DIJEFA: Dinasti International Journal of Economics, Finance & Accounting
E-ISSN: 2721-303X
P-ISSN: 2721-3021
https://dinastipub.org/DIJEFA dinasti.info@gmail.com +62 811 7404 455
DINASTI PUBLISHER

DOI: https://doi.org/10.38035/dijefa.v6i4.5105
https://creativecommons.org/licenses/by/4.0/
Received: 04 July 2025 | **Revised:** 30 August 2025 | **Accepted:** 11 September 2025

The Effect of Product Quality, Service, Brand Image, and Availability on Customer Loyalty with Satisfaction as a Mediation Variable (Study at Astra Isuzu Harapan Indah)

Muhammad Irfan Rizki[1*], Fansuri Munawar[2]
[1]Universitas Widyatama, Bandung, Jawa Barat, Indonesia, irfan.rizki@widyatama.ac.id
[2]Universitas Widyatama, Bandung, Jawa Barat, Indonesia, fansuri.munawar@widyatama.ac.id

[*]Corresponding Author: irfan.rizki@widyatama.ac.id[1]

Abstract: This study examines the effect of product quality, service quality, brand image, and spare part availability on customer loyalty, with customer satisfaction as a mediating variable. The research involved customers of Dealer AI Harapan Indah who had used its services and purchased spare parts in the past two years. A quantitative approach was applied using *purposive sampling* of 300 respondents, and data were analyzed with the Structural Equation Modeling Partial Least Squares (SEM-PLS) method. The results indicate that product quality (p-value= 0.000), service quality (p-value = 0.004), brand image (p-value = 0.010), and spare part availability (p-value = 0.001) have significant positive effects on customer satisfaction. Customer loyalty is directly influenced by product quality (p-value = 0.026) and customer satisfaction (p-value = 0.004), while spare part availability, service quality, and brand image affect loyalty indirectly through satisfaction. Product quality is the most dominant factor in shaping loyalty, aligning with commercial vehicle users' emphasis on reliability and durability. These findings underscore the importance of improving product reliability, ensuring consistent after-sales service, maintaining brand perception, and securing sustainable spare part availability to strengthen long-term customer loyalty.

Keywords: Customer Loyalty, After-Sales Service, Commercial Vehicles, Automotive Industry, SEM-PLS.

INTRODUCTION

The automotive industry has been experiencing profound structural changes over the past decade, driven by globalization, digital transformation, and shifting consumer expectations. Historically, competition among manufacturers and dealerships revolved around core product attributes such as engineering quality, performance specifications, and pricing strategies. However, as technological advancements and quality assurance systems have narrowed product differences across brands, competitive advantage is increasingly determined by *after-sales service performance*. This includes not only routine vehicle maintenance and the provision of spare parts but also warranty management, complaint handling, and long-term customer relationship programs (Nguyen & Tran, 2021; Rehman et al., 2023).

This transformation is supported by empirical data. Deloitte's (2023) Global Automotive Consumer Study shows that 65% of vehicle owners in Asia regard service experience as equally important as product quality in their repurchase decisions, and more than 50% are willing to switch brands if after-sales services fall short of expectations. In an environment where product quality is standardized, after-sales becomes a key touchpoint that differentiates brands and builds enduring loyalty.

In Indonesia, the automotive market plays a pivotal role in the national economy. According to Gaikindo (2024), total vehicle sales in 2023 reached over one million units, with commercial vehicles accounting for more than 20% of the market share. Unlike passenger car buyers, commercial vehicle customers such as logistics operators, mining companies, and manufacturing firms evaluate brand performance based not only on purchase cost but also on operational reliability. Any downtime due to delayed service or unavailable spare parts directly impacts their productivity and revenue. This unique market characteristic underscores the strategic importance of after-sales service in the commercial vehicle segment.

Within this competitive environment, PT Isuzu Astra Motor Indonesia (IAMI) serves as the sole distributor of Isuzu vehicles in Indonesia, supported by an extensive dealer network. Based on the internal analysis of ATPM Isuzu, it was found that there were 10 dealers with a customer decline rate in 2024 as shown in table 1.

Table 1. Number of Service Customers (US)

Dealer	US-2020	US-2021	US-2022	US-2023	US-2024	% US	Amount Contribution - ATPM 2023 %	Amount Contribution - ATPM 2024 %
Sipin Mobilindo Jambi	1.428	1.857	2.204	2.164	2.089	-3,47%	2,98%	2,68%
Perros Mobilindo Ancol	1.828	1.569	1.506	1.256	1.201	-4,38%	2,00%	2,51%
BAC Sampit	821	881	1.562	1.895	1.807	-4,64%	0,62%	0,27%
IMP Makasar	968	1.067	1.063	1.079	1.028	-4,73%	0,55%	0,29%
ACK Cianjur	130	267	503	564	540	-4,26%	0,52%	0,17%
AAT Palembang	-	133	617	806	762	-5,46%	0,29%	0,29%
BPP Tuban	-	401	524	672	636	-5,36%	0,19%	0,15%
AI Cilegon	1.582	1.861	2.000	1.953	1.855	-5,02%	2,55%	2,03%
AI Harapan Indah	4.415	4.642	5.686	5.337	5.043	-5,51%	6,97%	5,07%
Isuindomas Putra Medan	2.103	2.258	2.744	3.342	3.200	-4,25%	4,3%	3,5%

Source: Company Internal Data

Among its outlets, Astra Isuzu Harapan Indah is a key contributor to national spare parts sales. Company records show that in 2023, Harapan Indah accounted for 6.97% of total spare parts sales to the ATPM, the highest among all dealers nationwide (Table 1). In 2024, it remained in first place with a 5.07% contribution, despite increased competition from other dealers. However, a concerning trend emerged: Harapan Indah simultaneously recorded the largest decline in the percentage of returning service customers (%US), with a drop of –5.51% in 2024.

This situation presents a paradox. On one hand, customers continue to purchase spare parts from the dealership, indicating product trust and perceived quality. On the other hand, fewer customers are returning for vehicle servicing, suggesting potential weaknesses in service delivery, customer engagement, or perceived value in the service offering. Preliminary interviews with front-line staff indicate possible contributing factors such as prolonged service lead times, limited personalized follow-up, and perceived higher costs compared to independent workshops.

To further investigate this pattern, a preliminary survey involving 30 customers was conducted to assess their behavioral loyalty toward the dealership's services and spare parts

offerings (Table 2). This survey was designed to measure three key loyalty indicators: repurchase behavior, continued use of after-sales services, and word-of-mouth recommendations. Table 2 shows that while 36.7% of respondents had purchased spare parts within the last six months, indicating a certain level of transactional loyalty, a smaller proportion (26.7%) continued to use the dealer's after-sales service for regular maintenance. Even more concerning, only 23.3% of customers reported recommending the dealer to others. This low referral rate suggests a lack of emotional attachment or satisfaction strong enough to encourage advocacy, which is a critical dimension of true customer loyalty.

Table 2. Initial Customer Loyalty Survey Data

Loyalty Indicator	Question	% Yes	% No	Number of Respondents
Repurchase	Have you replaced any spare parts in the last 6 months?	36.7%	63.3%	30
Use of After Sales Services	Do you still have regular servicing at this dealer after your first purchase?	26.7%	73.3%	30
Referral to Other Dealers	Have you ever recommended another dealer to anyone?	23.3%	76.7%	30

Source: Processed Data 2025

These findings correlate with the dealership's declining Customer Satisfaction Index (CSI), which dropped significantly over the last three years from 78.1% in 2022 to 50.8% in 2024 (Table 3). This sharp decline highlights an urgent need to identify the drivers behind customer disengagement.

Table 3. CSI Score

Period	2022	2023	2024
CSI Score	78.1 %	68.2 %	50.8 %

Interestingly, despite this downward trend in CSI, satisfaction levels for product availability (81.7%) and product quality (80.0%) remain relatively high. This contrast suggests that the core issue may not lie in the products themselves but rather in the delivery and management of after-sales service, including service speed, responsiveness, communication quality, and service facilities.

To explore this issue further, a pre-survey was conducted to examine which factors such as service quality, after-sales service, and product satisfaction most significantly influence customer loyalty toward service and spare part purchases at Astra Isuzu Harapan Indah. The summarized results are visualized in Figure 1, which provides a clear depiction of the distribution of responses across these influencing variables.

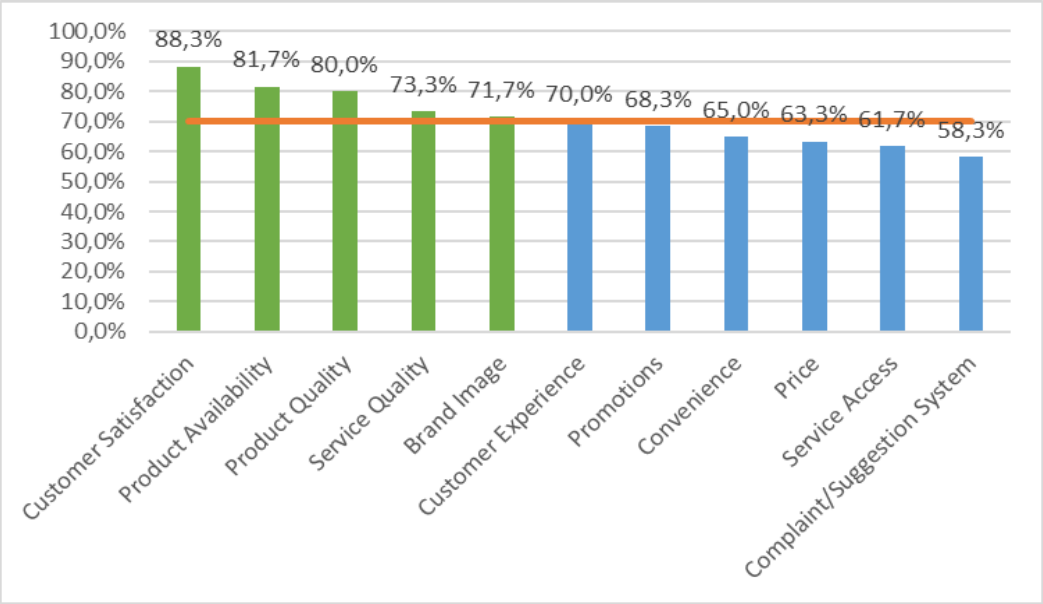


Figure 1. Pre-survey graph of variables that influence customer loyalty
Source: Processed Data 2025

While the significance of after-sales service for customer loyalty has been widely discussed in previous studies (Shaharudin et al., 2022; Lee & Kim, 2020; Rahman et al., 2023), several research gaps remain. First, prior research in the automotive sector predominantly focuses on passenger cars rather than commercial vehicles, whose owners and operators prioritize uptime and service reliability over other attributes (Shaharudin et al., 2022; Lee & Kim, 2020). Second, previous studies have confirmed that after-sales service quality and brand image influence loyalty; however, only a few have explored the mediating role of brand image in this relationship, particularly in the Indonesian context (Rahman et al., 2023). Third, earlier research rarely addresses intra-brand performance disparities at the dealership level, even though dealerships often operate under the same corporate guidelines but experience varying customer retention outcomes. The case of Astra Isuzu Harapan Indah where spare parts sales remain high but service retention continues to decline presents a unique opportunity to examine these gaps within the context of commercial vehicle dealerships in Indonesia.

Against this backdrop, the present study aims to analyze the effect of after-sales service on customer loyalty, with brand image as a mediating variable, focusing on customers of Astra Isuzu Harapan Indah. By employing *Structural Equation Modeling–Partial Least Squares* (SEM-PLS), the research simultaneously examines direct and indirect effects, capturing the complex interplay between service quality perceptions, brand image, and loyalty behaviors. This approach enables a more comprehensive understanding of how service experiences shape customer attitudes and behavioral intentions in the commercial vehicle market.

This study offers several contributions. Theoretically, it expands the scope of loyalty research by integrating after-sales service and brand image into a single analytical framework within the commercial vehicle segment an under researched area in Indonesia. It also tests the mediating effect of brand image, addressing a methodological gap in prior literature. Practically, the study provides actionable insights for dealership managers, particularly in designing interventions to improve service retention. Strategies could include enhancing personalized service follow ups, implementing loyalty programs tied to parts purchases, and leveraging digital platforms for customer engagement.

METHODS

This study employs the Structural Equation Modeling Partial Least Squares (SEM-PLS) technique for data analysis. SEM-PLS was chosen because it offers several advantages over

covariance-based SEM (CB-SEM) and other multivariate techniques. First, SEM-PLS can handle complex models with multiple dependent and independent latent variables while simultaneously estimating direct and indirect relationships. Second, it is particularly suitable for exploratory research and prediction-oriented analysis, where theory is still developing. Third, SEM-PLS performs well with small to medium sample sizes and non-normally distributed data, which is advantageous in studies with targeted sampling. Fourth, it does not require strict assumptions about data normality, making it more flexible than CB-SEM. These characteristics align with the research objectives, which seek to analyze both the structural model (relationships between constructs) and the measurement model (validity and reliability of indicators).

The research examines the influence of Product Quality (X_1), Spare Part Availability (X_2), Service Quality (X_3), and Brand Image (X_4) on Customer Satisfaction (Z) and Customer Loyalty (Y).

1. Product Quality (X_1): Measured using 4 indicators adapted from Kotler & Keller (2016), including product durability, reliability, performance, and conformity to specifications. Responses were collected using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).
2. Spare Part Availability (X_2): Measured through 3 indicators, including stock readiness, delivery speed, and consistency of supply (adapted from Shaharudin et al., 2022).
3. Service Quality (X_3): Measured using a modified SERVQUAL model, which includes dimensions of tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988).
4. Brand Image (X_4): Measured through 4 indicators adapted from Aaker (1996), covering brand reputation, perceived trustworthiness, recognition, and customer association with the brand.
5. Customer Satisfaction (Z): Measured using 3 items referring to customer expectations, perceived performance, and overall satisfaction (Oliver, 1999).
6. Customer Loyalty (Y): Measured through 4 items including repurchase intention, willingness to recommend, resistance to switching, and preference for the brand (Zeithaml et al., 1996).

All items were measured on a 5-point Likert scale, ensuring consistency in scoring and interpretation.

The population in this study consists of customers of Astra Isuzu Harapan Indah who have purchased commercial vehicles and/or related spare parts. The purposive sampling technique was applied to ensure respondents met the research criteria:

1. Have purchased a vehicle from the dealership within the last 2 years.
2. Have conducted at least one after-sales service at the dealership.
3. Are decision-makers in vehicle maintenance and spare part purchases.

Purposive sampling was chosen because it focuses on respondents with direct and relevant experience, thus increasing the relevance and accuracy of the data. However, potential bias was mitigated by including customers from various purchase periods, vehicle models, and business sectors.

The research model used in this study is presented as follows:

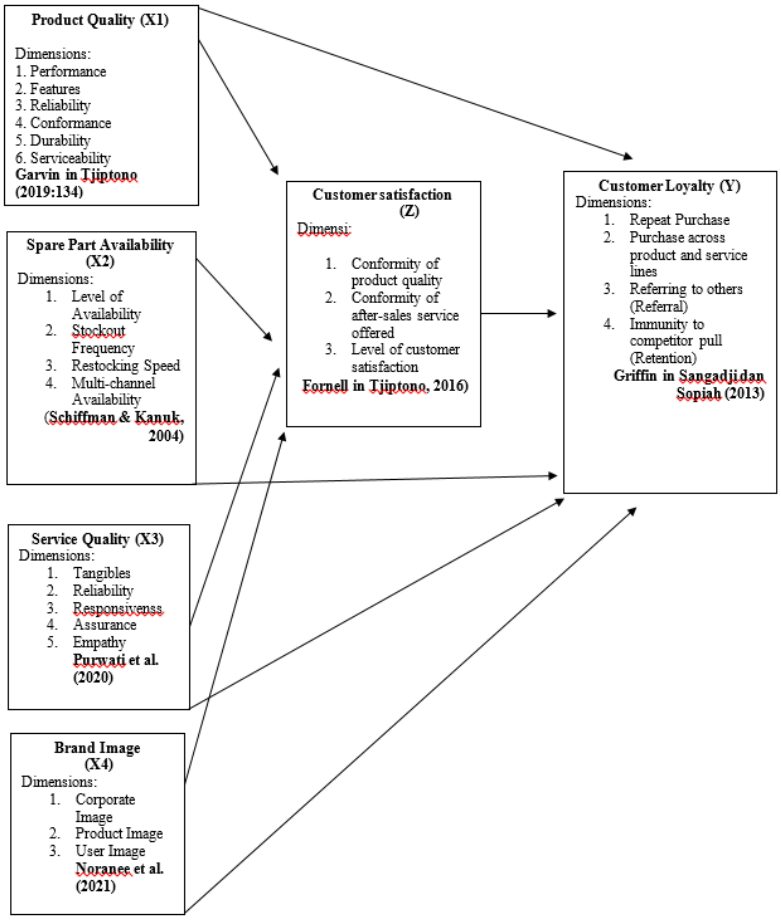


Figure 2. Framework of Thought

Data were analyzed using SmartPLS 3.0 in two main stages:

1. Measurement Model Evaluation: This includes testing convergent validity (outer loadings ≥ 0.7, Average Variance Extracted ≥ 0.5), discriminant validity (Fornell-Larcker criterion and HTMT ratio), and construct reliability (Cronbach's Alpha ≥ 0.7 and Composite Reliability ≥ 0.7).
2. Structural Model Evaluation: This involves testing the significance of path coefficients using bootstrapping (5,000 resamples), examining R^2 values for endogenous constructs, and assessing predictive relevance (Q^2) and effect size (f^2).

The proposed hypotheses (H_1–H_{13}) test both direct effects and mediating effects of Customer Satisfaction between the independent variables and Customer Loyalty.

The research model is illustrated in Figure 2. Based on the framework, the hypotheses are as follows:

1. H_1–H_4: Product quality, spare part availability, service quality, and brand image each have a positive influence on customer satisfaction.
2. H_5: Customer satisfaction has a positive influence on customer loyalty.
3. H_6–H_9: Product quality, spare part availability, service quality, and brand image each have a positive influence on customer loyalty.
4. H_{10}–H_{13}: Customer satisfaction mediates the relationship between product quality, spare part availability, service quality, and brand image with customer loyalty.

RESULTS AND DISCUSSION

The data analysis revealed an uncommon and noteworthy demographic finding in consumer behavior research: all survey respondents at AI Harapan Indah Dealer were male, with no female respondents recorded. At first glance, this might appear to be a sampling bias or a limitation of the data collection method. However, a closer examination suggests that this is not a mere coincidence but rather reflects the specific market characteristics of AI Harapan Indah Dealer, which specializes in selling and providing after-sales services for commercial vehicles such as light trucks, pickups, and operational fleet vehicles.

From a socio cultural perspective, this male dominance can be explained by two main factors. First, in the automotive and small-to-medium enterprise (SME) business culture in Indonesia, decision-making related to vehicle maintenance, spare part purchases, and technical service negotiations remains largely associated with men. These roles are typically carried out either by male business owners or by male technical staff/drivers. Second, the commercial vehicle segment is closely tied to industries such as logistics, construction, large-scale agriculture, and building material trade, sectors that have historically and demographically been male dominated in terms of workforce composition. This creates a market pattern in which female customers are significantly underrepresented as direct buyers or service users.

The complete absence of female respondents is therefore a significant finding, as it indicates that AI Harapan Indah Dealer's current customer base is highly homogeneous in terms of gender. This is in contrast to studies in the retail automotive sector (particularly passenger vehicle segments), where female customers while still a minority are consistently present. Thus, these results reaffirm the structural differences between the customer profiles of commercial vehicle markets and personal vehicle markets.

Regarding educational background, the majority of customers were high school/vocational school/Islamic high school graduates, totaling 164 individuals (55%), followed by junior high school graduates with 94 individuals (31%), and bachelor's degree holders with 42 individuals (14%). This distribution indicates that most customers interacting directly with after-sales services or spare part purchases are vehicle operators or technical staff rather than business owners or strategic managers. This is consistent with the operational nature of commercial vehicles, where daily management and technical maintenance tasks are often delegated to drivers or mechanics rather than handled by the company's top management.

Interestingly, the predominance of moderate to low formal education levels does not imply a lack of technical competence. On the contrary, many of these customers possess strong technical literacy and practical knowledge of vehicle performance, maintenance needs, and spare part specifications, developed through extensive field experience. This suggests that when designing customer loyalty strategies, management should not rely solely on demographic indicators such as education level but should also consider customers' hands-on technical expertise and experiential knowledge.

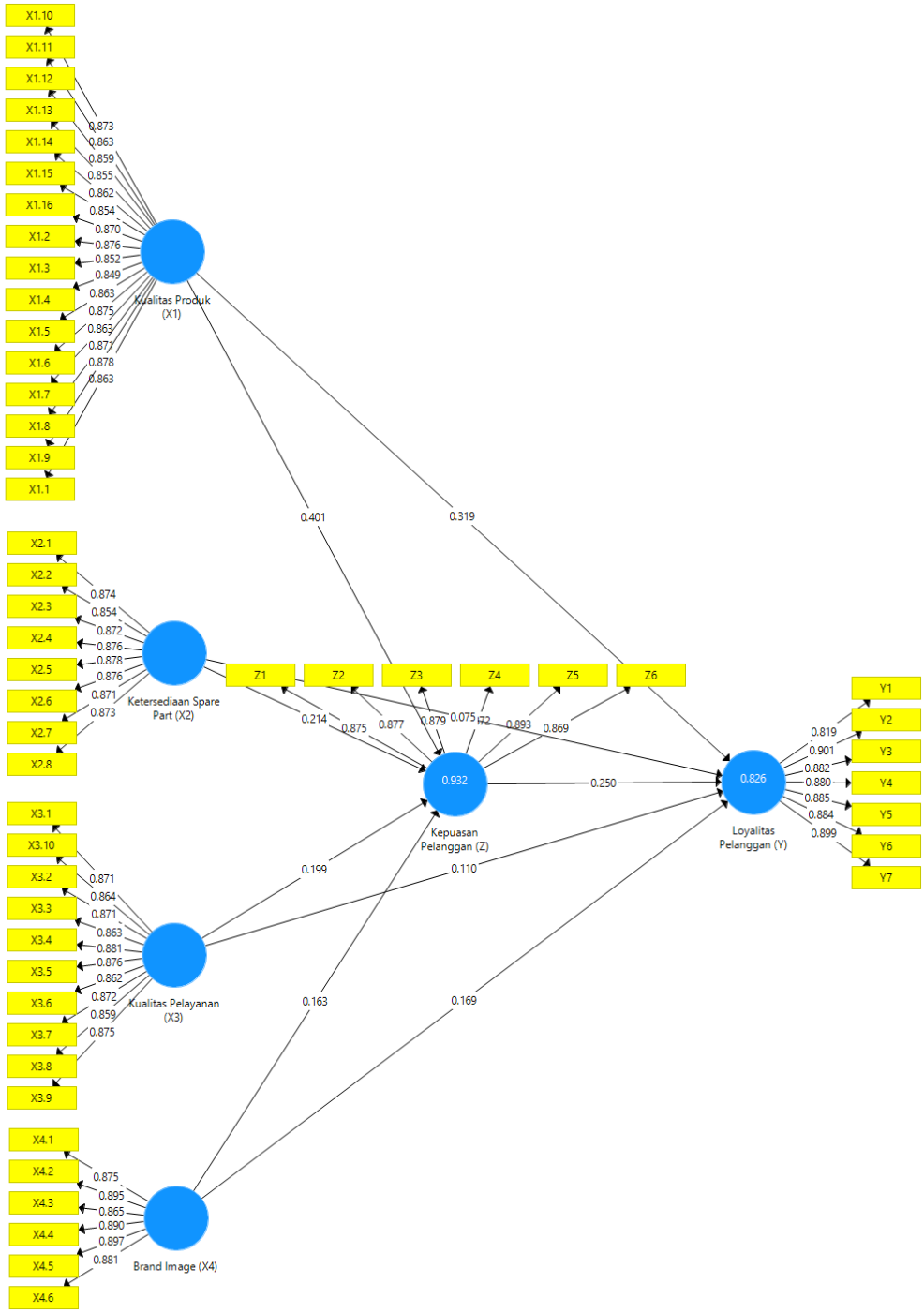
These findings have important strategic implications. First, the absence of female customers represents an opportunity for AI Harapan Indah Dealer to develop more inclusive marketing strategies, targeting emerging segments such as female small-scale transport business owners, a group that has begun to grow in certain urban and semi-urban areas. Second, segmentation by education level can inform the design of more effective communication materials, where simplified but accurate technical explanations may be most suitable for customers with secondary education, while more detailed and data-driven presentations may better serve those with higher education backgrounds.

In sum, although the data reveals a high level of homogeneity in gender and a dominance of secondary education levels, these characteristics present valuable opportunities for service differentiation and market expansion. This reinforces the argument that demographic analysis should be viewed not only as a descriptive tool but also as a strategic source of insight for

innovating service models, identifying untapped market segments, and enhancing overall customer experience.

The SEM-PLS analysis process was conducted using SmartPLS version 3.0. Hypothesis testing included both outer model and inner model analyses. The results from the SEM-PLS analysis are as follows: Product quality (X1), spare part availability (X2), service quality (X4) and brand image (X4) as independent variables and their influence on customer satisfaction as intervening variables (Z) and customer loyalty as dependent variables (Y).

Model (Outer Model)



Source: SmartPLS 3.0 Processed Data, 2025

Figure 3. Outer Model Graphic

Table 4. Outer Loadings SmartPLS 3.0

	X1	X2	X3	X4	Y	Z
_X.1_1	,863					
_X.1_2	,876					
_X.1_3	,852					
_X.1_4	,849					
_X.1_5	,863					
_X.1_6	,875					
_X.1_7	,863					
_X.1_8	,871					
_X.1_9	,878					
_X.1_1	,873					
_X.1_11	,863					
_X.1_12	,859					
_X.1_13	,856					
_X.1_14	,862					
_X.1_15	,854					
_X.1_16	,870					
_X.2_1		,874				
_X.2_2		,854				
_X.2_3		,872				
_X.2_4		,876				
_X.2_5		,878				
_X.2_6		,876				
_X.2_7		,871				
_X.2_8		,873				
_X.3_1			,871			
_X.3_2			,871			
_X.3_3			,863			
_X.3_4			,881			
_X.3_5			,876			
_X.3_6			,862			
_X.3_7			,872			
_X.3_8			,859			
_X.3_9			,875			
_X.3_10			,864			
_X.4_1				,875		
_X.4_2				,895		
_X.4_3				,865		
_X.4_4				,890		
_X.4_5				,897		
_X.4_6				,881		
_Y._1					,890	
_Y._2					,910	
_Y._3					,881	
_Y._4					,880	
_Y._5					,882	
_Y._6					,884	
_Y._7					,898	

_Y._8	,886	
_Z._1		,875
_Z._2		,877
_Z._3		,879
_Z._4		,871
_Z._5		,893
_Z._6		,869

Table 4 above shows that there are no loading factor values below 0.70, so that all Product quality (X1), spare part availability (X2), service quality (X4) and brand image (X4) as independent variables and their influence on customer satisfaction as intervening variables (Z) and customer loyalty as dependent variables (Y) manifest variables in this study can be used.

Table 5. Cross Loadings SmartPLS 3.0

	X1	X2	X3	X4	Y	Z
_X.1_1	,863	,84	,834	,825	,752	,836
_X.1_2	,876	,848	,854	,837	,798	,851
_X.1_3	,852	,833	,839	,835	,772	,825
_X.1_4	,849	,831	,831	,826	,778	,832
_X.1_5	,863	,830	,844	,835	,765	,827
_X.1_6	,875	,845	,854	,847	,796	,822
_X.1_7	,863	,842	,834	,841	,773	,823
_X.1_8	,871	,837	,838	,838	,777	,827
_X.1_9	,878	,856	,844	,844	,762	,844
_X.1_1	,873	,855	,834	,835	,795	,833
_X.1_11	,863	,850	,837	,84	,762	,817
_X.1_12	,859	,837	,837	,824	,789	,828
_X.1_13	,856	,823	,824	,812	,772	,810
_X.1_14	,862	,843	,835	,831	,784	,839
_X.1_15	,854	,831	,840	,820	,783	,834
_X.1_16	,870	,846	,836	,837	,777	,828
_X.2_1	,845	,874	,839	,829	,763	,829
_X.2_2	,837	,854	,818	,818	,758	,823
_X.2_3	,843	,872	,825	,823	,761	,820
_X.2_4	,857	,876	,836	,836	,776	,830
_X.2_5	,86	,878	,854	,845	,788	,839
_X.2_6	,852	,876	,835	,838	,765	,824
_X.2_7	,849	,871	,826	,821	,792	,833
_X.2_8	,841	,873	,820	,833	,779	,827
_X.3_1	,837	,818	,871	,827	,783	,817
_X.3_2	,835	,827	,871	,831	,756	,824
_X.3_3	,840	,824	,863	,812	,779	,828
_X.3_4	,851	,831	,881	,844	,794	,837
_X.3_5	,853	,844	,876	,837	,778	,833
_X.3_6	,844	,821	,862	,827	,754	,816
_X.3_7	,854	,833	,872	,842	,790	,828
_X.3_8	,833	,821	,859	,816	,751	,830

_X.3_9	,842	,834	,875	,826	,764	,820
_X.3_10	,846	,841	,864	,839	,764	,842
_X.4_1	,847	,835	,832	,875	,765	,820
_X.4_2	,855	,837	,839	,895	,792	,842
_X.4_3	,833	,828	,829	,865	,772	,817
_X.4_4	,852	,841	,843	,89	,783	,834
_X.4_5	,861	,855	,862	,897	,791	,849
_X.4_6	,864	,854	,858	,881	,792	,845
_Y._1	,847	,835	,827	,840	,890	,837
_Y._2	,815	,880	,800	,792	,910	,820
_Y._3	,774	,767	,770	,766	,881	,773
_Y._4	,782	,768	,766	,766	,880	,765
_Y._5	,775	,761	,765	,767	,882	,761
_Y._6	,757	,746	,747	,755	,884	,755
_Y._7	,788	,772	,790	,776	,898	,784
_Y._8	,765	,754	,754	,745	,886	,760
_Z._1	,843	,845	,832	,840	,773	,875
_Z._2	,849	,829	,835	,833	,788	,877
_Z._3	,829	,816	,816	,860	,791	,879
_Z._4	,846	,832	,836	,832	,758	,871
_Z._5	,869	,853	,857	,842	,800	,893
_Z._6	,821	,826	,819	,819	,774	,869

The results in the table indicate that the loading value for each indicator surpasses its corresponding cross-loading values. This confirms that all latent constructs exhibit strong discriminant validity. In other words, the indicators are more strongly associated with their respective constructs than with other constructs in the model.

Table 6. Output SmartPls 3.0 *Composite Reliability* dan *Cronbach Alpha*

Variable	*Cronbach's Alpha*	*Composite Reliability*	Critical value	Information
X1	0,97	0,97	0,7	Reliable
X2	0,95	0,95		Reliable
X3	0,96	0,96		Reliable
X4	0,94	0,94		Reliable
Y	0,95	0,95		Reliable
Z	0,94	0,94		Reliable

Table 6 is shown below. Looking at the values in the table above, each variable has a Cronbach's Alpha and Composite Reliability value that is higher than 0.7. This means that the construct and dimensions are reliable and meet the needed standards.

Table 7. R^2

Evaluation Size	Criteria Rules	Model Test Results
R^2 (Variable X against Y)	Strong model $\leq$ 0.70, moderat $\leq$ 0.45, weak $\leq$ 0.25	$R^2 = 0.821$
R^2 (Variable X against Z)	Strong model $\leq$ 0.70, moderat $\leq$ 0.45, weak $\leq$ 0.25	$R^2 = 0.932$

Source: Processed with SmartPLS 3.0, 2025

The R^2 value from the structural model evaluation is 0.821, which suggests that the five variables have a strong effect on customer loyalty because it is higher than 0.7. This means that these five variables can explain 82.1% of the changes in customer loyalty (Y). The remaining 17.9% of the changes are due to other things not included in the model.

Table 8. *Q Square Predictive Relevance*

Variable	SS0	SSE	Q^2 (=1-SSE/SS0)
Brand Image (X4)	1800,000	1800,000	
Customer Satisfaction (Z)	1800,000	517,685	0,712
Spare Part Availability (X2)	2400,000	2400,000	
Service Quality (X3)	3000,000	3000,000	
Product Quality (X1)	4800,000	4800,000	
Customer Loyalty (Y)	2100,000	777,401	0,630

Source: Processed with SmartPLS 3.0, 2025

The Q^2values were calculated and found to be 0.712 and 0.630. This means the independent variable is good at predicting the dependent variable. Because the Q^2 value is greater than zero, the research model is known to be good at predicting things. The R Square and Q^2 calculations show that the model is strong, so we can test our hypothesis.

Table 9. Hypothesis Testing Results (Direct Effect)

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
X1 -> Y	0,325	2,222	0,026
X1 -> Z	0,401	4,568	0,000
X2 -> Y	0,078	0,715	0,475
X2 -> Z	0,214	3,207	0,001
X3 -> Y	0,111	0,952	0,341
X3 -> Z	0,199	2,901	0,004
X4 -> Y	0,147	1,409	0,159
X4 -> Z	0,163	2,567	0,010
Z -> Y	0,260	2,852	0,004

Source: Processed with SmartPLS 3.0, 2025

The hypothesis testing results indicate that product quality exerts a statistically significant influence on customer satisfaction, as shown by a t-value of 4.568 surpassing the critical value of 1.97 and a p-value of 0.000, which is well below the 0.05 threshold. Therefore, the null hypothesis (H_0) is rejected. Similarly, spare part availability significantly contributes to customer satisfaction, with a t-value of 3.207 and a p-value of 0.001, both of which confirm statistical relevance. Service quality also displays a notable impact, supported by a t-value of 2.901 and a p-value of 0.004, affirming its significance. Likewise, brand image has a meaningful effect on customer satisfaction, as indicated by a t-value of 2.567 and a p-value of 0.010. Regarding the direct effect of product quality on customer loyalty, the analysis reveals a significant positive relationship, with a t-value of 2.222 and a p-value of 0.026. Moreover, customer satisfaction itself directly enhances customer loyalty, demonstrated by a t-value of 2.852 and a p-value of 0.004. Conversely, the direct influences of spare part availability, service quality, and brand image on customer loyalty are not statistically significant, as their p-values exceed the 0.05 significance level, resulting in the failure to reject the corresponding null hypotheses.

Table 10. Total Effect

Total effects	Y	Z
X1 – Product Quality	0,429	0,401
X2 – Spare Part Availability	0,134	0,214
X3 – Service Quality	0,163	0,199
X4 – Brand Image	0,189	0,163
Y – Customer Loyalty		
Z – Customer Satisfaction	0,260	

Source: Data Processed by Researchers with SmartPLS 3.0, 2025

The results of the study show that the product quality variable (X1) has the most dominant influence on customer loyalty (Y) and customer satisfaction (Z), with a total effect value of 0.401. This finding is very relevant in the context of the commercial vehicle spare parts business. Customers in the commercial vehicle segment tend to place more emphasis on functional aspects such as durability, reliability, and technical suitability of spare parts because they directly affect the operational efficiency and maintenance costs of the business unit. As stated by Shende (2014), commercial vehicle customers prioritize comfort, design, and additional features, while aspects such as the availability and quality of spare parts are crucial for commercial vehicle customers. Alalawin et al. (2021) also emphasized that spare part durability is very important for commercial vehicle users because component damage can cause business losses due to vehicle downtime. This is reinforced by Jullien (2002) who stated that commercial vehicle customers in Europe control almost half of the spare parts market and have a high preference for quality products, not just price aspects. Therefore, the results of this study indicate that customer loyalty in the commercial vehicle segment such as Isuzu is highly dependent on their perception of the quality of the products provided.

Table 11. Hypothesis Testing Results (Indirect Effect)

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
X3 -> Z -> Y	0,0518	2,007	0,044
X4 -> Z -> Y	0,042	1,737	0,082
X1 -> Z -> Y	0,104	2,553	0,010
X2 -> Z -> Y	0,055	1,966	0,049

Source: Data Processed by Researchers with SmartPLS 3.0, 2025

Based on the results of the specific indirect effect analysis using SmartPLS, several mediation pathways were identified in which Customer Satisfaction (Z) serves as a mediator toward Customer Loyalty (Y). First, the path Service Quality (X3) → Customer Satisfaction (Z) → Customer Loyalty (Y) shows a significant indirect effect, with a path coefficient of 0.052 and a p-value of 0.045 ($p < 0.05$). This indicates that although X3 does not have a direct significant effect on Y, its effect becomes significant when mediated through Z. Therefore, Z significantly mediates the relationship between X3 and Y. Next, the path Brand Image (X4) → Z → Y shows a path coefficient of 0.042 with a p-value of 0.082, which is greater than 0.05. This suggests that Z does not significantly mediate the effect of X4 on Y. Then, for the path Product Quality (X1) → Z → Y, the indirect effect is significant with a path coefficient of 0.104 and a p-value of 0.011. This means that Z significantly mediates the relationship between X1 and Y, indicating that improvements in product quality lead to higher satisfaction and, consequently, greater customer loyalty. Finally, the path Spare Part Availability (X2) → Z → Y also shows a significant indirect effect, with a path coefficient of 0.056 and a p-value of 0.049. Thus, X2 significantly influences Y through Z as a mediator. Overall, these results reinforce the role of Customer Satisfaction (Z) as a key mediating variable in the model. While some independent variables (X2, X3) do not directly affect loyalty (Y), their effects become

significant through satisfaction (Z). Therefore, strategies to improve X1, X2, and X3 should focus on enhancing Z to ultimately strengthen Y.

Discussion

In the automotive industry, customer loyalty is a strategic factor that plays an important role in maintaining business continuity. Loyalty not only reflects the tendency of consumers to make repeat purchases, but also generates indirect marketing through positive word-of-mouth recommendations. Therefore, understanding the factors that shape loyalty is crucial, particularly in the context of after-sales services such as those provided by AI Harapan Indah Dealer.

This study aimed to measure the influence of four main variables product quality, spare part availability, service quality, and brand image on customer loyalty, both directly and indirectly through satisfaction as a mediating variable. The results of the structural model evaluation (inner model) show that the coefficient of determination (R^2) for customer satisfaction is 0.932, meaning that 93.2% of its variation can be explained by the four independent variables. Meanwhile, the R^2 value for customer loyalty is 0.821, indicating that 82.1% of its variation is influenced by the four variables through satisfaction as a mediator. Statistically, the model demonstrates strong validity, supported by significant t-values and p-values for most variable relationships. These results suggest that a holistic managerial approach that ensures superior product quality, guarantees spare part availability, enhances service quality, and strengthens brand image can significantly increase satisfaction, which in turn fosters long-term customer loyalty.

The findings align with Oliver's (1997) loyalty model, which conceptualizes loyalty development through three stages: cognitive (quality evaluation), affective (emotional attachment), and conative (commitment to repurchase). In this framework, product quality influences the cognitive stage by shaping customers' initial evaluation of performance and reliability. High-quality products create positive perceptions, which translate into satisfaction (affective stage), eventually leading to the conative stage where customers exhibit strong loyalty behaviors. Similarly, spare part availability contributes to the affective stage by reducing perceived risk and service delays, which reinforces trust and satisfaction. Service quality, encompassing responsiveness, reliability, and professionalism, directly supports both the affective and conative stages by providing consistent positive experiences that make switching less attractive.

Interestingly, while brand image significantly influenced satisfaction, it did not exert a direct significant effect on loyalty in this study. This result diverges from several prior studies (e.g., Chandel & Mohiuddin, 2023; Balinado et al., 2021) which found a direct pathway between brand image and loyalty. One plausible explanation is that in the commercial vehicle segment unlike in passenger vehicle markets customers prioritize tangible operational benefits (e.g., durability, maintenance cost, service reliability) over abstract brand associations when deciding on repeat purchases. Thus, brand image in this context exerts its influence primarily by enhancing satisfaction, which then drives loyalty indirectly.

This finding is consistent with Sikombe (2025) and González (2015), both of whom demonstrated that satisfaction mediates the relationship between service quality and loyalty in the automotive after-sales sector. However, the weaker direct influence of brand image on loyalty observed here contrasts with studies conducted in retail passenger car markets, where emotional brand attachment often plays a stronger role. This difference underscores the importance of contextual factors: in commercial vehicle ownership, decisions tend to be more utilitarian and cost-efficiency oriented, making operational performance and service responsiveness more decisive than branding alone.

While this study offers valuable insights, several limitations should be acknowledged. First, the research was conducted exclusively with customers of AI Harapan Indah Dealer, an

Isuzu dealer specializing in commercial vehicles. Therefore, the findings may not be fully generalizable to passenger vehicle dealers or to other automotive brands. Second, the demographic profile of respondents was highly homogeneous 100% were male which limits the ability to analyze gender-based differences in loyalty formation. This gender bias reflects the male-dominated nature of the commercial vehicle market but also means the results may not capture perspectives of emerging female-owned businesses in logistics or transportation. Third, the cross-sectional design of the study restricts the ability to capture changes in loyalty and satisfaction over time. Longitudinal studies would provide a more dynamic understanding of how these relationships evolve with changes in service quality, product offerings, and market conditions.

Despite these limitations, the results highlight practical strategies for enhancing loyalty in the commercial vehicle segment. Dealers should focus on maintaining consistent product quality, ensuring reliable spare part supply chains, and delivering responsive after-sales service, while leveraging brand image as a satisfaction enhancer rather than expecting it to independently drive loyalty. Furthermore, targeting untapped segments such as female entrepreneurs in small-scale transportation businesses could expand the customer base and reduce demographic homogeneity.

CONCLUSION

This study confirms that product quality, service quality, brand image, and spare part availability exert a significant influence on customer loyalty, with customer satisfaction acting as a critical mediating factor. Among these, product quality emerges as the strongest driver, especially in the commercial vehicle segment where reliability and durability are directly linked to business continuity. The findings reveal that while service quality, brand image, and spare part availability may not always have the same direct impact, they contribute meaningfully by enhancing customer satisfaction, which in turn strengthens loyalty.

The SEM-PLS model applied in this research demonstrates strong explanatory power, with R^2 values of 93.2% for satisfaction and 82.1% for loyalty, indicating that the relationships between variables are both robust and highly predictive. These results underscore the strategic importance of an integrated loyalty-building approach that combines superior technical performance, consistent after-sales service, and reliable spare part supply.

From a managerial perspective, the implications are clear. Dealer AI Harapan Indah needs to ensure the consistent availability and quality of spare parts to reduce downtime for commercial vehicle operators. At the same time, ongoing staff training in technical expertise, problem-solving, and customer communication is essential to maintain high service standards. Building long-term relationships through tailored customer programs such as loyalty rewards or specialized maintenance packages for fleet owners can further strengthen loyalty. Additionally, the absence of female respondents in this study points to an untapped market segment, namely female entrepreneurs in the small-scale transportation business, which may offer new growth opportunities if properly targeted. Looking ahead, future research could expand on these findings by investigating the role of service digitization, mobile maintenance solutions, and personalized after-sales service, which may reshape loyalty drivers in the digital era. Furthermore, exploring gender differences in loyalty formation could provide valuable insights into whether marketing and service strategies should be customized for different customer demographics.

In summary, sustaining customer loyalty in the competitive commercial vehicle service market requires more than just delivering high-quality products. It demands a comprehensive strategy that integrates product excellence, service consistency, spare part reliability, and a proactive approach to emerging customer needs and market opportunities.

REFERENCES

Aaker, D. A. (1996). *Building strong brands*. Free Press.

Alalawin, A., Arabiyat, L. M., & Alalaween, W. (2021). Forecasting vehicle's spare parts price and demand. *Journal of Quality in Maintenance Engineering, 27*(3), 483–499. https://doi.org/10.1108/JQME-03-2020-0019

Balinado, J. R., Prasetyo, Y. T., Young, M. N., Persada, S. F., Miraja, B. A., & Perwira Redi, A. A. N. (2021). The effect of service quality on customer satisfaction in an automotive after-sales service. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(2), Article 116. https://doi.org/10.3390/joitmc7020116

Chandel, J. K., & Mohiuddin, S. A. (2023). The drivers of customer satisfaction and loyalty in automotive aftermarket industry. *International Journal of Business Excellence, 29*(3), 351–364. https://doi.org/10.1504/IJBEX.2023.129101

Deloitte. (2023). *Global Automotive Consumer Study*. Deloitte Insights. https://www2.deloitte.com/global/en/pages/consumer-business/articles/global-automotive-consumer-study.html

GAIKINDO. (2024). *Laporan penjualan kendaraan Indonesia 2023*. Gabungan Industri Kendaraan Bermotor Indonesia. https://www.gaikindo.or.id

González, A. G. (2015). Service quality and repurchase behaviour in the Spanish automotive after-sales business. *Journal of Relationship Marketing, 14*(3), 204–215. https://doi.org/10.1080/15332667.2015.1069456

Jullien, B. (2002). Consumer vs. manufacturer or consumer vs. consumer? The implications of a usage analysis of automobile systems. *Industry and Innovation, 9*(4), 365–384. https://doi.org/10.1080/10245290212674

Nguyen, S. N. T., & Luu, T.-M. N. (2024). Customers perceive service quality, satisfaction and loyalty: The case of passenger transport service by car in Northern Vietnam. *International Journal of Religion and Mission, 5*(11), 9116–9128. https://doi.org/10.61707/68dhbg35

Nguyen, S. N. (2025). The impact of digital communication on customer loyalty through the relationship between brand and customer, and customer citizenship behavior. *International Review of Management and Marketing, 15*(2), 77–84. https://doi.org/10.32479/irmm.17858

Oliver, R. L. (1997). *Satisfaction: A behavioral perspective on the consumer*. McGraw-Hill.

Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing, 63*(Special Issue), 33–44. https://doi.org/10.1177/00222429990634S105

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12–40.

Qiao, G., Chen, H., Li, G., Liu, H., & Wang, X. (2024). The role of filial piety in filial tourism: An intergenerational analysis of decision-making. *Asia Pacific Journal of Tourism Research, 1*–15. https://www.tandfonline.com/doi/abs/10.1080/10941665.2024.2362199

Rehman, M., Tong, Z., & Hussain, T. (2025). Influence of consumer satisfaction on brand allegiance: An empirical investigation in Pakistan's safety and luxury automobile sector. *Acta Psychologica, 252*, 104667. https://doi.org/10.1016/j.actpsy.2024.104667

Shende, V. (2014). Analysis of research in consumer behavior of automobile passenger car customer. *International Journal of Scientific and Research Publications, 4*(2), 1–8. https://www.ijsrp.org/research-paper-0214/ijsrp-p2670.pdf

Sikombe, S. (2025). Investigating after-sales service, customer satisfaction and word-of-mouth nexus: Evidence from a branded car dealership. *International Journal of Business Forecasting and Marketing Intelligence, 10*(2), 199–213. https://doi.org/10.1504/IJBFMI.2025.145289

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing, 60*(2), 31–46. https://doi.org/10.2307/1251929