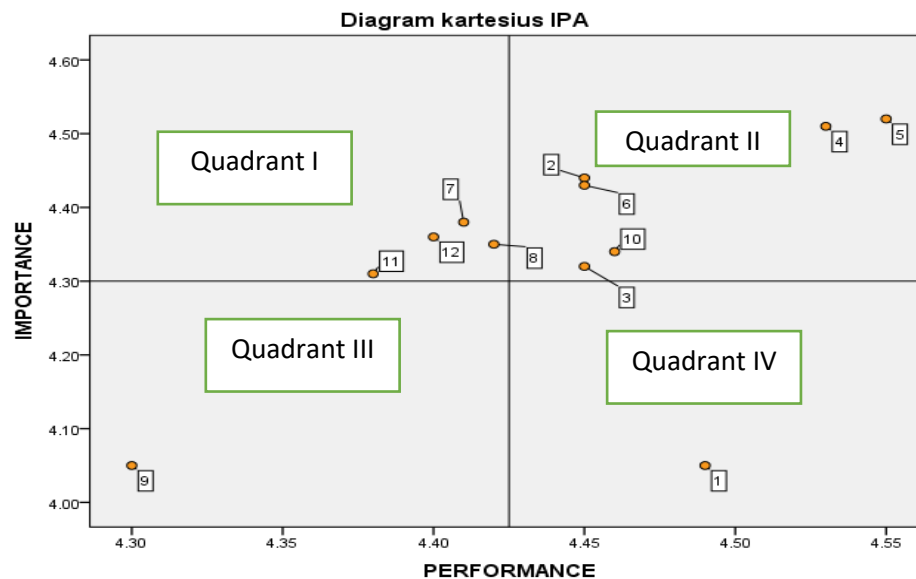
Table 5.
Hypothesis testing using SMART-PLS

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Subjective quality -> Commuter satisfaction	0.25	0.259	0.06	4.172	0.000
Subjective quality -> Value perception	0.659	0.661	0.067	9.91	0.000
Commuter satisfaction -> Confidence	0.63	0.608	0.087	7.22	0.000
Value perception -> Commuter satisfaction	0.716	0.707	0.056	12.699	0.000
Value perception -> commuter loyalty	0.038	0.039	0.083	0.464	0.321
Subjective Quality -> Confidence	0.267	0.288	0.089	3.001	0.001
Commuter preferences -> Commuter loyalty	0.224	0.226	0.06	3.728	0.000
Confidence -> Commuter preferences -> Commuter loyalty	0.165	0.166	0.045	3.635	0.000
Commuter loyalty -> Intention repurchases	0.868	0.866	0.021	40.682	0.000
Commuter satisfaction -> commuter loyalty	0.321	0.316	0.1	3.215	0.001
Beliefs -> commuter loyalty	0.135	0.14	0.066	2.042	0.021
Beliefs -> commuter preferences	0.737	0.734	0.043	17.044	0.000

Source: Data processed by researchers

IPA (importance-performance analysis) analysis is a method used to evaluate features of significance relative to the anticipated performance of customers.

Figure 2.
Importance-Performance Analysis



Source: Data processed by researchers

The findings from the Importance and Performance Analysis (IPA) indicate that within the first quadrant, characterized by low performance yet high interest and demand from service users, four aspects require immediate enhancement: uninterrupted fast train travel, the reliability of rolling stock, integration with alternative transport modes, and the implementation of a unified ticketing system. The primary emphasis must be on infrastructure and technology to guarantee travel reliability and rolling stock, as this directly influences consumer pleasure. Moreover, the amalgamation of transit modalities and a unified ticketing system must occur concurrently to enhance the customer experience.

Discussion

The quality of service, which is believed to have a direct and positive impact on the customer's confidence in a company, is consistent with hypothesis 1 (H1 Accepted). According to the findings of this study, the higher the subjective quality, the higher the level of confidence that customers have in a product or service (Saxena, 2017), (Zhang dkk., 2019). A foundation that is consistently considered to be of high quality serves as the foundation for the development of a long-lasting Faith over time. The term subjective quality refers to the overall product offering that contributes to the many benefits enjoyed by customers. Due to the emphasis that manufacturers place on product quality, consumers will inadvertently believe that high-quality products can meet their various needs. (Soltanpour dkk., 2020), (Hakimi Ibrahim & Barhan, 2020). Subjective qualities have been examined by many previous researchers, including (Ashraf dkk., 2018), (Hakimi Ibrahim & Barhan, 2020).

The second hypothesis is supported by the observation that service quality has a direct and positive influence on customer and passenger satisfaction. The conclusions of this study are consistent with a large number of other studies. The level of pleasure that consumers experience is significantly influenced in a good way by the quality of service they receive (Machado-León dkk., 2017), (Zefreh dkk., 2020). The conclusion that can be drawn from this is that the level of satisfaction experienced by consumers is directly proportional to the quality of service provided and whether it can exceed customer expectations. That is an important aspect in determining

the level of enjoyment that users experience is the quality of service they receive (Shen dkk., 2016), (Wang dkk., 2020).

This implies that it corresponds to hypothesis 3 when it is believed that the quality of service has a direct and positive impact on the perceived value that consumers perceive of a product or service. The results of this investigation are in accordance with the results of the investigation mentioned above (Shen dkk., 2016), (Lai & Chen, 2011), (Marina dkk., 2023). Since service quality has a positive impact on the perception of the value of a product or service, company management should prioritize improving customer satisfaction while also improving their view of overall service quality and improving the perception of value among consumers.

The results of this study are in line with the fact that for links to be considered necessary, customers must previously engage in positive encounters that contribute to the development of Beliefs. It has been the subject of a large number of investigations in the past (Saleem dkk., 2017), (Leninkumar, 2017), (Prameka dkk., 2017). Commuter satisfaction can have a positive influence on Belief, namely with hypothesis 4.

Passengers are directly affected positively by the perception of value. Hypothesis 5 is supported by the fact that commuter satisfaction is present. When consumers anticipate that they will be able to make a greater profit proportional to the amount of money they spend on each transaction, a relationship is established between value perception and high customer satisfaction levels. Consumers are more likely to feel satisfied with their purchase when they are provided with additional benefits, which results in greater transaction value. These findings are consistent with several investigations conducted by (Prameka dkk., 2017), (Rasoolimanesh et al., 2016). Because it has a significant impact on the decisions customers make, value perception is an important component of strategic company management (Chen & Lin, 2019), (J.-H. Kim & Park, 2019), (Hallak dkk., 2018).

As a result of the fact that the perception of value cannot have a positive influence on consumer loyalty (also known as consumer loyalty), it is invalid according to hypothesis 6. The results of this hypothesis test, on the other hand, do not coincide with the conclusions of several studies conducted by (Muskat dkk., 2019), (Hallak dkk., 2018) shows that value perception has a beneficial and significant impact on loyalty. Good service quality or added value for consumers certainly affects loyalty.

Value Perception can affect Commuter loyalty; However, the effects differ based on context and industry. Value perception is a customer's subjective evaluation of the value of a product or service in proportion to its price. The factors related to the correlation between perceived value and loyalty are as follows:

- a) Customers and competitors generally show increased loyalty when they feel that the product or service they are purchasing provides superior value compared to market alternatives. Strong Value Perception encourages customers to choose the same product or service repeatedly.
- b) Value perception is often associated with the balance between the price paid and the quality obtained. Customers are more likely to be happy and loyal if they are confident the price they pay matches the quality of the product and service.
- c) Value Perception is intrinsically related to the total customer experience. A positive purchase or use experience can increase the perception of Value and foster long-term loyalty.

A variety of variables can affect the intensity of the correlation between value perception and loyalty, including psychological influences, individual preferences, and market dynamics. Therefore, it is important to evaluate these diverse aspects in a marketing plan to improve the impact of Value perception on client loyalty.

According to hypothesis 7, the fact that commuter satisfaction can have a beneficial impact on commuter loyalty implies that this is the case (Hizam dkk., 2021). Furthermore, the results of this study are compatible with the following: Commuter satisfaction has a significant influence on commuter loyalty. When customer happiness increases after using the services of a transportation company, the chances of users remaining loyal to the company or becoming loyal clients increase (Wonglakorn dkk., 2021).

The fact that Confidence can have a positive influence on passenger loyalty shows that it is consistent with the theoretical framework 8. Furthermore, the findings of this study are consistent with the findings of (Fu & Juan, 2017), (Shen dkk., 2016). When a service provider effectively generates client belief, consumers will experience a reduced sense of risk and greater confidence in the provider's reliability and integrity. Ultimately, this will cause consumers to become more loyal to the provider.

According to hypothesis 9, the fact that Beliefs can have a favorable influence on Commuter preferences suggests that it is consistent with the hypothesis. Because businesses can't build genuine relationships without Faith, Faith is a critical component of their operations (Vanacore dkk., 2021). Service User Preferences The term "commuter preference" refers to the inclination or decision that customers show about their preferred options among various products or services. As a result, customers are required to have complete confidence in the business, as this belief ultimately plays a role in determining their preferences and choices regarding the services or products provided by the supplier (Fong et al., 2023).

Commuter preferences can affect commuter loyalty, which supports hypothesis 10. This research is consistent with (Hatzioannidu & Polydoropoulou, 2022). Passenger preferences for public transportation, especially rail-based systems, are influenced by many criteria, including network coverage in remote places, quality of service, infrastructure reliability, convenience, and safety. All of these elements have the potential to create loyalty to the use of trains (Zheng dkk., 2016) (Zheng dkk., 2016).

Beliefs have the potential to influence Commuter loyalty through passenger preferences. Considering this, hypothesis 11 could be correct. According to the findings of the study, customers who have trust in service providers are more likely to show loyalty to those suppliers (Deng et al., 2010). (Zulvani dkk., 2022) (Halpern dkk., 2021) Supported by other researchers due to the importance of Confidence in creating and maintaining commuter loyalty, rail-based public transportation has become the most preferred alternative among the general public. The term "commuter preference" refers to preferences or choices about various products and services, which reflects customer expectations about the large number of options available to reinforce the loyalty of customers who use public transportation services, especially those who take trains.

Passenger loyalty can affect to make repurchases. The conclusion that can be drawn from this is that it is consistent with hypothesis 12. According to the findings of this investigation, the findings of various other studies are consistent (Miao et al., 2022), (Çakici dkk., 2019). From a social psychology point of view, the term buyback intent refers to the desire to continue a relationship with a particular brand. This suggests that rewards earned from previous encounters have a substantial impact on customer repurchase. An example of a dimension, sign,

or feature that affects loyalty is customer relationships. Other factors that affect loyalty include reliability, responsiveness, and quick problem resolution. Various studies on loyalty have been conducted by scholars before, including but not limited to (Dams & Dams, 2021) (Chinomona & Sandada, 2013) (Chatzoglou dkk., 2022).

Customer belief, satisfaction, value perception, commuter loyalty, and preferences are all significantly influenced by service quality, according to the study's findings. Improving the quality of service helps to improve the customer's perception of the value of a product or service, which in turn leads to satisfaction, belief, and increased loyalty. Positive experiences and strong value perceptions also have an impact on commuter loyalty, especially when it comes to rail-based public transportation.

This report presents numerous key measures to promote the transition from private automobile usage to public transportation, particularly trains.

- a) **Enhanced Service Quality:** To meet consumer expectations, it is essential to improve service quality, encompassing convenience, security, reliability, and efficiency of time. This will promptly affect the satisfaction of passengers.
- b) **Enhancing Value Perception:** Competitive fare adjustments, cutting-edge amenities, and accessible services can enable rail transportation to deliver superior added value compared to private automobiles.
- c) **Building User Loyalty:** Service companies must continually develop lucrative experiences to enhance consumer loyalty. It is essential to ensure that individuals not only transition to rail travel but also sustain their preferences over time.
- d) **Understanding Passenger Preferences:** Passenger preferences for transportation modes are influenced by accessibility, network coverage, and intermodal integration. Consequently, the service strategy must be predicated on customer demand and expectations to enhance their preference for railways.

This study's conclusion underscores the necessity of implementing an integrated approach to public transportation management. By prioritizing service quality, value perception, and customer loyalty, trains can become a favored transportation option for the public, consequently diminishing dependence on private vehicles and enhancing the alleviation of congestion and carbon emissions.

The connection between public policies and public transportation, particularly trains, is crucial for enhancing service quality, accessibility, and user loyalty. High service quality directly influences user trust and satisfaction. In the realm of trains, elements such as punctuality, comfort, safety, and amenities at stations and aboard trains significantly influence user perceptions of services.

Infrastructure reliability and maintenance, facilitated by policies like the Infrastructure Maintenance Obligation (IMO), guarantee travel quality and safety. The dependability of rail infrastructure, stations, and signaling systems significantly impacts railway user loyalty. The perception of value and affordable fares is supported by the Public Service Obligation (PSO) policy, which provides subsidies, particularly for commuter train services. This enhances users' perceived value, Commuter satisfaction, and loyalty.

Passenger loyalty in train services is shaped by belief established through reliable and high-quality service. Content passengers are inclined to persist in utilizing trains as their principal means of transport, thereby fostering the ongoing expansion of public transportation usage.

The implementation of this policy will ensure that rail-based public transportation remains the preferred option for daily mobility while advancing the sustainability and efficiency objectives of national transportation.

In the first quadrant of *Importance-Performance Analysis* (IPA), the findings are as follows:

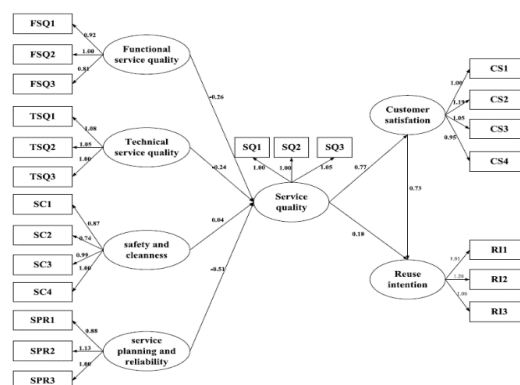
- This implies that high-speed trains do not stop on highways due to technical issues, including signals, electric power, railroads, or natural disturbances. An additional way to express this is that the high-speed train runs without a hitch.
- The maintenance of Rolling Stock facilities must be improved to ensure that Rolling Stock is highly reliable and does not function during operation.
- Accelerate the implementation of an integrated system consisting of infrastructure, facilities/modes, ticketing systems, and schedule integration systems that are interconnected with other modes.
- Implementing an integrated ticketing system within the framework of urban transportation.

In quadrant II, rail transportation service providers are performing well, and there is a high demand for service consumers. Therefore, it is crucial to maintain this level of performance in order to foster commuter loyalty. In quadrants III and IV, attention is scarce to the interests of service consumers.

The development of a service model to obtain accurate imaging policies, both public policies by the Central Government and operational policies by Railway Operators, is considered necessary to increase the role of Public Transportation in Jakarta. This policy is related to ways to increase the role of Rail-Based Public Transportation. Creating a model of an original system, a system that is in progress in life, a system that is the center of attention and a problem, is a process called modeling (Kurniawan & Sugianto, 2020), while according to William N. Dunn, quoted by (Sudibya, 2019), Public policy is described as a set of regulations or laws set by government authorities to improve the welfare of citizens. This paper examines public policy regarding the implementation of effective and efficient integration, as well as the development of IMO, PSO, and TAC rail and transportation networks.

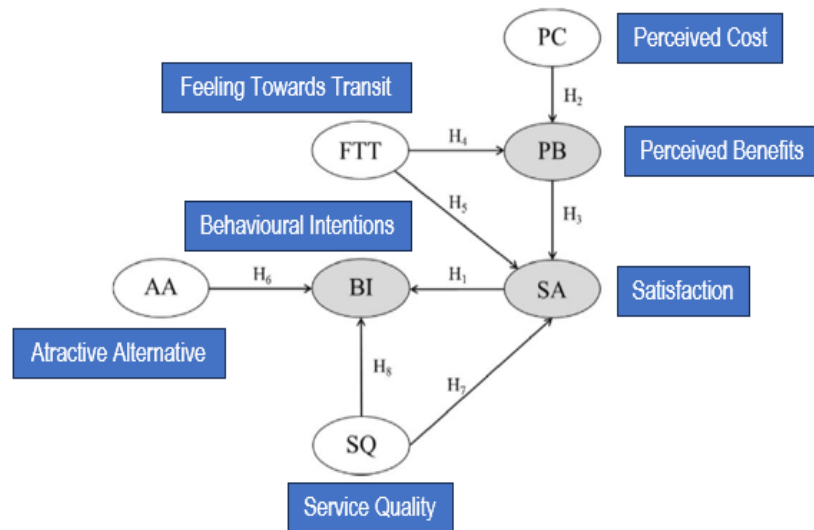
The following are some of the *Urban Rail Transportation service models* from several countries, namely:

Figure 3.
Model The Effect of Customer Satisfaction and Service Quality on Reuse Intention in Urban Rail Transit in Tianjin, China



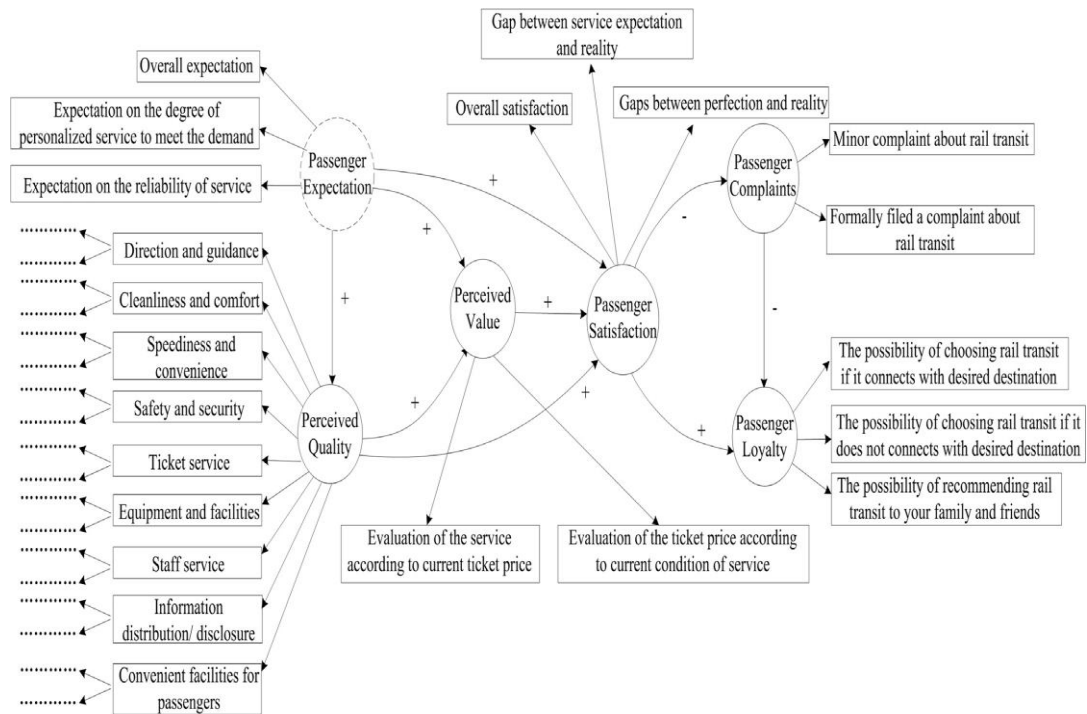
Source: (Wang et al., 2020)

Figure 4.
The impact of customer satisfaction and service quality on the behavioral intention of transit passengers Sevilla (Spain)



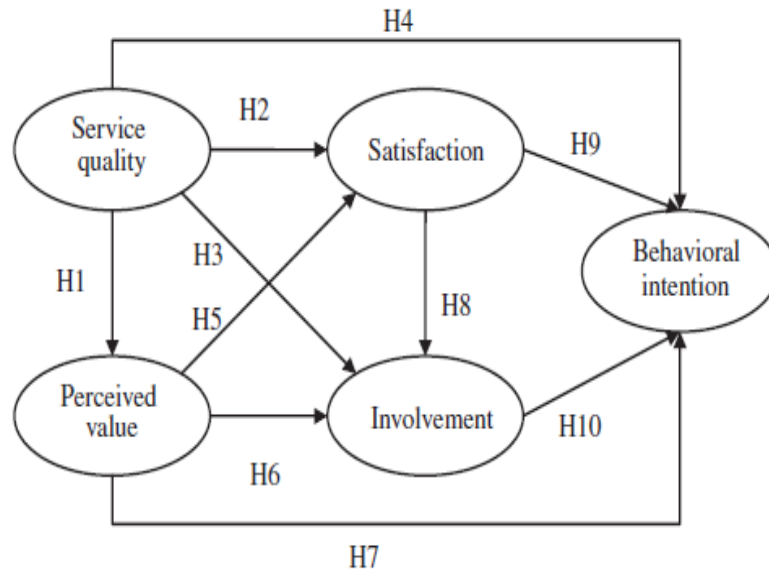
Source: (Oña dkk., 2016a)

Figure 5.
Model An evaluation model of urban rail transport passenger satisfaction based on the smallest partial square: A structural equation modeling approach (China's urban railway transit)



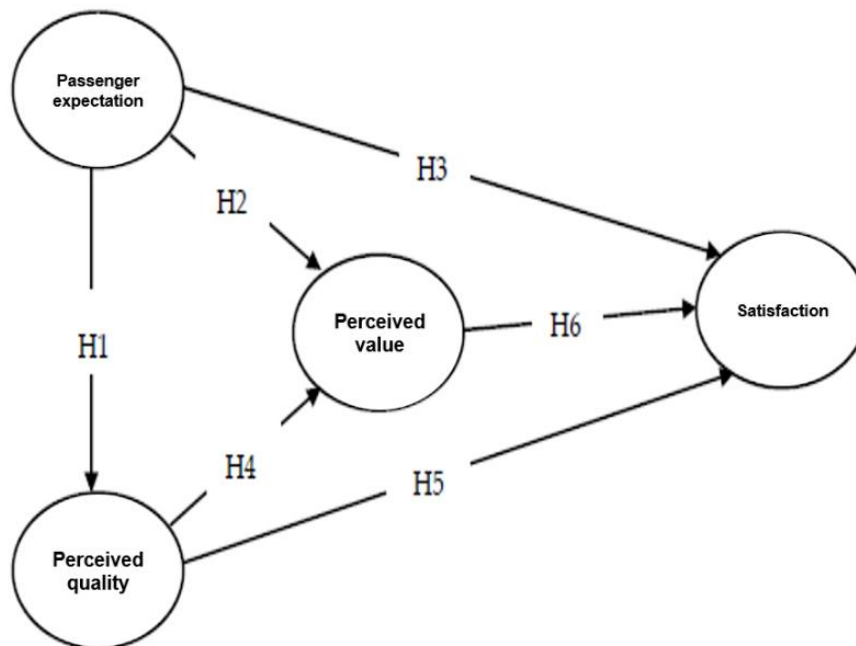
Source: (Shen et al., 2016)

Figure 6.
Model The role of service quality, perceived value, satisfaction, and engagement in the behavioral intentions of public transport passengers in Taiwan



Source: (Lai & Chen, 2011)

Figure 7.
Structural Equation Modelling to Investigate the Factors Influencing Passenger Satisfaction with Light Rail Transit Services in Kota Alpha: Evidence from Kuala Lumpur, Malaysia



Source: (Hakimi Ibrahim dkk., 2021)

The model establishes that all studies connect service quality, commuter satisfaction, and intention to reuse as fundamental components in the success of public transportation services. Elements such as planning, reliability, and passenger engagement consistently manifest in diverse models. Propose enhanced amenities, optimized system architecture, and minimized travel expenses to elevate the passenger experience. Prioritizing transportation integration is a crucial strategy to entice users to abandon private vehicles. More intricate models, such as "Feeling Toward Transit" and "Attractive Alternatives," offer a novel framework for comprehending user loyalty and intention repurchase, thereby broadening the conventional focus on service quality and satisfaction.

These models enhance one another, providing strategic direction for operational management and the formulation of transportation theories centered on service quality and passenger loyalty.

In order to build a rail-based public transportation system aimed at reducing the use of private cars and promoting rail transit, many public policies must be put in place, including:

a) Railway network development

The construction of the Jabodebek LRT line, which stretches 14.9 km from Cibubur (Harjamukti) to Cawang and 29.6 km from East Bekasi (Jatimulya) to Cawang, Pancoran, Kuningan, Setiabudi, and Dukuh Atas, with a total of 44.5 km with 18 stations, is expected to increase the number of passengers on the Jabodebek LRT service. The Jakarta LRT, with a planned network expansion of 215.12 km, will soon start development from Velodrome Station to Manggarai Station at a distance of 6.2 km.

(Octoria & Rarasati, 2022) Demonstrate that network performance in this category is adequate but requires capacity building and integration with other modes, and the length of highway required to maintain the accessibility of its feeder mode is beyond the criteria set by the United States (Bureau of Transportation Statistics, 2020), and supported by government policies for the development of the railway network (MRTJ, LRTJ, and Jabodebek LRT),

b) Implementation and improvement of the integration system

Integration of urban transportation as an organizational process that consolidates the design of transportation system elements across modes, sectors, operators, and institutions to increase economic and social excellence (Blainey & Preston, 2022), (Institute for Transportation and Development Policy, 2021).

The government has established basic requirements for transportation services to improve public services related to security, safety, comfort, affordability, equality, and order through the Regulation of the Minister of Transportation of the Republic of Indonesia (PM RI No 29, 2015). Therefore, increasing integration between forms of public transportation is very important to make it easier for users to achieve their goals.

Previous research (Sonar & Gaikwad, 2020) explained that the integration of the public transportation system is divided into four namely.

1) Infrastructure Integration

In particular, developing and supplying connecting infrastructure in transportation hubs. Infrastructure integration in Jakarta has reached 69.5% completion. This highway mode serves as a feeder for rail traffic, facilitating a seamless transition between modes (Handyani DKK., 2021).

2) Ticket Integration

The integration of public transportation services in Jakarta is expanding to include the consolidation of large, medium, and small buses in TransJakarta, as well as rail-based transportation managed by the DKI Jakarta Provincial Government, consisting of MRT, LRT, TransJakarta, KRL/KCI, and KA-Airport, in addition to toll road payments in the Greater Jakarta area supervised by Jasa Marga, Hutama Karya, and Citra Marga Nusapahala Persada.

3) Operations/schedule integration

To reduce the waiting time for transportation service users at stations and bus stops, the arrival and departure schedules of different transit modes must be synchronized. The Moovit application enhances user convenience for service consumers (Handyani DKK., 2021).

c) Improve PSO, IMO, and TAC execution

These three policies aim to create an environment that supports the development of a more efficient, reliable, and affordable railway system for the local community. *Public Service Obligation* (PSO), *Infrastructure Maintenance Obligation* (IMO), and *Track Access Charge* (TAC) will improve regional and national connectivity and better transportation services in Indonesia.

CONCLUSIONS

The research highlights the necessity of an integrated approach to managing rail-based public transportation to diminish dependence on private vehicles and enhance transport sustainability. Enhancing service quality via convenience, security, reliability, and time efficiency is crucial for augmenting user satisfaction. Strategies encompass competitive fare modifications, modern amenities, and accessible services that can augment value perception and incite public interest in the shift to rail transportation.

To cultivate user loyalty, a reliable and lucrative experience is imperative. The resilience of infrastructure, encompassing maintenance through regulations like the Infrastructure Maintenance Obligation (IMO), profoundly influences long-term user beliefs and preferences. Moreover, Public Service Obligation (PSO) regulations that facilitate low-cost fares significantly influence passengers' valuation and enhance their dedication to these transit alternatives.

This study highlights the substantial influence of transportation mode integration. The execution of an integrated system encompasses infrastructure, ticketing systems, and multimodal schedules, which are interconnected and enhance the user experience. This initiative enhances transportation efficiency and fortifies urban transportation networks.

The analysis results indicate that service quality, passenger satisfaction, and intention to reuse are critical factors for the success of rail-based public transportation. A service model that integrates transportation optimizes system design, and lowers travel expenses can enhance the customer experience. This technique necessitates backing from pertinent public policies to guarantee sustainable development.

By employing these strategies, rail travel can emerge as a favored choice for everyday commuting, contributing to the reduction of congestion, lowering carbon emissions, and achieving national transportation sustainability goals.

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