

THE EFFECT OF PRODUCT QUALITY AND AFTER-SALES SERVICE ON CUSTOMER LOYALTY OF XIAOMI SMARTPHONE USERS IN MEDAN CITY

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ABSTRACTS

This research aims to analyze the effect of product quality and after-sales service on customer loyalty among Xiaomi smartphone users in Medan City. The study employed a quantitative explanatory design with purposive sampling, involving 100 respondents who had been using Xiaomi smartphones for at least six months. Data were collected through an online questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results demonstrate that both product quality and after-sales service have a significant and positive impact on customer loyalty. However, after-sales service emerged as the dominant factor, as indicated by a higher path coefficient and effect size compared to product quality. This suggests that warranty claims, repair services, availability of spare parts, and responsiveness of customer support are crucial determinants of long-term loyalty in the highly competitive smartphone market. The model explains 57.5% of the variance in customer loyalty, which indicates a moderate to strong predictive power. The findings extend previous research by highlighting the importance of post-purchase services in shaping loyalty, especially in emerging markets. For practitioners, the results provide strategic implications, emphasizing that while product quality should remain a priority, greater investment in after-sales infrastructure and proactive customer engagement will yield stronger loyalty outcomes for Xiaomi in Medan City.

Keywords: *Product Quality, After-Sales Service, Customer Loyalty, Marketing*

INTRODUCTION

In the smartphone industry, consumer expectations extend beyond mere functionality; quality and post-purchase support have become pivotal determinants of brand preference and repeated patronage. Xiaomi, one of the leading smartphone brands in Indonesia, has gained significant market share by offering high specifications at competitive prices. However, sustaining loyalty among users in cities such as Medan requires more than a favorable price-to-specification ratio. It demands excellence in product quality and robust after-sales service.

Product quality encompasses various tangible and intangible attributes, such as reliability, durability, design, sensor accuracy, battery life, performance, and overall workmanship. For smartphone users, particularly those who rely on their devices for daily communication, productivity, social media, and entertainment, any shortcomings in product quality—such as frequent malfunctions or rapid performance degradation—can erode trust. Studies in Indonesia and elsewhere have consistently found that higher product quality is associated with greater customer loyalty (Purwati, Fitrio, Ben, & Hamzah, 2020; Naini, Santoso, Andriani, Claudia & Nurfadillah, 2022). For example, Purwati et al. (2020) reported that in a distributor-company

setting, product quality significantly influenced loyalty even though it did not significantly affect satisfaction in that context.

Meanwhile, after-sales service refers to the support and services provided after a consumer has purchased a product. This includes warranty, repair services, accessibility of service centers or support channels, responsiveness of customer service, clarity of service information, and competence of service personnel. In highly technological products such as smartphones, after-sales service is often tested by software updates, replacement of damaged components, and provision of support for unforeseen issues. Prior research, including studies in Indonesia, shows that after-sales service positively influences customer satisfaction and loyalty (Rabbad, 2025).

While multiple studies have examined the effects of product quality or after-sales service separately, research specifically focusing on Xiaomi smartphone users in Medan remains scarce. Some works address perceived quality and brand equity among Xiaomi users in other Indonesian cities (e.g., Tangerang Selatan) (Lesmana, Sunardi, Hastono & Widodo, 2021). However, there is a research gap concerning how product quality and after-sales service jointly affect consumer loyalty in the local context of Medan. Considering that city's unique consumer

preferences, economic conditions, and available after-sales infrastructure, an empirical investigation in Medan can yield valuable insights for both practitioners and academics.

Thus, this study aims to examine the combined effect of product quality and after-sales service on customer loyalty among Xiaomi smartphone users in Medan City. The central research questions are:

1. Does product quality influence customer loyalty among Xiaomi smartphone users in Medan?
2. Does after-sales service influence on customer loyalty among Xiaomi smartphone users in Medan?
3. Between product quality and after-sales service, which has the stronger influence on customer loyalty?

Ultimately, by using SEM-PLS with a sample size of 100 respondents, this study seeks to produce reliable estimates of path coefficients and provide actionable recommendations for Xiaomi distributors or service centers operating in Medan.

Based on the literature review and theoretical framework, the following hypotheses are proposed:

H1: Product Quality has a positive and significant effect on Customer Loyalty among Xiaomi smartphone users in Medan City.

H2: After-Sales Service has a positive and significant effect on Customer Loyalty among Xiaomi smartphone users in Medan City.

The rationale for these hypotheses is grounded in prior empirical studies. High product quality has been consistently associated with greater consumer loyalty, as it enhances consumer trust and reduces the perceived risk of repurchasing (Marakanon & Panjakajornsak, 2017; Naini et al., 2022). Similarly, reliable and responsive after-sales service strengthens post-purchase satisfaction and creates long-term relationships, which are crucial determinants of loyalty (Pratiwi et al., 2025; Rabbad, 2025).

Thus, both product quality and after-sales service are expected to exert significant positive effects on customer loyalty, with the possibility that one may exert a stronger influence depending on local market conditions and consumer perceptions in Medan.

METHODS

Research Design

This study employed a quantitative research design with an explanatory approach, aiming to test the causal relationship between product

quality, after-sales service, and customer loyalty among Xiaomi smartphone users in Medan City. A cross-sectional survey was administered, and the collected data was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SEM-PLS software. This method was chosen because of its ability to handle relatively small sample sizes, complex models, and data that may not meet multivariate normality assumptions (Hair, Hult, Ringle, & Sarstedt, 2022).

Population and Sample

The population of this research consisted of Xiaomi smartphone users residing in Medan City. Given the absence of an official sampling frame, the study used a non-probability purposive sampling technique, targeting respondents who had been using Xiaomi smartphones for at least the past six months. A total of 100 respondents were collected, which met the minimum threshold for PLS-SEM according to the “10-times rule” and power analysis guidelines (Hair et al., 2022). This number is considered sufficient to detect medium effect sizes at a 5% significance level with adequate statistical power.

Data Collection

Data was collected through an online self-administered questionnaire distributed via social media platforms (e.g., WhatsApp groups, Instagram, and Telegram communities in Medan). The questionnaire used a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Before distribution, the questionnaire was pre-tested with 20 respondents to ensure clarity, reliability, and content validity.

Measurement of Variables

- Product Quality (X1): Measured using indicators such as reliability, durability, performance, design, features, and perceived value (Naini et al., 2022).
- After-Sales Service (X2): Measured using indicators such as warranty, parts availability, repair services, and customer support (Putra et al., 2025; Sunarya & Jamaludin, 2022).
- Customer Loyalty (Y): Measured using indicators such as repurchase, willingness to recommend, and resistance to switching to competitors (Lesmana et al., 2021).

All constructs were operationalized as reflective latent variables.

Data Analysis Technique

To ensure rigorous testing of the hypothesized relationships between product quality, after-sales service, and customer loyalty, the collected data were analyzed using SEM-PLS with the following procedures:

1. Assessment of the Measurement Model (Outer Model): Testing indicator reliability, internal consistency reliability (Cronbach's alpha and composite reliability), convergent validity (Average Variance Extracted), and discriminant validity (Fornell-Larcker criterion and HTMT ratio).
2. Assessment of the Structural Model (Inner Model): Testing collinearity, coefficient of determination (R^2), effect size (f^2), and path coefficients significance using bootstrapping with 5,000 subsamples.

3. Hypothesis Testing: Hypotheses were accepted or rejected based on t-statistics (≥ 1.96) and p-values (≤ 0.05).

RESULTS AND DISCUSSION

Characteristics of Respondents

The demographic profile of respondents provides an overview of the sample distribution in this study. The characteristics analyzed include gender, age, educational background, and occupation.

1. Gender

Table 1 Characteristics of respondents by gender

Gender	Amount	Percentage
Male	32	32
Female	68	68
Total	100	100

Source: Processed primary data, 2025

As shown in Table 1, the majority of respondents were female, totaling 68 respondents (68%), while male respondents amounted to 32 respondents (32%). This indicates that female respondents were more dominant in the study. This condition may suggest that women tend to be more

responsive in providing evaluations regarding product quality and after-sales service compared to men.

2. Age

Table 2. Characteristics of respondents by age

Age	Amount	Percentage
18 - 24	56	56
25 - 34	33	33
35 - 44	7	7
45 - 54	2	2
> 55	2	2
Total	100	100

Source: Processed primary data, 2025

The age distribution (Table 2) shows that the largest group of respondents was in the 18–24 years old category with 56 respondents (56%), followed by the 25–34 years old category with 33 respondents (33%). Meanwhile, 7 respondents (7%) were in the 35–44 years old group, 2 respondents (2%) in the 45–54 years old group,

and 2 respondents (2%) were above 55 years old. These findings highlight that the majority of respondents came from the younger generation, who are generally more active in accessing information and in shaping loyalty towards products or services.

3. Education Level

Table 3. Characteristics of respondents based on education level

Education Level	Amount	Percentage
High School	74	74
Diploma	4	4
Bachelor (S1)	19	19
Master (S2)	2	2
Doctor (S3)	1	1
Total	100	100

Source: Processed primary data, 2025

With regard to education level (Table 3), most respondents had a high school background, accounting for 74 respondents (74%). Respondents with a diploma degree were 4 respondents (4%), while 19 respondents (19%) held a bachelor's degree (S1), 2 respondents (2%) had a master's

degree (S2), and 1 respondent (1%) held a doctoral degree (S3). These results suggest that the majority of respondents were from the secondary education level, with a smaller proportion from higher education backgrounds.

4. Occupation

Table 4

Characteristics of respondents by occupation

Occupation	Amount	Percentage
High School/University Student	61	61
Teacher/Lecturer	3	3
Government Employee	2	2
Private Employee	5	5
Housewife	7	7
Entrepreneur	2	2
Unemployed	8	8
Other	12	12
Total	100	100

Source: Processed primary data, 2025

Respondent distribution by occupation (Table 4) indicates that the majority were students with 61 respondents (61%). Other occupations included teachers/lecturers (3%), government employees (2%), private sector employees (5%), housewives (7%), entrepreneurs (2%), and unemployed individuals (8%). Additionally, 12 respondents (12%) were categorized as having other types of occupations. This distribution reveals that most respondents were students or young individuals still pursuing formal education, making their perceptions of after-sales service and

product quality particularly relevant in shaping customer loyalty.

These results indicate that the respondents represent a balanced distribution across demographic groups, thereby providing a comprehensive picture of Xiaomi smartphone users in Medan.

Data Analysis

The data analysis in this study was conducted using Partial Least Squares – Structural Equation Modeling (PLS-SEM). Several tests were performed to assess the measurement model (outer model) and the structural model (inner model).

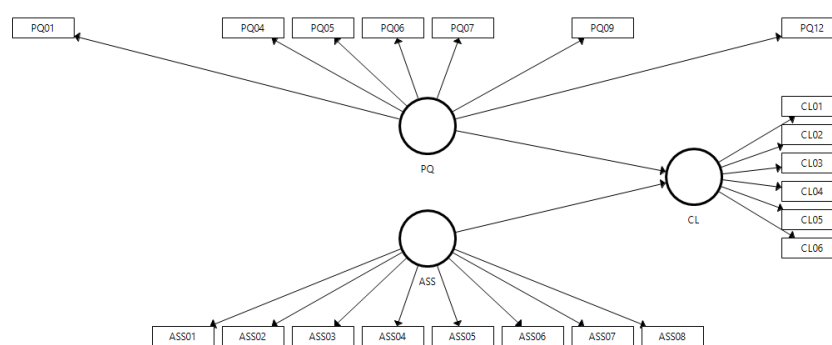


Figure 1. Final Model

One iteration was run for finding invalid indicator, i.e. which had loading factors less than 0.7 (PQ02, PQ03, PQ08, PQ10, and PQ11). The

second iteration was run after deleting the invalid indicators.

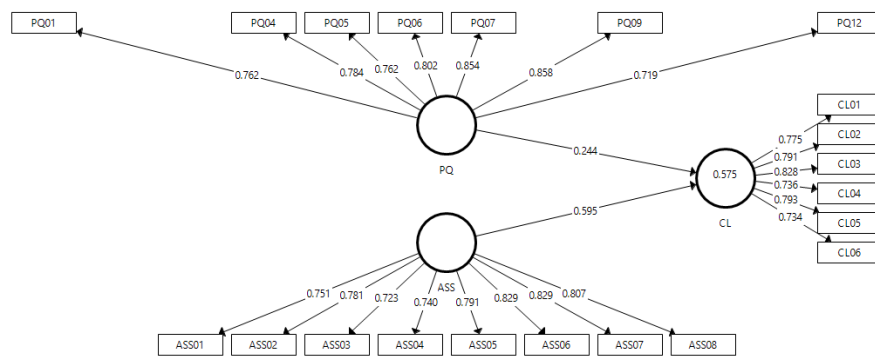


Figure 2. Path Coefficient, Final Iteration

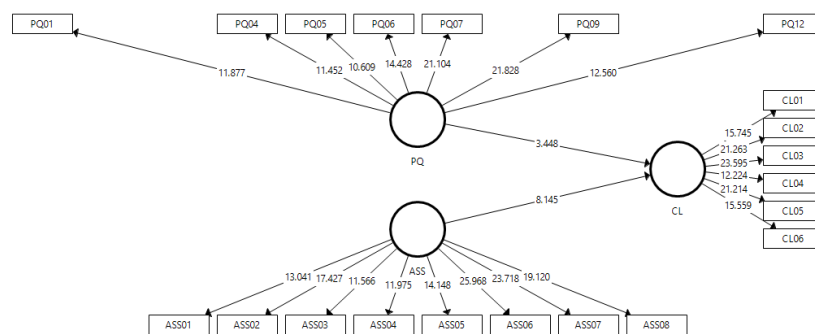


Figure 3. t Values, Final Iteration

1. Research Findings

a. Measurement Model (Outer Model)

The reliability and validity of the measurement model were evaluated through factor

loadings, Cronbach's Alpha, Average Variance Extracted (AVE), and Composite Reliability (CR).

Table 5. Reliability and Validity Test

Construct	Product Quality	CR	AVE	Outer Loadings (Range)
Product Quality	0.901	0.922	0.629	0.719-0.858
After-Sales Service	0.909	0.901	0.603	0.723-0.829
Customer Loyalty	0.868	0.918	0.614	0.734-0.828

Source: Output of PLS-SEM, 2025

All outer loadings exceed the 0.70 threshold, Cronbach's Alpha and CR values are above 0.70, and AVE values surpass 0.50. These results confirm internal consistency and convergent validity.

Discriminant validity was evaluated using the Fornell-Larcker criterion and HTMT ratio. The square root of AVE values were higher than inter-construct correlations, and all HTMT values were below 0.90, thus confirming discriminant validity.

b. Structural Model

The explanatory power of the model was assessed using R^2 . The R^2 value for Customer Loyalty is 0.575 (Adjusted $R^2 = 0.566$), indicating that Product Quality and After-Sales Service jointly explain 57.5% of the variance in Customer Loyalty, which is considered moderate to strong in PLS-SEM studies.

Effect size (f^2) analysis revealed that After-Sales Service had a large effect (0.575) on Customer Loyalty, while Product Quality had a small effect (0.097).

Table 6. Path Coefficients and Hypothesis Testing

Hypothesis	Path Coefficient (β)	t-Statistic	P-Value	Result
H1: Product Quality $\rightarrow$ Customer Loyalty	0.244	3.448	0.001	Supported
H2: After-Sales Service $\rightarrow$ Customer Loyalty	0.595	8.145	0	Supported

Source: Output of PLS-SEM, 2025

Both relationships are significant at $p < 0.05$, with After-Sales Service showing the strongest impact.

2. Discussion

The findings demonstrate that both product quality and after-sales service positively and significantly influence customer loyalty. However, after-sales service emerged as the stronger determinant, evidenced by a higher path coefficient and larger effect size.

This aligns with Pratiwi et al. (2025), who found that after-sales service significantly influences brand loyalty in the automotive industry. Similarly, Rabbad (2025) highlighted the importance of after-sales service quality in driving loyalty in e-commerce. These findings suggest that in technology markets such as smartphones, the customer's post-purchase experience - warranty, parts availability, repair services, and customer support - plays a critical role in sustaining loyalty.

Product quality also showed a significant impact, although smaller. This result resonates with Naini et al. (2022), who reported that product quality and service quality jointly enhance loyalty in consumer goods. In smartphone contexts, Wahid and Ratnamurni (2024) confirmed that durability, reliability, performance, user-friendliness, and packaging contribute to consumer loyalty.

Taken together, the results indicate that while product quality remains essential, it is the after-sales service that differentiates Xiaomi in Medan's competitive smartphone market. Consumers value reliable service centers, responsive customer support, and warranty fulfillment. Hence, investing in service infrastructure may yield stronger customer retention compared to incremental product improvements alone.

CONCLUSION AND IMPLICATIONS

1. Conclusion

This study examined the influence of product quality and after-sales service on customer loyalty among Xiaomi smartphone users in Medan, using PLS-SEM with 100 respondents. The findings revealed that both product quality and after-sales service significantly affect customer loyalty, with after-sales service exerting a stronger

effect. The R^2 value of 0.575 indicates that the two variables together explain 57.5% of the variance in customer loyalty.

These results suggest that while high-quality products remain essential for fostering loyalty, the after-sales service dimension plays a more decisive role in the context of smartphones. The availability of responsive service centers, reliable warranty claims, and supportive customer care are key drivers in ensuring long-term loyalty among Xiaomi users.

b. Theoretical Implications

This research contributes to the marketing literature by reinforcing the importance of after-sales service as a critical determinant of customer loyalty, especially in the technology sector. The findings support prior studies (e.g., Pratiwi et al., 2025; Rabbad, 2025) and extend them by providing empirical evidence from the smartphone industry in an emerging market. Moreover, the study highlights the relative weight of after-sales service compared to product quality, emphasizing the need to consider post-purchase factors in loyalty models.

c. Managerial Implications

For managers and practitioners, the results underscore the strategic importance of strengthening after-sales service to enhance customer retention. Specifically:

1. Service Infrastructure: Expanding the availability of authorized service centers and ensuring adequate spare parts will improve customer trust.
2. Responsiveness: Timely repair services and efficient complaint handling should be prioritized to meet consumer expectations.
3. Customer Engagement: Providing proactive follow-up, software updates, and personalized support can reinforce loyalty.
4. Balanced Strategy: While after-sales service is paramount, product quality must not be neglected, as it still contributes positively to loyalty.

By focusing on these areas, Xiaomi and similar smartphone brands can sustain customer loyalty in highly competitive markets.

d. Limitations and Future Research

This study is limited by its focus on a single brand (Xiaomi) and a specific geographic location (Medan). Therefore, the findings may not be generalizable to other smartphone brands or regions. Future research could expand the model by including additional variables such as brand trust, perceived value, or price fairness. Moreover, a comparative study across different smartphone brands or markets would provide broader insights into consumer loyalty determinants.

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