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Service Innovation, Public Trust, and Customer Experience in Relation to Customer Loyalty at SPBU 54.612.53

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A R T I C L E I N F O

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A B S T R A C T

This study examines service innovation, provider trust, and customer experience in relation to self-reported loyalty at an Indonesian fuel station. A questionnaire survey involved 120 purposively selected customers and measured four constructs using five Likert items each. Multiple regression was the stated analysis. The thesis reports positive coefficients for innovation and experience but a nonsignificant trust coefficient. Independent reconstruction from its respondent-level appendix produces different partial estimates and substantially higher collinearity. Because these records cannot be reconciled from the available documents, hypothesis-specific conclusions remain provisional. The study distinguishes operational service context from individual loyalty and identifies requirements for reproducible interpretation

INTRODUCTION

Retail fuel purchases combine waiting, dispensing, payment, staff interaction, and supporting facilities. Customers may value transaction speed while holding different views about fuel measurement or the quality of the visit. Assessments of service encounters relate to intentions to return and recommend a provider (Zeithaml et al., 1996), and loyalty drivers differ across settings (Liu-Thompkins et al., 2022). Aggregate station sales therefore cannot by themselves demonstrate loyalty among individual customers.

At SPBU 54.612.53 in Krian, Sidoarjo, company records reproduced in the thesis indicate fuel sales of 7,920 kL (2023), 8,649 kL (2024), and 10,800 kL (2025). The thesis also reports approximately 92 complaints from January 2023 to April 2026, particularly about facilities. These periods differ, and neither administrative record is linked to repeat purchases by identified customers. They provide service context rather than an individual measure of loyalty.

The study examines three perceptions: service innovation, including technology and transaction convenience; provider trust, including perceived fuel quantity, quality, transparency, and consistency; and customer experience, including comfort and treatment by staff. Relationship marketing explains why trust may matter (Morgan & Hunt, 1994), while customer-journey studies show that experience develops across linked touchpoints (Lemon & Verhoef, 2016; De Keyser et al., 2020). The constructs are related but conceptually distinct.

Indonesian fuel-station research has examined experience, brand trust, repurchase intention, and promotional moderation (Chandra et al., 2023). The present survey addresses a different combination of innovation, provider trust, and experience at one station. It asks whether each predictor is associated with self-reported loyalty and how their joint model fits the responses. The observational design does not support causal claims.

LITERATURE REVIEW

Relationship Marketing and Customer Loyalty

Commitment-trust theory places trust within continuing exchange relationships (Morgan & Hunt, 1994), and brand studies associate trust with aspects of loyalty (Chaudhuri & Holbrook, 2001). Loyalty remains distinct from satisfaction (Oliver, 1999). Its cognitive, affective, and social drivers vary across retail contexts (Liu-Thompkins et al., 2022). Here, loyalty is operationalized through questionnaire ratings of repeat purchase, resistance to switching, referrals, primary preference, and continued use, not verified transaction records.

Service Innovation and Loyalty

Service innovation covers modernization, payment methods, technology, speed, and convenience. Prior research associates innovation with performance but finds important contextual variation (Feng et al., 2021). Retail encounter evidence shows that service cues carry different weight across markets (Bolton et al., 2022), while hospitality research distinguishes technological and employee-related innovation (Tai et al., 2021). H1 predicts a positive partial

association between perceived service innovation and reported customer loyalty.

Public Trust and Loyalty

Although labelled public trust, X2 measures confidence in a particular station, not generalized institutional trust. Its items assess dispensing accuracy, fuel quality, transparent prices, professionalism, and service consistency. Commitment-trust theory motivates the hypothesized relationship (Morgan & Hunt, 1994), but coefficients need not be identical across service settings (Chandra et al., 2023). H2 predicts a positive partial trust-loyalty association after adjustment for innovation and experience; a nonsignificant estimate would not prove irrelevance.

Customer Experience and Loyalty

Customer experience arises across interactions, circumstances, and customers' responses (Verhoef et al., 2009; Lemon & Verhoef, 2016; De Keyser et al., 2020). Recent work links journeys with loyalty (Reitsamer et al., 2024). At a fuel station, comfort, employee conduct, and respectful treatment may shape experience while remaining different from payment convenience and trust in fuel quantity. H3 predicts a positive partial association with self-reported loyalty.

Simultaneous Model and Conceptual Framework

The framework specifies three predictors and one outcome. H1-H3 concern the respective partial slopes for X1-X3; H4 concerns the three-predictor model overall. A significant F statistic does not imply three significant individual coefficients. Figure 1 depicts hypothesized associations rather than established causal pathways.

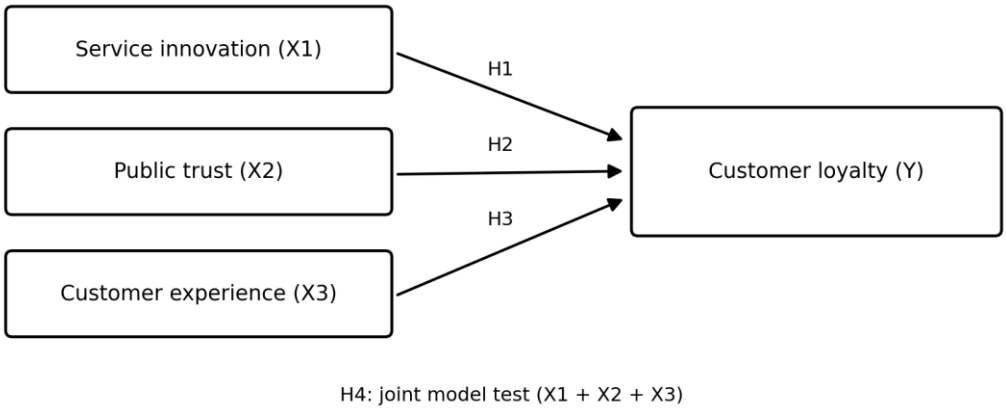


Figure 1. Conceptual framework for the proposed associations and joint model

METHODOLOGY

The study is described as a quantitative cross-sectional survey at SPBU 54.612.53, PT Sumber Energi Abadi Sejahtera, Krian, Sidoarjo, East Java. Purposive sampling yielded 120 respondents. According to the stated eligibility requirements, participants were at least 17 years old, had purchased fuel at the station at least three times during the preceding three months, and agreed to respond. The thesis gives an anticipated three-month research schedule but not the observed first and last survey dates. The single-location, non-probability design permits within-sample regression analysis but does not identify causal effects or establish population representativeness.

Four constructs were measured using five statements each, for a total of 20 questionnaire items. Response categories ranged from strongly disagree (1) to strongly agree (5); construct totals were formed by summing five items and therefore have a theoretical range of 5-25. Table 1 summarizes the item themes. The reproduced questionnaire uses a different company name from the thesis title and study description. Consequently, the actual fielded questionnaire and respondent-level files are needed to verify the institutional label and scoring used in the final analyses.

Table 1. Constructs, codes, and five observed indicator themes

Construct (code)	Five indicator themes
Service innovation (X1)	Service modernization; digital-payment ease; transaction technology; service speed; convenience
Public trust (X2)	Fuel quantity; fuel quality; price transparency; staff professionalism; service consistency
Customer experience (X3)	Station comfort; staff friendliness; respect; positive impression; satisfaction
Customer loyalty (Y)	Repeat purchase; resistance to switching; recommendation; first choice; continued use

Source: Operational definitions and questionnaire content documented in the thesis, pp. 50-55 and Appendix 1.

The thesis reports item-correlation validity checks, Cronbach's alpha, normality and residual plots, VIF statistics, and ordinary least squares regression in IBM SPSS at a 5% significance criterion. The regression contains an intercept and three summed predictors. During manuscript preparation, the 120 rows printed in its respondent-level appendix were separately transcribed and checked against the displayed totals. OLS, Cronbach's alpha, and VIF were then recalculated using those rows as a source-consistency check. This reconstruction is distinct from the SPSS output reproduced in the thesis; the supplied documents do not demonstrate that both analyses used an identical file or scoring scheme.

$$Y = a + b1X1 + b2X2 + b3X3 + e \quad (1)$$

RESEARCH RESULT

Respondent Characteristics

The thesis reports 120 customers: 76 men (63.33%) and 44 women (36.67%). The most frequent age group was 17-30 years (41 respondents; 34.17%), followed by 31-40 years (37; 30.83%). The education table lists 57 people (47.50%) with senior high or vocational schooling, 15 with diplomas, 41 graduates, and 7 postgraduate respondents. These three summary distributions each total 120 and are reproduced in Table 2 without implying that the underlying demographic records have been independently authenticated.

The fourth characteristic, length of customer relationship, cannot be reconciled: its category frequencies of 18, 43, 36, and 25 sum to 122 rather than 120. The printed percentages also use a denominator of 122, even though the total row states 120. The duration frequencies are therefore not placed in Table 2. A separate inconsistency appears between the education table (57 senior-high respondents) and its narrative (58); 57 accords with the printed 47.50% of 120.

Table 2. Respondent characteristics as printed in the thesis (n = 120)

Characteristic	Category	n	%
Gender	Male	76	63.33
	Female	44	36.67
Age	17–30 years	41	34.17
	31–40 years	37	30.83
	41–50 years	27	22.50
	Over 50 years	15	12.50
Education	Senior high/vocational	57	47.50
	Diploma	15	12.50
	Bachelor's degree	41	34.17
	Master's degree	7	5.83

Note: Frequencies reproduce the internally additive demographic tables in the source thesis; customer-duration categories remain unresolved.

Operational Context

Reported sales and complaints are shown separately in Table 3 to avoid mixing observation periods. They describe activity at the station, not transactions of identified survey participants. The administrative totals therefore motivate questions about service processes without being interpreted as direct predictors or measures of individual loyalty.

Table 3. Operating context reported in the source thesis

Record	Period	Reported value
Fuel sales	2023	7,920 kL
Fuel sales	2024	8,649 kL
Fuel sales	2025	10,800 kL
Customer complaints	Jan. 2023–Apr. 2026	Approximately 92

Source: Operating records summarized in the thesis, Chapters I and V. Original sales statements and complaint logs were not supplied for independent verification.

Comparison of Measurement and Regression Records

The original SPSS summaries list Cronbach's alpha values of .909, .915, .897, and .877 for X1, X2, X3, and Y, respectively. The respondent-level reconstruction gives .798, .775, .781, and .784. Although each exceeds .70, the difference indicates that the analytical source must be identified. The VIF results diverge more severely: the printed values for X1, X2, and X3 are 3.321, 2.548, and 3.860, compared with 47.029, 85.241, and 54.075 calculated from the appendix. If the appendix is the actual regression dataset, the predictors exhibit serious multicollinearity that limits interpretation of unique partial slopes.

Table 4 compares the printed coefficient estimates with values reconstructed from the 120 appendix rows. X1 is positive and significant in both, although the slope magnitudes differ. X2 changes from a small negative non-significant estimate to a positive estimate with $p = .012$. X3 changes from a positive statistically significant coefficient to a non-significant coefficient. Differences of this size alter hypothesis decisions and cannot be explained as simple rounding discrepancies.

Table 4. Partial regression estimates from two distinct source records

Predictor	SPSS (B; t; p)	Appendix (B; t; p)	Status
Service innovation (X1)	0.558; 7.794; < .001	0.680; 9.282; < .001	Same decision; different slope
Provider trust (X2)	-0.030; -0.584; .561	0.261; 2.543; .012	Sign and decision differ
Customer experience (X3)	0.289; 3.545; .001	0.046; 0.569; .571	Decision differs

Note: SPSS values reproduce the source thesis; the appendix values were independently recalculated from its printed respondent scores. The input files have not been matched.

The model-fit statistics also disagree (Table 5). The printed model summary reports R squared of .769 and adjusted R squared of .763, whereas the appendix reconstruction yields .9862 and .9859, respectively. The printed F(3, 116) of 128.469 is consistent with its own ANOVA sums of squares; its consistency does not establish that the respondent-level appendix was used to produce the output. Both versions produce a significant overall model test, but their explanatory magnitudes differ substantially.

Table 5. Comparison of printed and reconstructed model fit

Measure	SPSS printed in thesis	Appendix reconstruction
Number of responses	120	120
R squared	.769	.9862
Adjusted R squared	.763	.9859
F(3, 116)	128.469	2,764.924
Residual standard error	1.42171	.27584

The discrepancies affect the interpretation of H2 and H3 in particular. A single authoritative input file, its variable construction, any inclusion or missing-value rules, and the matching SPSS output are needed before the partial associations can be presented as verified evidence. Neither set is silently selected as the final version in this article. The values are reported to make the uncertainty and its substantive consequences explicit.

DISCUSSION

Conceptual Distinctions and Measurement Overlap

The measured dimensions refer to recognizable but related aspects of the service encounter. Payment convenience concerns innovation, confidence in fuel quantity concerns provider trust, and respect or comfort concerns experience. Customer-journey research supports this conceptual distinction (Lemon & Verhoef, 2016; De Keyser et al., 2020). However, distinct definitions do not ensure statistically independent construct scores. The very high VIF values obtained from the appendix reconstruction suggest that the partial regression coefficients may be unstable even if the combined model fits closely.
The original discussion described service innovation as the dominant predictor on the basis of its printed standardized coefficient. That inference depends on confirming which response file and coding generated the model. The regression estimates and their precision need to be reconciled before ranking the importance of the three measured perceptions. In particular, fit alone cannot establish independent explanatory contributions when predictors are strongly correlated.

Service Innovation and Loyalty

The five innovation items focus on technology and convenience that are visible to customers. Prior work establishes reasons to examine these service attributes, but its dependent variables and settings differ. Feng et al. (2021) examined firm performance, while Tai et al. (2021) compared forms of innovation in hospitality. Neither result fixes the expected loyalty coefficient at a fuel station. The two reconstructions here agree on a positive statistically significant X1 coefficient but not its size or the accompanying multicollinearity diagnosis. Service research has also identified innovation and the design of service encounters as continuing research priorities (Ostrom et al., 2015).

A modest managerial implication can nevertheless be drawn from the measured service context. Managers can document digital-payment availability, transaction disruptions, waiting times, and the functioning of service facilities before deciding which operational changes deserve attention. Evidence from multi-market retail encounters further suggests that service cues are evaluated differently across circumstances (Bolton et al., 2022). Such monitoring is appropriate without claiming that a service change has been shown to cause repeat buying.

Provider Trust and Loyalty

Provider trust concerns dispensing quantity, perceived fuel quality, transparent price information, staff professionalism, and service consistency. Commitment-trust theory explains why such perceptions may matter for continued exchange (Morgan & Hunt, 1994). A study of Shell customers in Surabaya examined brand trust and experience against repurchase intention under a promotional moderator (Chandra et al., 2023). Its measures and model differ from the current design, so it should not be treated as direct confirmation or contradiction of the present partial coefficient.

The two available X2 estimates support incompatible statistical decisions: B = -0.030, p = .561 in the SPSS printout and B = 0.261, p = .012 from the respondent appendix. The large reconstructed VIF also weakens a simple interpretation of the latter as an isolated trust association. A non-significant estimate would not prove that trust has no role, and a significant association would still not establish causality. The source discrepancy must be resolved before either outcome can be treated as the study's finding.

Customer Experience and Service Touchpoints

The experience items cover station cleanliness and comfort, employee friendliness, respectful treatment, positive impressions, and overall satisfaction. Customer-journey literature locates these responses within a sequence of touchpoints (Verhoef et al., 2009; Lemon & Verhoef, 2016), while later work identifies conditions under which effective journeys contribute to loyalty (Reitsamer et al., 2024). The recorded complaints provide concrete issues for operational review but were not linked to any named survey participants. Consequently, no causal link between a complaint and a loyalty score was estimated. Bringing together physical, digital, and interpersonal experiences is a recognized management challenge (Bolton et al., 2018; Homburg et al., 2017).

For customer experience, the thesis's SPSS output reports B = 0.289, p = .001, whereas the appendix reconstruction yields B = 0.046, p = .571. It would be misleading to privilege either decision before the respondent records have been matched to the SPSS run. Moreover, a Likert statement about intending to return is not equivalent to a sequence of observed repeat purchases; the latter was not measured for the respondents.

Joint Model, Scope, and Limitations

H4 concerns overall model fit. In both analytical versions the F test is statistically significant, but this does not imply three significant partial coefficients. The corrected adjusted R squared should be reported for one specified dataset and one scoring rule, and interpreted as explained variation in measured loyalty rather than a causal share of loyalty. The cross-sectional, self-report design and possible overlap among predictor scores remain important limitations.

The sample includes customers of one station, selected purposively after recent purchases. It cannot represent every fuel-station user in Indonesia. Proximity, fuel availability, travel patterns, and competitor conditions may influence choices but were not measured as predictors. Reviews of retailer loyalty show that the relative importance of loyalty drivers can vary across settings (Liu-Thompkins et al., 2022). These are boundaries on interpretation, not evidence that any unobserved factor caused the observed responses.

CONCLUSIONS AND RECOMMENDATIONS

The research framework addresses associations of service innovation, provider trust, and customer experience with self-reported loyalty among 120 customers of SPBU 54.612.53. Both analytical records show a positive significant coefficient for service innovation and a significant overall F test. However, the SPSS printout and reconstructed appendix data disagree on the trust coefficient's sign and significance, the significance of experience, model fit, and VIF values. As a result, final decisions about H2, H3, and the unique contribution of each predictor cannot be justified from the documents currently available.

The original respondent dataset, instrument coding, demographic record, and matching SPSS output should be reconciled before submission and managerial prioritization. The operator may independently review the facility and transaction complaints documented in its logs, but those activities should not be presented as interventions proven by this survey to improve loyalty. A final article should use the statistics reproduced from one verified dataset rather than selecting between conflicting tables.

ADVANCED RESEARCH

Research at multiple stations using clear sampling frames could test whether the specified relationships hold under different competitive and geographic conditions. Linking repeated customer visits to transaction records would allow observed patronage to be distinguished from self-reported intentions. Objective indicators such as queue length, payment failures, equipment availability, and complaint resolution could also be studied alongside perception scores; these data were not collected for the present model.

Future measurement work should test whether innovation, trust, and experience remain distinguishable when analyzed jointly. Replication with archived item-level observations, transparent scoring, and an explicit survey period could clarify the severe collinearity observed in the appendix reconstruction. Including relevant unmeasured factors, such as accessibility and fuel availability, would extend rather than retroactively change the design reported here.

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