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Revolutionizing Commutes: Unraveling Customer Citizenship Behavior through Value Co-Creation in Public Transportation

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ABSTRACT

The service-dominant logic paradigm underscores the significance of consumer participation in co-creating value. Co-creation serves as a source of competitive advantage for companies, including those operating in the public service sector. This study aims to analyze the factors that motivate public transportation users to engage in co-creation behavior, with the goal of fostering customer citizenship behavior that benefits other stakeholders. To address the research questions, an electronic survey was conducted among MRT Jakarta users using purposive sampling techniques, successfully collecting 201 valid responses. Partial least squares structural equation modeling (PLS-SEM) was employed to examine the relationships between the study variables. The findings indicate that co-creation behavior is influenced by users' identification with the MRT Jakarta brand and their positive attitudes. In turn, this co-creation behavior encourages users to engage in customer citizenship behavior, reflecting efforts that go above and beyond basic expectations. This study highlights the importance for service providers to establish more open communication channels with passengers, including empowering them to provide input, offer suggestions, or participate in service development programs.

KEYWORDS

Value co-creation
Customer citizenship behavior
Service-dominant logic
Public transportation
MRT Jakarta

INTRODUCTION

Compared to the activeness of consumers of commercial products or services, public transportation passengers tend to be somewhat more passive (Wirtz & Lovelock, 2016), even though one of the key factors in gaining a competitive advantage lies in a company's ability to engage the active participation of its customers (Prahalad & Ramaswamy, 2004). When consumer involvement remains minimal, it reflects a service orientation that is primarily inward-focused rather than customer-centric (Khan & Krishnan, 2021).

The contemporary challenge facing public transportation service providers involves transitioning from a traditionally predictable and stable operational environment to one characterized by rapid change. Successfully addressing this challenge presents an opportunity for providers to innovate,

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potentially generating new revenue streams through the development of value-added services that promote active customer or passenger engagement (Gebauer et al., 2012).

The service-dominant (S-D) logic paradigm posits that customers act as co-creators of value, integrating their unique resources—such as expertise, information, and skills—through interactions within a service ecosystem (Vargo, 2021). However, in the realm of public transportation, passengers have traditionally been perceived as passive recipients of value provided by operators, reflecting the outdated goods-dominant (G-D) logic paradigm. This paradigm does not account for the evolving nature of consumer behavior observed today (Vargo et al., 2020).

Prior research has pointed out that the public sector has often been slower to adopt value co-creation practices and tools, largely due to a lack of customer orientation (Nunes et al., 2014). This is particularly evident in the urban public transportation sector, which operates in a less competitive environment compared to private transportation industries such as aviation. Given resource constraints, engaging passengers becomes essential for delivering services that are better aligned with their preferences (Vargo & Lusch, 2017).

Value co-creation within the public sector has garnered attention in scholarly literature. For example, Torfing et al. (2019) underscored how institutional design, public leadership, and systemic change can serve as catalysts for co-creation. Additionally, Engen et al. (2021) shed light on the repercussions of failed value co-creation in the public sector, attributing such failures to factors including lack of transparency, bureaucratic inefficiency, service inadequacy, and resource misallocation within the service ecosystem. Building on this, recent research by Hardyman et al. (2022) elucidated how adopting a service ecosystem perspective to interpret public experience and participation can furnish public sector managers with a deeper understanding of exchange processes, experimentation, and value co-creation in innovative service endeavors. Fostering positive consumer attitudes towards the utilization of public transportation is crucial, particularly in relation to the service provider's brand identity, as it underscores the relevance and significance of the transportation service.

Research findings have also demonstrated that value co-creation positively influences the development of customer citizenship behavior (Mitrega et al., 2022). This form of behavior encompasses various actions, including expressing interest in providing service feedback, volunteering to assist in service provision, sharing positive experiences with others, and showing tolerance toward occasional service shortcomings (Gong et al., 2022; Kim & Tang, 2020). The insights shared by Engen et al. (2021) are particularly relevant for understanding public service dynamics, especially the lack of strong competencies to meet customer needs in non-competitive sectors like public transportation. Therefore, fostering citizenship behavior among public transportation users is essential—not only to encourage individual participation but also to support a broader shift toward increased public transportation usage.

While research on co-creation within public services has received some attention from scholars (Khan & Krishnan, 2021), discussions on applying the S-D logic paradigm to the public sector have primarily focused on mandatory services such as tax, population, and social services. Conversely, studies examining the application of this paradigm in transportation settings remain scarce. Hence, this study seeks to bridge this gap by investigating how value co-creation influences customer citizenship behavior in public transportation services.

The public transportation sector is viewed as a service ecosystem (Vargo, 2021), where passengers act as resource integrators and beneficiaries, interacting with various actors within the system. The specific context under examination is public transportation operating in Jakarta, specifically MRT. The service was selected due to its significant increase in ridership since commencing operations in March 2019, as well as its target market. Jakarta's MRT holds a positive reputation among the city's public transportation users, being recognized as a modern, fast, and

efficient mode of transit. Furthermore, the provider actively engages with its users through multiple social media channels. Prior research has demonstrated that both service quality (Agustien, 2021) and interaction quality (Ismail et al., 2023) from service providers contribute positively to user satisfaction. As consumer awareness, including that of passengers, regarding environmental sustainability increases, public service users are increasingly recognizing that responsible consumption is prevalent (Gunawan et al., 2024), which also entails the use of public transportation.

The present study investigates how public transport users' perceptions of value co-creation influence their willingness to engage in citizenship behaviors that benefit not only the service provider but also other current and potential users. To address this gap, the study poses the following research questions:

1. Does the brand identity of a public transportation service provider influence the formation of positive user attitudes and motivate users to engage in co-creation behavior?
2. Does the co-creation behavior of public transportation users contribute to the development of their customer citizenship behavior?

This study delves into customers' value co-creation behaviors within the public transportation sector, with a focus on service provider brand identification, consumer attitudes toward public transportation, and customer citizenship behavior. It aims to investigate how value co-creation in public transportation influences the development of customer citizenship behavior. By offering a comprehensive understanding of how such behavior is shaped by value co-creation, brand identification, and user attitudes toward service attributes, this research contributes to the literature by enriching the framework for decision-making processes and consumer behavior in the context of public services.

LITERATURE REVIEW

Service-dominant logic and value co-creation

Service-dominant (S-D) logic is a novel paradigm that posits a departure from the traditional dichotomy between service and products, as popularized by Vargo & Lusch (2004). This paradigm shifts away from the previous goods-dominant (GD) logic, which was predominantly firm-centric. S-D logic redefines value creation by emphasizing that value is co-created through interactions among actors within a value network (Vargo & Lusch, 2008). Value emerges from these interactions, with each actor functioning as a resource integrator, utilizing their resources to generate value. S-D logic highlights that the locus of value creation shifts from the company to intangible elements such as knowledge, skills, and sustained relationships (Payne et al., 2009). In this framework, value is co-created by actors embedded within the broader service ecosystem.

Value Co-Creation Behavior

Customer value co-creation behavior, as defined by Yang et al. (2023), refers to customers' actual engagement in value co-creation, encompassing the actions they undertake during the production and delivery of services to meet a company's service expectations. Past studies typically classify customer value co-creation behavior into two categories: customer engagement behavior and customer citizenship behavior (Mitrega et al., 2022; Yi et al., 2011; Yi & Gong, 2013). As research on value co-creation progresses, it encompasses both user participation behavior—where users actively contribute to enterprise activities to generate value—and user citizenship behavior—where users

voluntarily maintain community order and support the interests of other participants while creating additional value for the enterprise (Liu et al., 2023). Prior research suggests that value co-creation behavior comprises four dimensions: information seeking, information sharing, responsible behavior, and personal interaction (Yi & Gong, 2013).

Public transportation brand identity

Social identity theory explains how individuals categorize themselves as members of specific social groups, form connections with these groups, and develop group-related behaviors through self-concept and group processes (Hogg et al., 1995). The literature suggests that customers who perceive brands as a reflection of their identity tend to form stronger brand relationships, exhibit more favorable brand attitudes, and demonstrate greater brand loyalty (France et al., 2015). When customers are deeply engaged in an activity, they are more likely to devote increased time and effort to it (Sirgy et al., 2008). Research has shown that brand identification fosters customers' active participation in co-creation activities (Hsu, 2024; Itani, 2021). MRT Jakarta, as a brand that positions itself as a high-standard public transportation service provider, may influence users' willingness to engage more actively with the service. Thus, this study hypothesizes the following:

H1: Public transportation brand identity has a positive effect on co-creation behavior.

Attitude toward public transportation

Attitude is defined as the extent to which an individual holds a positive or negative evaluation of a specific behavior (Ajzen, 1991). In the context of public transportation, attitude refers to an individual's overall evaluation or perception of public transportation services. This includes their feelings, beliefs, and perceptions about using public transportation, encompassing factors such as convenience, comfort, reliability, safety, and environmental impact (Beirão & Sarsfield Cabral, 2007).

When consumers can easily access the identity they associate with a brand, they tend to generate positive associations and develop favorable attitudes toward the brand (Guo & Hong, 2018). Moreover, individuals with a strong sense of brand identity seek affirmation of their connection to the broader brand community by consistently expressing attitudes and intentions that reinforce their sense of belonging (Magnusson et al., 2015). This is supported by previous studies that highlight the role of brand identity in shaping favorable customer attitudes (Calapez et al., 2024). Customers who feel connected to a brand are more likely to hold a positive attitude toward it, thereby increasing their intention to engage with the brand (Marin et al., 2018). Accordingly, when MRT Jakarta services are perceived as integral to users' lifestyles, more positive attitudes are likely to develop, encouraging continued use of the service. Therefore, this study hypothesizes that:

H_2: Public transportation brand identity has a positive effect on attitude towards public transportation.

Attitude plays a pivotal role in shaping individuals' willingness and readiness to engage in co-creation activities, ultimately influencing their co-creation intention (Chepurna & Rialp Criado, 2021). Engagement in co-creation is driven not only by users' personal experiences, motivations, and mindsets but also by interactions with other actors (Oertzen et al., 2020). Given that customer

involvement in value creation can lead to both positive and negative outcomes, it is essential for companies to understand not only the extent of consumer engagement but also the attitudes underpinning their participation (Seifert & Kwon, 2019). Prior studies have shown that customers who identify with a brand are more likely to actively engage in value co-creation, thereby generating greater value for both themselves and the brand (Itani, 2021). Then, a positive attitude towards online co-creation has a strong and significant influence on customer participation in value co-creation (Chepurna & Rialp Criado, 2021) This study therefore hypothesizes that:

H_3: Attitude towards public transportation has a positive effect on co-creation behavior.

Customer citizenship behavior

Customer citizenship behavior refers to voluntary actions that go beyond basic service requirements and contribute positively to organizational performance (Fatma et al., 2022). This research regards customer citizenship behavior as comprising feedback, advocacy, helping, and tolerance (Yi & Gong, 2013). Customers not only utilize services and products but also take on the role of leading value creation (Heinonen et al., 2010), with their involvement in citizenship behaviors enhancing the service experience for other consumers (Vargo & Lusch, 2008). Merrilees et al. (2017) affirmed that engagement can encourage citizenship behaviors such as helping, innovation, and advocacy, thus promoting interaction that supports citizenship behaviors (Fatma et al., 2022; Yang et al., 2023).

Studies have highlighted the pivotal role of customer participation in the formation of citizenship behavior through their engagement in co-creation activities (Salem & Alanadoly, 2024). These positive experiences then resonate emotionally with customers, generating lasting effects (Liu et al., 2023) that encourage the adoption of citizenship behaviors (Yang et al., 2023). Assiouras et al. (2019) demonstrated that customers' willingness to "give back" is often a response to personal and meaningful experiences, which motivates them to go the extra mile in maintaining relationships with service providers. Similarly, Arıca et al. (2022) and Hsu (2024) also confirmed that customer citizenship behavior is significantly influenced by the co-creation processes they engage in. Based on these findings, the present study proposes the following hypotheses:

H_4: Co-creation behavior has a positive effect on feedback.
H_5: Co-creation behavior has a positive effect on advocacy.
H_6: Co-creation behavior has a positive effect on helping.
H_7: Co-creation behavior has a positive effect on tolerance.

RESEARCH METHOD

This research employed an online survey distributed via Google Forms to collect data from respondents. Screening questions were included at the beginning of the questionnaire to ensure that participants met the predefined eligibility criteria. To enhance response rates and encourage participation, respondents who completed the survey with valid and consistent answers were offered incentives in the form of e-wallet credits.

The target population of this study comprises users of the MRT Jakarta public transportation service. A purposive or judgmental sampling technique was employed in conjunction with an unrestricted self-selected survey method. This approach enables researchers to deliberately select individuals from the population based on specific criteria and informed judgment, ensuring that the

selected respondents are representative of the population under investigation (Burns & Veeck, 2020). Although judgmental sampling may limit the generalizability of the findings, in this study, it is justified by the large size of the population and the ability to identify groups with relevant characteristics and insights necessary to address the research questions (Sekaran & Bougie, 2016). A total of 261 responses were collected via the online questionnaire. Of these, 45 responses were excluded due to failure to meet the screening criteria, and 15 were removed due to respondent misconduct, resulting in 201 valid responses for analysis.

Partial least squares structural equation modeling (PLS-SEM) was used in this study due to its suitability for exploring complex relationships and theoretical extensions, particularly when the primary aim is theory development rather than theory testing (Hair et al., 2022). Given that Service-Dominant (S-D) Logic is a contemporary and evolving marketing paradigm with increasing acceptance across various academic disciplines (Vargo et al., 2020), PLS-SEM is deemed the most appropriate analytical approach for this research. The study utilized measurement instruments adapted from previously validated research, with all items assessed using a five-point Likert scale.

Table 1. Measurement items

No	Constructs	Items	Reference
1	Public transportation brand identity	1. I feel a sense of ownership towards MRT Jakarta. 2. I feel a strong compatibility with MRT Jakarta. 3. MRT Jakarta is an integral part of my daily life. 4. MRT Jakarta holds personal significance to me.	Wallace et al. (2021)
2	Attitude toward public transportation	Overall, in my opinion, MRT Jakarta is ... 1. Unfavorable – Favorable 2. Bad – Good 3. Unpleasant – Pleasant 4. Negative – Positive	Hwang & Lyu (2020)
3	Information seeking	1. I actively search for sources of information regarding MRT Jakarta. 2. I seek information about MRT Jakarta services available at each station. 3. I observe how other people use MRT Jakarta services. 4. I ask others for information about MRT Jakarta services.	Foroudi et al. (2020)
4	Information sharing	1. I clearly express the services I want to receive from MRT Jakarta. 2. I provide accurate information to MRT Jakarta authorities. 3. I share information with MRT Jakarta to help staff perform their duties effectively.	Foroudi et al. (2020)
5	Responsible behavior	1. I follow all instructions while using MRT Jakarta.	Foroudi et al. (2020)

		2. I behave in accordance with the rules set by MRT Jakarta. 3. I take responsibility for my actions while using MRT Jakarta. 4. I comply with the regulations enforced by MRT Jakarta staff.	
6	Personal interaction	1. I am friendly towards the MRT Jakarta staff. 2. I am kind to the MRT Jakarta staff. 3. I behave politely towards the MRT Jakarta staff. 4. I show respect to the MRT Jakarta staff.	Foroudi et al. (2020)
7	Feedback	1. I am willing to share ideas regarding efforts to improve MRT Jakarta services. 2. I am willing to comment on the satisfactory service I receive from MRT Jakarta. 3. I am willing to inform MRT Jakarta if I receive unsatisfactory service.	Hwang & Lyu (2020)
8	Advocacy	1. I will share positive things about MRT Jakarta. 2. I want to recommend MRT Jakarta services to others. 3. I will encourage others to use MRT Jakarta services.	Hwang & Lyu (2020)
9	Helping	1. I will assist fellow MRT Jakarta users if they need my help. 2. I will help other MRT Jakarta users if I see them experiencing difficulties. 3. I want to offer suggestions for MRT Jakarta.	Hwang & Lyu (2020)
10	Tolerance	1. If the service provided does not meet my expectations, I am willing to be tolerant. 2. If an MRT officer makes a mistake while serving, I am willing to be patient. 3. If I have to wait longer than usual to receive MRT Jakarta service, I am willing to adapt.	Hwang & Lyu (2020)

To measure the validity and reliability of the measurement items, confirmatory composite analysis (CCA) using PLS-SEM was conducted to obtain composite reliability, convergent validity, and discriminant validity values (Hubona et al., 2021). To test the structural model, a PLS bootstrap of 5,000 resamples was performed, as recommended by Hair et al. (2022). In addition, a robustness check of the proposed model was conducted by analyzing both in-sample and out-sample predictive validity (Shmueli et al., 2019).

RESULTS

The following table presents the profile of the respondents who participated in this study.

Table 2. Demographic profile of the respondents

Item	Description	n	%
Have used MRT Jakarta for …	Less than a year	130	64.7
	Between 1-3 years	54	26.9
	More than 3 years	17	8.5
Gender	Male	91	45.3
	Female	110	54.7
Age	18-24	140	69.7
	24-35	37	18.4
	35-45	2	1.0
	45-55	16	8.0
	55-65	5	2.5
	Above 65	1	0.5
Have followed one or more of MRT Jakarta's social media accounts	Yes	125	62.2
	No	76	37.8
Occupation	Student	37	18.4
	Private employee	114	56.7
	Professional	19	9.5
	Entrepreneurs	8	4.0
	Others	23	11.4

As presented in Table 2, most respondents (64.7%) have been using MRT Jakarta for less than a year, suggesting that relatively new users may hold different perceptions compared to more experienced users. More than half of the respondents have followed MRT Jakarta on social media, indicating their interest in online interaction and potential participation in digital initiatives. Finally, the majority of respondents (56.7%) are employees, indicating that MRT Jakarta is a widely used mode of transportation among working individuals.

Common method bias

Common method bias is defined as a phenomenon arising from the measurement method used in a study, rather than from the actual cause-effect relationships among the latent variables in the study (Kock, 2022).

Table 3. Harman's single-factor test results

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.429	35.512	35.512	11.804	33.725	33.725

Harman's single-factor test was conducted in this study using exploratory factor analysis on all measured items. If a single factor emerged as the dominant factor explaining most of the inter-item covariance, this might indicate the presence of common method bias. Kock (2022) stated that a common variance value above equal to 0.5 suggests potential common method bias. As shown in Table 3, the total variance explained in the exploratory factor analysis is 0.33, indicating that there are no symptoms of common method bias.

PLS-Confirmatory composite analysis (PLS-CCA)

PLS-CCA is a series of steps that can be performed with composite-based SEM methods, such as PLS, to confirm reflective or formative measurement models in a nomological network (Hair et al., 2020). The main objective of PLS-CCA is to maximize the variance extracted from exogenous variables, which simultaneously facilitates the prediction of endogenous variables and confirms the measurement model. PLS-CCA involves obtaining: 1) item weights, loading, and significant values; 2) composite reliability (CR) and Cronbach-alpha values for each construct; 3) average variance extracted (AVE) value; 4) validation of discriminant validity through heterotrait-monotrait (HTMT) ratio and Fornell-Larcker criteria; and 5) evaluation of predictive validity (Manley et al., 2021).

Table 4. PLS-Confirmatory composite analysis results

Indicator	**Loading**	**Cr. alpha**	**Rho_A**	**Rho_C**	**AVE**	**t-statistic**
First order construct						
Public transportation brand identity		0.789	0.820	0.857	0.603	
(PTB)	0.813					42.563
PTB1						
PTB2	0.836					34.824
PTB3	0.629					35.542
PTB4	0.810					38.596
Attitude towards public transportation (ATT)		0.934	0.934	0.953	0.834	
ATT1	0.922					42.563
ATT2	0.910					34.824
ATT3	0.906					35.542
ATT4	0.915					38.596
Personal interaction (PER)		0.940	0.941	0.957	0.847	
PER1	0.928					44.365
PER2	0.896					19.520
PER3	0.934					48.108
PER4	0.923					47.347
Responsible behavior (RES)	0.896	0.896	0.902	0.928	0.765	
RES1	0.788					13.287
RES2	0.927					55.360
RES3	0.883					28.674
RES4	0.893					32.588
Information seeking (SEE)	0.771	0.771	0.778	0.853	0.594	
SEE1	0.762					21.205
SEE2	0.829					33.878
SEE3	0.780					22.031

SEE4	0.705					14.657
Information sharing (SHA)	0.839	0.839	0.848	0.903	0.757	
SHA1	0.830					24.647
SHA2	0.908					51.097
SHA3	0.870					41.011
Feedback (FEE)	0.855	0.855	0.861	0.912	0.776	
FEE1	0.887					46.054
FEE2	0.912					61.492
FEE3	0.843					30.164
Helping (HEL)	0.842	0.842	0.847	0.905	0.761	
HEL1	0.888					52.461
HEL2	0.901					42.284
HEL3	0.826					30.057
Advocacy (ADV)	0.863	0.863	0.864	0.917	0.786	
ADV1	0.868					37.261
ADV2	0.904					58.554
ADV3	0.887					43.062
Tolerance (TOL)	0.849	0.849	0.866	0.908	0.766	
TOL1	0.860					29.782
TOL2	0.898					62.636
TOL3	0.868					30.970
Second order construct						
Value co-creation behavior		0.749	0.751	0.842	0.571	

All significant p-value < 0.001

Reliability

Table 4 shows that the loading value of each indicator on the latent variable is all above 0.700, indicating that the construct explains more than 50% of the variance in each indicator and thus confirms item reliability (Hair et al., 2019). Internal consistency reliability, commonly assessed using composite reliability (CR), was also evaluated. Higher CR values generally reflect a higher level of reliability. All rho_A and rho_C values fall between 0.7 and 0.95, demonstrating that the constructs possess internal reliability.

Convergent validity

Convergent validity refers to the extent to which a construct explains the variance of its associated items. The metric used to evaluate the convergent validity is the average variance extracted (AVE) for all items within each construct. A minimum AVE value of 0.50 is considered acceptable—indicating that the construct accounts for at least 50 percent of the variance in its items (Hair et al., 2019). In this study, all AVE values exceed 0.50, confirming that the constructs exhibit convergent validity.

Discriminant validity

Discriminant validity refers to the extent to which a construct is empirically distinct from other constructs in the structural model (Fornell & Larcker, 1981). Fornell and Larcker recommended

assessing this by comparing the AVE of each construct with the squared inter-construct correlations, ensuring that the shared variance does not exceed the AVE for any construct in the model. However, Henseler et al. (2015) showed that the Fornell-Larcker criterion may underperform, especially when the indicator weights on a construct differ only slightly. As an alternative, they proposed the heterotrait-monotrait (HTMT) ratio of correlations to assess discriminant validity, recommending a threshold value of 0.85. As shown in Table 5, all constructs in this study have HTMT values below 0.85, indicating that discriminant validity has been established.

Table 5. Discriminant validity with HTMT

		1	2	3	4	5	6	7	8	9	10
1	ADV										
2	ATT	**0,359**									
3	FEE	0,657	**0,301**								
4	HEL	0,730	0,346	**0,665**							
5	SEE	0,625	0,216	0,538	**0,501**						
6	SHA	0,612	0,266	0,566	0,547	**0,809**					
7	PTB	0,649	0,441	0,446	0,463	0,508	**0,571**				
8	PER	0,527	0,418	0,501	0,640	0,313	0,376	**0,353**			
9	RES	0,454	0,536	0,548	0,593	0,292	0,363	0,323	**0,800**		
10	TOL	0,481	0,324	0,446	0,483	0,420	0,364	0,435	0,380	**0,381**	

Results

Before analyzing structural relationships, multicollinearity was assessed to ensure that it did not distort the regression results. Multicollinearity occurs when two or more predictors in the model are highly correlated and provide overlapping information. It is commonly assessed using the variance inflation factor (VIF) and tolerance values. A VIF value exceeding 4.0 or a tolerance value below 0.2 indicates potential multicollinearity. Specifically, a VIF value above 5 suggests a possible collinearity issue among the predictor constructs (Hair et al., 2019). The results of the analysis show that all VIF values in the structural model are below 3.00, indicating no signs of multicollinearity. Therefore, the data in this study are suitable for proceeding to hypothesis testing.

Hypothesis testing

Table 6. Hypothesis test results

	Path	β	t	CI corrected bias	
				5%	95%
Hypothesis 1	PT Brand Identity -> VCC Behavior	0.350	5.272	0.223	0.444
Hypothesis 2	PT Brand Identity -> Attitude	0.419	5.785	0.294	0.533
Hypothesis 3	Attitude -> VCC Behavior	0.312	3.452	0.143	0.441
Hypothesis 4	VCC Behavior -> Feedback	0.605	12.557	0.517	0.676
Hypothesis 5	VCC Behavior -> Advocacy	0.616	12.005	0.523	0.693
Hypothesis 6	VCC Behavior -> Helping	0.659	10.007	0.522	0.744
Hypothesis 7	VCC Behavior -> Tolerance	0.440	6.517	0.322	0.546

All significant p-value < 0.001

After the assessment of the measurement model and the multicollinearity test produced satisfactory results, hypothesis testing was carried out by analyzing the path coefficient (β) values, one-tailed *t*

values, and bias-corrected confidence interval (CI) scores using a bootstrapping procedure with 5,000 resamples.

As presented in Table 6, all hypotheses in this study show positive and significant results. Public transport brand identity significantly affects passenger co-creation behavior (β = 0.350, t = 5.272, p = 0.000) and passenger attitude towards public transport (β = 0.419, t = 5.785, p = 0.000). Furthermore, passenger co-creation behavior significantly contributes to the formation of customer citizen behavior, namely feedback (β = 0.605, t = 12.557, p = 0.000), advocacy (β = 0.616, t = 12.005, p = 0.000), helping (β = 0.659, t = 10.007, p = 0.000), and tolerance (β = 0.440, t = 6.517, p = 0.000).

The corrected-bias CI value was further analyzed at the 5% and 95% confidence levels. Confidence interval (CI) is a range of values that expresses the degree of confidence in the accuracy of a parameter estimate. To reduce potential bias, the bias-corrected CI increases the precision of this estimate. The analysis shows that none of the path coefficients' bias-corrected CIs include zero. Therefore, all research hypotheses are supported.

Model explanatory power and effect size

The primary metric for assessing the model's explanatory power is the coefficient of determination (R^2), which serves as an in-sample indicator of prediction accuracy (Sarstedt et al., 2014).

Table 7. R^2 dan f^2 values

Path	R^2	f^2
PT Brand Identity -> VCC Behavior	0,146	0,146
PT Brand Identity -> Attitude	0,213	**0,213**
Attitude PT -> VCC Behavior	0,117	0,117
VCC Behavior -> Feedback	0,578	**0,578**
VCC Behavior -> Advocacy	0,612	**0,612**
VCC Behavior -> Helping	0,766	**0,766**
VCC Behavior -> Tolerance	0,240	**0,240**

As shown in Table 7, the dependent variables feedback, advocacy, and helping have an R^2 value above 0.500, indicating that the independent variables influencing them explain more than half of the variance. Meanwhile, value co-creation behavior and tolerance have an R^2 value below 0.500.

Effect size quantifies the strength of relationships between variables and is often represented as f^2. In PLS-SEM, the f^2 value is computed to measure the impact of an exogenous latent variable on an endogenous latent variable. The assessment of f^2 values is as follows: 0.02 denotes a small effect, 0.15 signifies a medium effect, and 0.35 indicates a large effect (Benitez et al., 2020). Values below 0.02 signify the absence of an effect, underlining the measure's utility in measuring practical significance alongside statistical significance. Table 7 shows that all f^2 values do not fall below 0.02, indicating medium and large effect sizes in the model.

Out-sample predictive relevance

Out-of-sample predictive ability in PLS-SEM refers to the model's capacity to predict new or future observations that are not used during model estimation. To assess this capacity, this present study employed the PLSpredict procedure by Shmueli et al. (2019). The Q^2predict values of the dependent

variable shows indicate that none of them have a value of zero. Therefore, the value of the ratio between PLS-SEM_RMSE and LM_RMSE indicators of all variables was subsequently analyzed.

According to Shmueli et al. (2019), if the PLS-SEM model yields lower RMSE values compared to the LM model, it demonstrates superior predictive power. In this study, the PLS-SEM model produced lower RMSE values than the LM model for slightly less than half of the manifest variables. This finding suggests that the model exhibits medium-level out-of-sample predictive power.

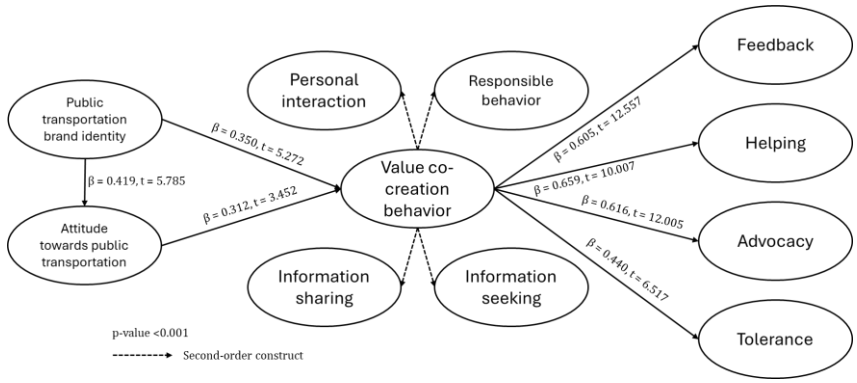


Figure 1. Research model and path analysis

DISCUSSION

This study aims to analyze the role of MRT Jakarta passengers' identification with the brand as a public transportation service operator, along with their attitudes, in encouraging participation in value co-creation activities and fostering citizenship behaviors toward other users.

This study demonstrates that brand identification—when passengers perceive the MRT Jakarta brand as relevant to their self-concept—positively influences their willingness to engage in value co-creation activities. This result aligns with previous studies (Hsu, 2024; Itani, 2021), suggesting that passengers who associate their lifestyle with the service provider are more motivated to participate due to a sense of emotional attachment and affiliation. Such identification fosters a stronger bond between passengers and MRT Jakarta, prompting them to view themselves as active contributors to the development and enhancement of its services. The desire to co-create may stem from a personal drive to reinforce this bond, exert a positive influence, or experience more personalized services that align with their individual preferences and needs.

When passengers perceive the brand as aligned with their personal identity and lifestyle, they tend to feel a stronger emotional connection, which increases their likelihood of engaging in activities that enhance the service. Those who identify with the brand and view its services as relevant to their values may actively use tools such as the MyMRTJ application to report issues, suggest improvements, or participate in user surveys. For example, a passenger who prioritizes efficiency and convenience may regularly offer feedback on how to streamline ticketing processes or improve route navigation. These actions exemplify value co-creation, as the passenger's input contributes to the continuous refinement of the service. Their willingness to engage is often driven by a sense that the brand embodies their values—such as efficiency—motivating them to invest time and effort in supporting the brand's development.

The results also indicate that brand identification with MRT Jakarta has a positive influence on passenger attitudes, reinforcing findings from prior studies (Calapez et al., 2024; Marin et al., 2018). When passengers perceive a strong identification with the MRT Jakarta brand, it significantly shapes

their attitudes toward the products and services offered. This identification fosters emotional and psychological bonds, leading to more favorable attitudes as it aligns with personal values, shared identity, and positive user experiences. Passengers who resonate with the lifestyle promoted by MRT Jakarta are more likely to perceive service quality as high, exhibit strong trust, and actively engage with the brand. When the MRT Jakarta brand is associated with values such as environmental sustainability or convenience, these attributes become reflections of the passenger's own identity. As a result, the brand is perceived not merely as a service provider, but as an extension of the self. This personal relevance nurtures a positive attitude, as individuals are naturally inclined to support brands that affirm their own values.

The data supports the notion that passengers' positive attitudes significantly influence their willingness to engage in value co-creation activities. This finding aligns with prior research (Chepurna & Rialp Criado, 2021; Itani, 2021). When MRT Jakarta passengers hold a favorable attitude toward the brand and its services, they are more likely to be motivated and enthusiastic about participating in co-creation initiatives. A positive attitude fosters a sense of involvement and personal investment, encouraging passengers to contribute ideas, offer constructive feedback, and take part in collaborative efforts aimed at enhancing the overall service experience. Moreover, individuals with positive attitudes tend to view value co-creation not merely as a transactional activity but as an opportunity to deepen their relationship with the service provider, enhance personal satisfaction, and shape services that better reflect their needs and expectations. Thus, attitude emerges as a key driver of co-creation behavior, enabling mutually beneficial outcomes for both MRT Jakarta and its passengers through innovation and service improvement.

Evidence from this study indicates that the participatory value co-creation activities of MRT Jakarta passengers play a significant role in fostering extra-role behaviors, particularly in the form of customer citizenship behavior. This finding aligns with prior research (Arıca et al., 2022; Hsu, 2024). Value co-creation, which entails the active involvement of customers in the joint creation of value with the brand, has been shown to enhance the customer-brand relationship, thereby encouraging voluntary and supportive behaviors. When MRT Jakarta passengers are engaged in co-creation efforts, they are more likely to develop a heightened sense of connection and responsibility toward the service provider. This sense of affiliation can motivate them to go beyond routine service usage by offering constructive feedback, advocating for the service among peers, or even participating in voluntary initiatives that support MRT Jakarta's operations. Through value co-creation, passengers experience greater personalization and emotional resonance, which not only enhances their satisfaction but also inspires behaviors that contribute positively to the brand without direct incentives. Hence, the involvement of passengers in value co-creation serves as a crucial mechanism in cultivating customer citizenship behavior, reflecting their active engagement and willingness to support the service provider beyond transactional interactions.

CONCLUSION

The findings of this study underscore the significant influence of MRT Jakarta's brand identity on the development of positive attitudes among its service users. The alignment between the brand's values, identity, and perceived service quality contributes to a favorable user experience, which in turn fosters a positive attitude toward MRT Jakarta. This positive attitude—rooted in users' identification with the brand—serves as a strong motivational factor driving their engagement in value co-creation behaviors.

Moreover, the value co-creation behavior exhibited by MRT Jakarta users plays a pivotal role in facilitating the emergence of customer citizenship behavior. Through active participation in

co-creation activities, users not only develop a deeper sense of engagement with the service provider but also demonstrate pro-social behaviors such as offering constructive feedback, sharing favorable experiences with others, and engaging in volunteer efforts that support MRT Jakarta's operations.

With all hypotheses supported, this study affirms the interconnected and reinforcing relationships among brand identity, positive attitude, value co-creation behavior, and customer citizenship behavior. These findings emphasize the strategic importance of fostering brand identification and user engagement in sustaining long-term, mutually beneficial relationships between MRT Jakarta and its passengers.

MANAGERIAL IMPLICATION

The managerial implications of this study point to several strategic directions that public transportation providers can adopt to strengthen positive interactions with their service users. Firstly, it is essential to maintain and reinforce a strong brand identity. This requires aligning brand values, identity, and perceived service quality consistently across all touchpoints. Launching branding campaigns focused on positive values, service reliability, and the uniqueness of the brand identity can foster stronger emotional connections with users.

Service providers can enhance user engagement by designing structured and interactive co-creation initiatives that actively involve service users in the development and improvement of services. These initiatives could take the form of the establishment of online platforms, interactive discussion forums, or special events geared toward eliciting active participation from users. By creating tangible and accessible opportunities for participation, service providers can not only strengthen users' sense of involvement and ownership but also harness valuable insights to inform service innovation.

Additionally, implementing a transparent and responsive communication strategy is paramount. Timely and effective responses to user feedback—especially those emerging from co-creation activities—can build trust and encourage citizenship behavior among users. Leveraging social media and other online platforms enables service providers to directly engage with users, fostering open communication channels.

The adoption of these strategies is poised to strengthen public transportation providers' relationships with service users, boost active engagement, and facilitate the development of constructive citizenship behavior. By prioritizing brand identity maintenance and fostering co-creation initiatives, public transportation providers can position themselves as responsive and user-centric organizations in the eyes of their clientele. These efforts not only enhance the overall user experience but also contribute to long-term sustainability.

In conclusion, the managerial implications highlighted in this analysis emphasize the significance of prioritizing brand identity, promoting positive attitudes, and advancing co-creation endeavors. By upholding brand coherence, launching brand campaigns focused on positive values, and maintaining reliable service delivery, public transportation providers can cultivate deeper emotional connections with users. Additionally, implementing structured co-creation initiatives, such as digital platforms and special events, provides tangible avenues for active user involvement in service enhancement, thereby fostering increased engagement. Moreover, promoting positive attitudes of users towards public transportation plays a vital role in encouraging favorable citizenship behavior. Through the implementation of these strategic measures, public transportation service providers stand to not only enrich the overall user experience but also fortify their reputation as user-centric organizations, thereby supporting long-term sustainability.

LIMITATION AND FUTURE RESEARCH

The limitations of this study need to be explained to provide a more complete picture. First, the research is context-specific, focusing solely on MRT Jakarta and its user demographic. As such, the generalizability of the findings may be limited by this unique context. To increase external validity, future research may consider involving a wider variety of contexts and service user populations.

Second, although all hypotheses in this study were supported, there is room for methodological refinement. Improvements in experimental design or further analysis approaches may provide additional insights. For example, the use of survey methods with open-ended questions might provide a deeper understanding of the specific factors that influence attitudes, co-creation, and citizenship behavior.

Lastly, the sample size used in this study also deserves further attention. Along with improving the design of a more representative sample, future research could consider increasing the number of respondents to increase the statistical power and reliability of the findings.

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