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ASSOCIATIONS OF ELECTRONIC SERVICE QUALITY AND PROMOTION WITH CUSTOMER SATISFACTION AMONG SHOPEE USERS IN BANDUNG CITY

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ABSTRACT

Prior Shopee studies provide inconsistent evidence on whether promotion remains associated with customer satisfaction when electronic service quality is considered simultaneously, and several have focused on narrowly defined respondent groups. This study reassesses these relationships among Shopee users in Bandung City through a quantitative cross-sectional survey. Data were collected in 2025 from 97 eligible respondents using non-probability incidental sampling and a 30-item context-adapted questionnaire administered through Google Forms. The data were analyzed using descriptive statistics, item-to-to-to-total correlations, Cronbach's Alpha, regression diagnostics, multiple linear regression, and HC3 heteroscedasticity-robust inference. Electronic service quality and promotion were both positively associated with customer satisfaction. Under HC3 robust inference, electronic service quality was positively associated with customer satisfaction ($B = 0.477$, $p < 0.001$), as was promotion ($B = 0.446$, $p < 0.001$), while promotion produced $B = 0.446$, $p < 0.001$. The model explained 75.8 percent of the observed variation in customer satisfaction, with $R^2 = 0.758$ and adjusted $R^2 = 0.753$. Because the two unstandardized coefficients were numerically close and were not formally compared, neither predictor was interpreted as meaningfully stronger. The study contributes a contemporary robustness-oriented replication and contextual extension of an established Shopee model using 2025 data and an operational specification that incorporates trust and transaction security within electronic service quality. Given the cross-sectional, single-source design, the findings indicate associations rather than causal effects and should be interpreted with caution.

Keywords: electronic service quality; promotion; customer satisfaction

INTRODUCTION

Digital technology has transformed online shopping by integrating product discovery, transaction processing, secure payment, customer support, and user-generated information within marketplace platforms. As these functions converge in a single digital environment, platform operators must simultaneously manage electronic service performance and the overall user experience because service quality, customer satisfaction, and trust are central to continued platform use and competitive positioning (Kim & Yum, 2024; Mamakou et al., 2024).

In Indonesia, online marketplaces have become part of the digital infrastructure that connects consumers, sellers, brands, payment providers, and logistics partners. Shopee is one of the

major platforms in this ecosystem, supported by integrated payment, logistics, fulfillment, and other value-added services (Limited, 2025). The emergence of interactive features such as Shopee Live also shows that marketplace competition has moved beyond basic transactions toward engagement, branding, and consumer interaction (Prasetia et al., 2025).

Customer satisfaction in e-commerce cannot be inferred from high platform traffic or frequent promotional exposure alone. Consumers evaluate a marketplace through the broader digital shopping experience, including information clarity, ease of navigation, transaction security, service reliability, and the quality of support received when problems occur. Recent evidence indicates that electronic service quality, user experience, customer service, perceived ease of use, and trust are positively associated with customer satisfaction, while satisfaction is also linked to continued platform use (Kim & Yum, 2024; Mamakou et al., 2024; Sayem et al., 2025).

Electronic service quality is one of the main factors associated with customer satisfaction in digital marketplaces. Recent studies describe it as users' evaluation of whether an e-commerce platform provides an efficient interface, reliable transaction processing, accurate order fulfillment, secure payments and data protection, responsive support, and a convenient overall user experience. In marketplace settings, stronger electronic service quality is associated with higher customer satisfaction, trust, and continued platform use, while Shopee-specific evidence highlights efficiency, fulfillment, system availability, and privacy as important attributes of the service experience (Kim & Yum, 2024; Mamakou et al., 2024; Sheu & Chang, 2022).

Promotion is also relevant because marketplace users are exposed to various promotional stimuli, including digital advertisements, vouchers, cashback, free shipping, flash sales, personalized notifications, testimonials, and other platform-based messages. Recent evidence shows that sales promotion methods such as discounts, coupons, and bonus packs can contribute to customer satisfaction, while cashback mechanisms can reinforce consumers' loyalty to promotional programs and encourage subsequent purchasing activity (Vieira et al., 2022; Urošević & Dukić, 2024). Promotional effects nevertheless depend on their design and intensity. Uncertain

price promotions may backfire when the realized discount falls below consumers' heightened expectations, and excessively strong online promotion habits may eventually produce diminishing or negative effects on customer value (Li et al., 2022; Wang & Chen, 2022).

Recent studies have examined electronic service quality and promotion as predictors of customer satisfaction in Indonesian e-commerce, but the evidence concerning promotion is not fully consistent. Ronsumbre and Telagawathi (2022) found that promotion and electronic service quality were positively associated with customer satisfaction among management students who used Shopee. Prami Dewi et al., (2024) reported similar positive relationships among Generation Z Shopee users in Denpasar, although their model specified security as a separate independent variable. In contrast, Damerianta et al., (2023) found that service quality was positively related to consumer satisfaction, whereas promotion did not have a significant relationship with satisfaction in a Shopee model that also included product quality and consumer loyalty.

These findings leave an empirical question regarding the robustness of the association between promotion and customer satisfaction across different respondent compositions and model specifications. Previous Shopee studies have focused on specific groups, such as a management student cohort or Generation Z users, and have operationalized service-related constructs differently, particularly in their treatment of security. The present study addresses this issue using data collected in 2025 from Shopee users in Bandung City whose eligibility was not restricted to a single academic cohort or generational category. In the present operationalization, trust and transaction security are incorporated within electronic service quality rather than modeled as a separate independent variable.

The contribution of this study therefore lies not in introducing an entirely new combination of variables, but in providing a contemporary robustness-oriented replication and contextual extension of an established model. Specifically, the study reassesses whether electronic service quality and promotion remain significantly associated with customer satisfaction under a later data-collection period, a different respondent eligibility frame, and a measurement specification that integrates trust and transaction security within electronic

service quality. Bandung City defines the empirical setting and the scope of inference rather than serving as the sole basis of novelty. Accordingly, the findings are interpreted as evidence from the observed sample and not as a representation of all Shopee users in Indonesia.

Based on this empirical gap, the study examines the partial and joint associations of electronic service quality and promotion with customer satisfaction among Shopee users in Bandung City. H1 states that electronic service quality is positively and significantly associated with customer satisfaction. H2 states that promotion is positively and significantly associated with customer satisfaction. H3 states that electronic service quality and promotion jointly explain significant variation in customer satisfaction.

LITERATURE REVIEW

Electronic Service Quality

Electronic service quality refers to users' evaluation of how effectively a digital marketplace supports information search, transaction processing, order fulfillment, security, and problem resolution throughout the online shopping process. Contemporary research treats electronic service quality as a multidimensional construct and indicates that service performance, user experience, trust, satisfaction, and continued platform use are closely related in marketplace settings (Sheu & Chang, 2022; Kim & Yum, 2024; Mamakou et al., 2024).

Because this study examines an application-based marketplace, it applies to a context-adapted five-dimensional framework comprising platform design, reliability, responsiveness, trust, and personalization. This structure is conceptually adapted from Arilaha et al., (2021), who examined web design, responsiveness, reliability, trust, and personalization among Indonesian online shoppers. Further empirical support is provided by Wisnel et al., (2022), who identified reliability, responsiveness, and personalization as significant predictors of customer satisfaction among Indonesian e-commerce users, and by Sheu and Chang (2022), who demonstrated the relevance of efficiency, fulfillment, system availability, and privacy to customer satisfaction in the Shopee application.

In the present study, platform design refers to the clarity and organization of product information and visible service documentation rather than interface aesthetics alone. Reliability concerns the

accuracy of delivery tracking and the consistency and retrievability of transaction records, while responsiveness concerns accessible customer support and timely handling of technical problems or complaints. Trust concerns transaction security, consumer protection, and confidence supported by product reviews and seller ratings, which recent marketplace evidence identifies as important to trust formation and customer experience (Peña-García et al., 2024). Personalization is operationalized narrowly as relevant automated assistance and respectful, problem-focused support rather than algorithmic product customization. Accordingly, these five dimensions constitute a context-adapted operational framework for the Shopee service encounters examined in this study and should not be interpreted as a verbatim application of the original E-S-QUAL scale.

Promotion

Promotion refers to coordinated marketing communication through which a digital marketplace informs, persuades, and reminds users about platform and seller offerings. In this study, promotion is represented by advertising, sales promotion, personal selling in a platform-enabled form, direct marketing, and publicity or earned digital exposure. Advertising concerns the attractiveness and relevance of paid promotional content, while sales promotion concerns short-term incentives such as discounts, vouchers, cashback, free shipping, and time-limited campaigns. Direct marketing concerns targeted messages delivered through application notifications or other digital channels, whereas publicity concerns platform reputation, media exposure, testimonials, and customer reviews disseminated organically (Kotler et al., 2022; Peña-García et al., 2024).

Promotion can contribute to customer satisfaction when consumers perceive its benefits as useful, transparent, fair, and easy to redeem. Urošević and Dukić (2024) found that sales promotion methods, including discounts, bonus packs, and coupons, were associated with consumer satisfaction, while Vieira et al., (2022) demonstrated that cashback strategies can create value through consumers' loyalty to promotional programs. Promotional effects, however, are not uniformly positive. Hidden price promotions may produce unfavorable evaluations when the realized benefit falls below consumers' heightened expectations, while increasingly strong

online promotion habits may eventually generate diminishing or negative effects on customer value (Li et al., 2022; Wang & Chen, 2022).

The personal selling dimension requires a context-specific interpretation in a marketplace environment. It does not refer to face-to-face selling or to a conventional sales force employed by Shopee. Instead, it denotes platform-enabled interactive selling, particularly two-way communication between buyers and sellers through chat or live-commerce features and recommendation assistance embedded in seller-consumer interactions. Recent studies indicate that live-streaming commerce can reproduce central personal-selling functions by enabling product explanation, interactive engagement, uncertainty reduction, and digital rapport between sellers or streamers and prospective buyers (Lu & Chen, 2021; Chu, 2024).

This interpretation is consistent with the development of Shopee Live, where live-stream e-branding and parasocial interaction connect promotional communication with an interactive shopping experience (Prasetia et al., 2025). In the present questionnaire, this dimension is represented by the usefulness of direct buyer-seller communication and personalized recommendation support. Because the recommendation indicator includes a technology-mediated component, the construct is interpreted narrowly as platform-enabled interactive selling support rather than as a pure measure of traditional personal selling. This contextual qualification is maintained throughout the manuscript to prevent an overstatement of construct equivalence.

Customer Satisfaction

Customer satisfaction refers to consumers' evaluative judgment of whether the performance and outcomes experienced during a transaction fulfill their prior expectations. In e-commerce, this judgment develops across the complete shopping process, including information search, ordering, payment, delivery, problem resolution, and post-purchase evaluation. Recent evidence confirms the continued relevance of expectancy-disconfirmation in explaining consumer satisfaction and shows that platform quality, user experience, and transaction convenience are closely associated with satisfaction in digital commerce (Mamakou et al., 2024; Savastano et al., 2025; Schiebler et al., 2026).

Consistent with the questionnaire administered in this study, customer satisfaction is operationalized through five evaluative domains: price, service quality, product quality, emotional experience, and efficiency. These domains constitute a context-adapted operational framework rather than a universally established five-dimensional customer satisfaction scale. The framework combines economic evaluation, service and product outcomes, affective experience, and transaction convenience because recent studies identify price fairness, electronic service quality, product performance, retail application experience, and ease of use as relevant components or antecedents of satisfaction judgments in digital commerce (Molinillo et al., 2022; Damerianta et al., 2023; Azizi et al., 2024; Mamakou et al., 2024).

In the present operationalization, price concerns the competitiveness of product prices and the transparency of additional transaction charges. Service quality concerns the usefulness of complaint handling and the reliability of delivery and tracking support, while product quality concerns the correspondence between the products received and the descriptions, images, and information displayed on the platform, together with the availability of suitable product alternatives. Emotional experience concerns comfort, enjoyment, confidence, and the sensory appeal of the application, whereas efficiency concerns the ease and speed of ordering, payment, and navigation. Recent research supports the relevance of affective and sensory application experience, price fairness, service performance, ease of use, and order or return convenience in consumers' satisfaction-related evaluations of digital commerce (Molinillo et al., 2022; Azizi et al., 2024; Savastano et al., 2025).

Because several of these indicators concern complaint handling, delivery tracking, application design, ordering, and navigation, their content is conceptually close to the electronic service quality predictor. Accordingly, the customer satisfaction measure in this study should be interpreted as a broad evaluation of the digital shopping experience rather than as a pure affective satisfaction scale. This conceptual proximity may contribute to stronger observed associations among the variables and therefore requires cautious interpretation, as well as future assessment through confirmatory factor analysis and discriminant validity testing.

Relationships among Electronic Service Quality, Promotion, and Customer Satisfaction

Customer satisfaction in digital marketplaces can be understood as an evaluative response to whether the performance and benefits experienced during the shopping process confirm users' prior expectations. Within this framework, electronic service quality represents the functional performance of the marketplace, whereas promotion represents the economic and communication value realized by users. Recent meta-analytic evidence indicates that perceived performance and expectancy disconfirmation remain central to satisfaction formation, providing a common rationale for examining both predictors within the same model (Schiebler et al., 2026).

Electronic service quality is expected to be positively associated with customer satisfaction because clear information, reliable transaction processing, secure payment, accurate delivery support, responsive assistance, and effective problem resolution reduce effort and uncertainty throughout the shopping journey. Empirical studies conducted in Shopee and other marketplace settings consistently report positive relationships between electronic service quality and customer satisfaction, while also showing its relevance to trust and continued platform use (Sheu & Chang, 2022; Pasaribu et al., 2022; Kim & Yum, 2024; Mamakou et al., 2024; Mardhotillah & Wibawa, 2025). Accordingly, H1 states that electronic service quality is positively and significantly associated with customer satisfaction among Shopee users in Bandung City.

Promotion is expected to be positively associated with customer satisfaction when the promised benefit is relevant, transparent, fair, and easy to redeem because the realized saving or additional value can positively confirm consumers' transaction expectations. Positive relationships have been reported by Ronsumbre and Telagawathi (2022), Sudirjo et al., (2023); Prami Dewi et al., (2024); and Urošević and Dukić (2024). However, promotion should not be assumed to generate satisfaction automatically. Damerianta et al., (2023) found no significant relationship between promotion and consumer satisfaction on Shopee, while other recent studies indicate that unclear or excessively intense promotional practices may weaken customer evaluations (Li et al., 2022; Wang & Chen, 2022). The mixed evidence suggests that promotional

outcomes depend on whether the value communicated before purchase is actually realized during the transaction. Accordingly, H2 states that promotion is positively and significantly associated with customer satisfaction among Shopee users in Bandung City.

Electronic service quality and promotion represent distinct sources of marketplace evaluation. Electronic service quality captures functional service performance, whereas promotion captures the economic and communication value experienced by users. Previous studies have reported significant multivariable models containing both constructs, although their respondent characteristics, model specifications, and additional predictors differ (Ronsumbre & Telagawathi, 2022; Sudirjo et al., 2023; Prami Dewi et al., 2024). In the present study, the joint hypothesis concerns whether the two predictors, when entered together, explain significant variation in customer satisfaction. It does not imply a statistical interaction or synergistic effect because the regression model does not include an interaction term. Accordingly, H3 states that electronic service quality and promotion jointly explain significant variation in customer satisfaction among Shopee users in Bandung City.

RESEARCH METHOD

This study employed a quantitative, cross-sectional survey design with descriptive and explanatory objectives. The descriptive component summarized respondents' evaluations of electronic service quality, promotion, and customer satisfaction, while the explanatory component examined the statistical associations of electronic service quality and promotion with customer satisfaction through multiple linear regression. Because all variables were measured at one point in time, the findings are interpreted as cross-sectional associations rather than definitive evidence of causality.

The study population comprised Shopee users who resided or were active in Bandung City and had prior purchasing experience through the platform. Because the exact population size and a formal sampling frame were unavailable, a proportion-based calculation for an unknown population was used to establish a minimum recruitment target. The calculation applied a 95 percent confidence level, a conservative population proportion of 0.50, and a precision level of 0.10, as shown below:

$n = (1.96^2 \times 0.50 \times 0.50) / 0.10^2 = 96.04$

The resulting value of 96.04 was rounded to 97 respondents. The calculation was treated as a pragmatic minimum recruitment target and not as a basis for claiming probability-based representativeness (Althubaiti, 2023).

Respondents were recruited using non-probability incidental sampling, whereby accessible individuals were included only when they satisfied the predefined eligibility criteria. Eligible respondents were at least 17 years old, resided or were active in Bandung City, possessed a Shopee account and had completed a purchase through Shopee, had interacted with Shopee services and received information about Shopee promotions, and agreed to complete the questionnaire fully and consistently. The use of non-probability recruitment means that the findings represent the observed sample and should not be generalized statistically to all Shopee users in Bandung City.

Data collection was conducted during 2025 through a structured online questionnaire administered using Google Forms. The survey link was distributed to accessible Shopee users within the Bandung City setting. The introductory page explained the purpose of the research, the voluntary nature of participation, the confidentiality of respondents' information, and consent to participate. Eligibility was checked through screening questions at the beginning of the questionnaire, after which the submitted responses were reviewed for completeness and consistency. The final dataset comprised 97 responses that met the eligibility and data-quality requirements.

The primary measurement instrument consisted of 30 closed-ended statements developed specifically for the Shopee marketplace context. Electronic service quality, promotion, and customer satisfaction were each represented by 10 items. The questionnaire was not a verbatim reproduction of E-S-QUAL or any other single established instrument. Instead, the operational domains were derived from recent literature, while the authors developed the wording of the individual statements to reflect the specific service, promotional, and shopping experiences examined in this study. Before distribution, the statements were reviewed for readability and clarity to reduce ambiguous interpretation.

Items 1 to 10 measured electronic service quality through platform design, reliability, responsiveness, trust, and personalization. The domain structure was

primarily informed by Arilaha et al., (2021) and was further aligned with recent evidence concerning reliability, responsiveness, personalization, Shopee service performance, security, and review-based trust (Wisnel et al., 2022; Sheu & Chang, 2022; Peña-García et al., 2024). The items addressed the clarity of product and service information, transaction records, delivery tracking, customer support, technical problem handling, transaction security, confidence derived from product reviews and seller ratings, automated assistance, and complaint handling.

Items 11 to 20 measured promotion through advertising, sales promotion, personal selling in a platform-enabled form, direct marketing, and publicity. These operational domains were informed by recent integrated marketing communication and digital promotion literature concerning advertising, promotional incentives, cashback, digital communication, livestream interaction, and platform reputation (Kotler et al., 2022; Wang & Chen, 2022; Chu, 2024; Prasetia et al., 2025). The item wording addressed advertising appeal, purchase-oriented advertising, discounts, vouchers, cashback, time-limited promotions, buyer-seller communication, personalized recommendation support, direct promotional messages, platform reputation, and organically disseminated testimonials. Personal selling was interpreted narrowly as platform-enabled interactive selling rather than conventional face-to-face selling or direct selling by Shopee employees.

Items 21 to 30 measured customer satisfaction as a broad evaluation of the digital shopping experience through price, service quality, product quality, emotional experience, and efficiency. These operational domains were informed by recent studies concerning retail application experience, price fairness, electronic service performance, ease of use, transaction convenience, and e-commerce satisfaction (Molinillo et al., 2022; Azizi et al., 2024; Mamakou et al., 2024; Savastano et al., 2025). The items addressed competitive pricing, transparency of additional charges, complaint support, delivery and tracking, product correspondence with descriptions, product variety, shopping comfort, application visualization, ordering and payment, and application navigation.

Responses to all 30 items were recorded on a five-point Likert scale ranging from 1 for strong disagreement to 5 for strongly agree. Higher scores

indicated more favorable evaluations of electronic service quality and promotion and a higher level of customer satisfaction. Because the questionnaire contained context-adapted, author-developed wording, the instrument is not presented as a fully validated established scale. The item-total correlation and Cronbach's Alpha analyses provide preliminary evidence of item performance and internal consistency, but they do not establish factorial, convergent, or discriminant validity.

Table 1. Operationalization of Research Variables

Variable	Operational domains	Item allocation
Electronic service quality	Platform design; reliability; responsiveness; trust; personalization	Items 1 to 10
Promotion	Advertising; sales promotion; personal selling in a platform-enabled form; direct marketing; publicity	Items 11 to 20
Customer satisfaction	Price; service quality; product quality; emotional experience; efficiency	Items 21 to 30

Source: Authors' context-adapted instrument based on Arilaha et al., (2021); Wisnel et al., (2022); Sheu and Chang (2022); Kotler et al., (2022); Vieira et al., (2022); Wang and Chen (2022); Molinillo et al., (2022); Peña-García et al., (2024); Chu (2024); Azizi et al., (2024); Mamakou et al., (2024); Prasetia et al., (2025); and Savastano et al., (2025)

Data were processed using IBM SPSS Statistics version 27. The analysis initially summarized respondent characteristics and the distributions of the three composite scores. Each variable score was calculated by summing its 10 corresponding items, resulting in a possible score ranging from 10 to 50. Before inferential analysis, the dataset was examined for eligibility, completeness, coding accuracy, and response consistency.

Preliminary item performance was evaluated using Pearson item-to-total correlations, while the internal consistency of each 10-item composite was assessed using Cronbach's Alpha. Positive item-to-total correlations exceeding the applicable critical correlation value were treated as preliminary evidence that the items were associated with their respective composite scores. Cronbach's Alpha values of 0.70 or higher were interpreted as indicating acceptable internal consistency. However, internal consistency is not equivalent to construct validity, and high Alpha coefficients do not independently establish one-dimensionality or the absence of item redundancy (Shaw, 2021; Field, 2024). Because confirmatory factor analysis was not conducted, the present

tests do not establish factorial, convergent, or discriminant validity.

Regression diagnostics were conducted before interpreting the multiple regression model. Residual normality was evaluated using the one-sample Kolmogorov-Smirnov test with Lilliefors correction, while multicollinearity was assessed using tolerance and variance inflation factor values. Tolerance values above 0.10 and variance inflation factor values below 10 were interpreted as indicating that severe multicollinearity was not present. These thresholds were used as diagnostic guidance rather than as absolute evidence that the predictors were entirely independent.

Heteroscedasticity was evaluated by combining visual and formal procedures. The standardized residual scatterplot was inspected for systematic patterns, while the Breusch-Pagan test was used to examine whether residual variance changed significantly as a function of the predictors. A Breusch-Pagan p-value above 0.05 was interpreted as insufficient evidence to reject the assumption of constant residual variance. Because no single diagnostic procedure is conclusive, graphical, and statistical evidence were considered together, and HC3 heteroscedasticity-robust standard errors were calculated as a sensitivity analysis to assess whether the statistical conclusions remained stable (Field, 2024; Shatz, 2024).

Potential common method bias was considered because electronic service quality, promotion, and customer satisfaction were reported by the same respondents, measured through the same questionnaire format, and collected at the same point in time. Confidential handling of responses, voluntary participation, and construct-specific item wording were used as limited procedural safeguards. Nevertheless, the single-source and single-wave design means that shared response tendencies, consistency motives, or general evaluative impressions may have inflated some of the observed associations. Common method bias therefore cannot be ruled out, and the magnitude of the regression results, particularly the coefficient of determination, is interpreted cautiously (Podsakoff et al., 2024).

Multiple linear regression was used to examine the associations of electronic service quality and promotion with customer satisfaction. The model was specified as follows:

Customer satisfaction = α + β1 (Electronic service quality) + β2 (Promotion) + ε

In this equation, α represents the intercept, β1 and β2 represent the estimated regression coefficients, and ε represents the residual term. Unstandardized coefficients were used to describe the expected change in the customer satisfaction score associated with a one-unit change in each predictor while holding the other predictor constant. No formal coefficient equality test was conducted. Therefore, the numerical difference between the two unstandardized coefficients was not interpreted as statistically significant.

The partial significance of each predictor was assessed using t-tests, while the overall explanatory significance of the model was evaluated using the F-test. The coefficient of determination and adjusted coefficient of determination were used to describe the proportion of observed variation in customer satisfaction accounted for by the two-predictor model. Statistical decisions were based on a two-sided significance level of 0.05 and were accompanied by coefficient estimates, standard errors, test statistics, p-values, and 95 percent confidence intervals. The simultaneous test concerned the significance of the regression model as a whole and did not represent an interaction or synergistic effect between electronic service quality and promotion.

RESULT AND DISCUSSION

Respondent Profile

The research involved 97 Shopee users in Bandung City. The respondent profile provides context for interpreting the findings because perceptions of platform service, promotion, and satisfaction may be influenced by demographic characteristics. The profile is summarized in Table 2.

Table 2. Respondent Profile

Characteristic	Distribution
Gender	Female: 62 respondents (63.92%); male: 35 respondents (36.08%)
Age	17 to 24 years: 62 respondents (63.92%); 25 to 34 years: 18 respondents (18.56%); 35 to 44 years: 6 respondents (6.19%); over 45 years: 11 respondents (11.34%)
Occupation	Student: 36 respondents (37.11%); private employee: 34 respondents (35.05%); other occupations: 27 respondents (27.84%)

Source: Processed primary data (2025)

Table 2 shows that the sample was concentrated among female respondents, users aged 17 to 24 years, students, and private employees. Accordingly, the descriptive and inferential results should be interpreted primarily as reflecting a relatively young and female-dominated

respondent composition rather than the full diversity of Shopee users in Bandung City.

Descriptive Statistics and Instrument Quality

Descriptive statistics were used to understand the general tendency of responses for each variable. Each variable consisted of 10 items, so the possible score for each construct ranged from 10 to 50. The summary of descriptive statistics, validity, and reliability is shown in Table 3.

Table 3. Descriptive Statistics, Preliminary Item Performance, and Internal Consistency

Variable	Composite mean	Preliminary item performance and internal consistency
Electronic service quality	40.75	Item-to-total correlation: 0.556 to 0.804; α = 0.907
Promotion	40.59	Item-to-total correlation: 0.682 to 0.815; α = 0.90
Customer satisfaction	41.03	Item-to-total correlation: 0.684 to 0.810; α = 0.924

Table 3 shows that customer satisfaction had the highest composite mean at 41.03, followed by electronic service quality at 40.75 and promotion at 40.59. Because each construct comprised 10 items, the corresponding mean item scores exceeded 4.00, indicating generally favorable respondent evaluations.

All item-to-total correlations were positive and exceeded the applicable critical Pearson correlation value. Cronbach's alpha coefficients ranged from 0.903 to 0.924, providing preliminary evidence of item performance and internal consistency. These results do not establish factorial, convergent, or discriminant validity, which would require confirmatory factor analysis and additional measurement-model assessment.

At the item level, the product review and seller rating items received the highest mean ratings within electronic service quality, whereas the technical problem-handling item received the lowest mean rating. Within promotion, the discount, voucher, cashback, and customer testimonial items received comparatively high mean ratings, whereas the direct marketing frequency item received the lowest mean rating.

Regression Diagnostics

Before interpreting the regression coefficients, diagnostic procedures were conducted to examine residual normality, multicollinearity, and the constancy of residual variance. Residual normality was assessed using the Kolmogorov-Smirnov

test, multicollinearity was evaluated through tolerance and variance inflation factor values, and heteroscedasticity was examined using both residual scatterplot inspection and the formal Breusch-Pagan test. The results are presented in Table 4.

Table 4. Regression Diagnostic Results

Diagnostic	Result and interpretation
Residual normality	Kolmogorov-Smirnov D = 0.081; p = 0.124. No statistically significant departure from residual normality was detected.
Multicollinearity	Tolerance = 0.383 and VIF = 2.609 for both predictors. No serious multicollinearity was detected.
Heteroscedasticity	Breusch-Pagan $\chi^2(2) = 3.717$; p = 0.156. No statistical evidence of heteroscedasticity was detected, and the residual scatterplot showed no systematic pattern.

Table 4 indicates that no statistically significant departure from residual normality was detected because the Kolmogorov-Smirnov test produced a p-value of 0.124. Electronic service quality and promotion each had a tolerance value of 0.383 and a variance inflation factor value of 2.609, indicating that the model did not exhibit serious multicollinearity.

The Breusch-Pagan test produced $\chi^2(2) = 3.717$ with p = 0.156. Because the p-value exceeded the 0.05 significance level, the null hypothesis of constant residual variance could not be rejected. This result does not prove perfect homoscedasticity, but it indicates that the available data do not provide statistical evidence of heteroscedasticity. The absence of a systematic pattern in the residual scatterplot provides complementary visual support. Overall, the diagnostic results did not reveal a major assumption violation that would preclude interpretation of the multiple regression model.

Multiple Regression and Hypothesis Testing

Multiple linear regression was used to examine the associations of electronic service quality and promotion with customer satisfaction. Because HC3 heteroscedasticity-robust standard errors were applied as a sensitivity analysis, Table 5 reports the unstandardized coefficients together with robust standard errors, robust t-statistics, p-values, and 95 percent confidence intervals.

Table 5. Multiple Regression Results with HC3 Robust Inference

Component	Estimate and HC3 robust inference	Interpretation
Constant	B = 3.514; robust SE = 1.958; t = 1.795; p = 0.076; 95% CI [-0.373, 7.402]	Not substantively interpreted
Electronic service quality	B = 0.477; robust SE = 0.106; t = 4.482; p < 0.001; 95% CI [0.266, 0.688]	H1 supported
Promotion	B = 0.446; robust SE = 0.113; t = 3.945; p < 0.001; 95% CI [0.221, 0.670]	H2 supported
Overall model	N = 97; R^2 = 0.758; adjusted R^2 = 0.753; OLS F(2, 94) = 147.293, p < 0.001; HC3 robust Wald F(2, 94) = 213.310, p < 0.001	H3 supported

Note: B denotes an unstandardized regression coefficient. HC3 correction affects the estimated standard errors and inferential statistics but does not change the regression coefficients or coefficient of determination.

Based on Table 5, the estimated regression equation is presented below. The equation summarizes the conditional association of each predictor with customer satisfaction.

Customer satisfaction = 3.514 + 0.477 (Electronic service quality) + 0.446 (Promotion)

The intercept was not interpreted substantively because a score of zero for electronic service quality and promotion falls outside the possible composite score range used in this study. Holding promotion constant, a one-point higher electronic service quality score was associated with a 0.477-point higher customer satisfaction score. This association remained statistically significant under HC3 robust inference, with a robust standard error of 0.106, t = 4.482, p < 0.001, and a 95 percent confidence interval ranging from 0.266 to 0.688. These results support H1.

Holding electronic service quality constant, a one-point higher promotion score was associated with a 0.446-point higher customer satisfaction score. The relationship also remained statistically significant under HC3 robust inference, with a robust standard error of 0.113, t = 3.945, p < 0.001, and a 95 percent confidence interval ranging from 0.221 to 0.670. These results support H2.

The two unstandardized coefficients are numerically close. Although the three composite variables share the same nominal score range, the difference

between the coefficients was not examined through a formal coefficient equality test or a comparative confidence interval procedure. The results therefore do not establish that electronic service quality has a meaningfully stronger association with customer satisfaction than promotion. The two predictors are more appropriately interpreted as showing positive and broadly comparable associations within the observed sample.

The model produced $R^2 = 0.758$ and adjusted $R^2 = 0.753$, indicating that the two predictors jointly accounted for 75.8 percent of the observed variation in customer satisfaction. The overall ordinary least squares model was statistically significant, $F(2, 94) = 147.293$, $p < 0.001$, and the conclusion remained unchanged under the HC3 robust Wald test, $F(2, 94) = 213.310$, $p < 0.001$. These results support H3 as a test of the joint explanatory significance of the two-predictor model. They do not demonstrate an interaction or synergistic effect because no interaction term was included in the regression equation.

The magnitude of R^2 is high for a two-predictor survey model and should therefore be interpreted cautiously. All variables were measured from the same respondents, through the same questionnaire format, and at the same point in time. In addition, several customer satisfaction items are conceptually close to the electronic service quality indicators. These measurement characteristics may have strengthened the observed associations and are examined critically in the Discussion.

Discussion

The results indicate that electronic service quality and promotion are each positively associated with customer satisfaction after the other predictor is held constant. Both associations remained statistically significant under HC3 robust inference. The unstandardized coefficients were numerically close, with $B = 0.477$ for electronic service quality and $B = 0.446$ for promotion, and their confidence intervals overlapped substantially. Because the difference between the coefficients was not examined through a formal equality test, the findings do not establish that one predictor has a meaningfully stronger relationship with customer satisfaction. The two predictors are more appropriately interpreted as having positive and broadly comparable associations within the observed sample.

The positive association between electronic service quality and customer satisfaction is theoretically plausible because dependable digital services reduce the effort, uncertainty, and perceived risk involved in online transactions. Clear information, reliable transaction records, accurate delivery tracking, secure payments, responsive assistance, and effective problem resolution can help users evaluate the platform as predictable and trustworthy. This interpretation is consistent with recent studies showing that electronic service quality is positively related to satisfaction, trust, loyalty, and continued marketplace use (Sheu & Chang, 2022; Pasaribu et al., 2022; Kim & Yum, 2024; Mamakou et al., 2024; Mardhotillah & Wibawa, 2025).

The descriptive findings provide a more specific interpretation of this relationship. Product reviews and seller ratings received particularly favorable evaluations, suggesting that user-generated information may function as an informational assurance mechanism when consumers cannot inspect products directly. This interpretation is consistent with Peña-García et al., (2024), who showed that reviews and marketplace rating systems are closely connected with trust and customer experience. However, technical problem handling received a comparatively lower evaluation. This contrast suggests that Shopee users may value information and social verification while still encountering weaknesses in service recovery when application disruptions, payment problems, tracking uncertainty, or complaint-related difficulties occur.

The positive association between promotion and customer satisfaction indicates that promotional value remains relevant even after electronic service quality is statistically controlled. Discounts, vouchers, cashback, free shipping, testimonials, and time-limited campaigns may improve transaction evaluations when the benefits are understandable, economically meaningful, and practically obtainable. This finding is consistent with the positive results reported by Ronsumbre and Telagawathi (2022); Sudirjo et al., (2023); Prami Dewi et al., (2024); and Urošević and Dukić (2024).

Nevertheless, the promotion finding should not be interpreted as evidence that every promotional practice automatically produces satisfaction. Damerianta et al., (2023) found no significant relationship between promotion and consumer

satisfaction in a Shopee-based model, indicating that promotional outcomes may vary across respondent groups, model specifications, and measurement approaches. Promotion may create favorable expectancy confirmation when the communicated benefit is realized, but it may create disappointment when eligibility requirements are unclear, the actual discount is lower than expected, redemption is difficult, or the offer is perceived as intrusive. Recent studies similarly show that uncertain price promotions may backfire and that increasingly intensive online promotion habits may eventually produce diminishing or adverse customer evaluations (Li et al., 2022; Wang & Chen, 2022).

The item-level pattern supports this conditional interpretation. Discounts, vouchers, cashback, and customer testimonials received relatively favorable evaluations, whereas the frequency of direct marketing received the lowest evaluation within the promotion measure. Promotional communication therefore appears to be valued for the benefit it delivers rather than for its frequency alone. Marketplace managers should distinguish between useful personalization and communication overload by improving message relevance, timing, redemption clarity, and user control over promotional notifications. Cashback and loyalty-oriented incentives may create economic value, but their effectiveness depends on whether consumers understand and can realize the promised benefit (Vieira et al., 2022).

Promotion in a marketplace environment also extends beyond price incentives. Platform-enabled communication, live shopping, product explanation, and recommendation assistance can reproduce several interactive functions associated with personal selling. Prasetia et al., (2025) show that live-stream e-branding and parasocial interaction are relevant to online shopping behavior on Shopee Live. Their study does not directly demonstrate an effect on satisfaction, but it helps explain why interactive communication and engagement may form part of consumers' broader promotional experience. In the present study, this dimension should therefore be interpreted as platform-enabled interactive selling support rather than conventional personal selling by Shopee employees.

The significant overall regression model indicates that electronic service

quality and promotion jointly explain variation in customer satisfaction. This result means that the two predictors are statistically informative when entered together in the regression equation. It does not demonstrate that they interact, produce a synergistic effect, or multiply one another's influence because no interaction term was estimated. Electronic service quality and promotion represent different evaluative sources, with the former reflecting functional service performance and the latter reflecting economic and communication value.

The coefficient of determination of 0.758 is substantial for a model containing only two self-reported predictors and therefore requires cautious interpretation. All three variables were reported by the same respondents, measured through the same questionnaire format, and collected at the same point in time. These conditions create a risk that consistency motives, general platform evaluations, response style, or other shared method characteristics strengthened the correlations among the variables. Common method bias cannot be ruled out in the present study, and a statistically significant regression model does not by itself demonstrate that the observed associations are free from such bias (Podsakoff et al., 2024).

Measurement content may also have contributed to the high R^2. Several customer satisfaction items assess complaint handling, delivery and tracking, application visualization, ordering, payment, and navigation, while closely related attributes are also represented within electronic service quality. This conceptual proximity may increase shared variance between the predictor and outcome scores. Because confirmatory factor analysis and discriminant validity testing were not conducted, the study cannot establish that the three composite measures are fully distinct at the latent construct level. The R^2 value should therefore be understood as the proportion of observed score variation explained within this particular dataset, not as proof that the two predictors universally explain 75.8 percent of customer satisfaction among all Shopee users.

The demographic composition further defines the scope of the findings. Female respondents represented 63.92 percent of the sample, and respondents aged 17 to 24 years represented the same proportion. Students and private employees were also the two largest occupational groups. The findings consequently reflect a sample

concentrated among relatively young users and should not be assumed to represent older consumers or a gender-balanced population. Although demographic characteristics may influence familiarity with applications, responsiveness to promotional communication, or reliance on reviews, the present study did not conduct subgroup comparisons. No conclusion regarding gender or age differences can therefore be drawn from these data.

From a managerial perspective, the results suggest that service recovery and promotional governance deserve particular attention. Shopee should maintain information-based strengths such as reviews, seller ratings, transaction records, security features, and delivery tracking, while improving technical problem resolution, complaint-status transparency, and communication during service disruptions. Promotional management should prioritize clear eligibility rules, stable redemption mechanisms, relevant targeting, and user-controlled notification frequency. These priorities are more defensible than simply increasing the quantity of promotions because satisfaction depends on whether the value communicated before a transaction is consistently realized during and after the transaction.

Overall, the findings provide a contemporary robustness-oriented replication of the positive relationships between electronic service quality, promotion, and customer satisfaction. They support the relevance of both predictors in the observed Bandung City sample, while also showing that the results are sensitive to measurement design, common-source data, and respondent composition. The contribution of the study therefore lies in reassessing the established relationships under a later data-collection period and a different operational specification, rather than establishing a new causal mechanism or demonstrating that one predictor is definitively more important than the other.

CONCLUSION

This study examined the associations of electronic service quality and promotion with customer satisfaction among 97 Shopee users in Bandung City. Electronic service quality and promotion were each positively and significantly associated with customer satisfaction when entered together in the regression model. Under HC3 robust inference, the unstandardized coefficient was 0.477 for

electronic service quality and 0.446 for promotion, while the two-predictor model accounted for 75.8 percent of the observed variation in customer satisfaction. These results support H1, H2, and H3. Because the two coefficient estimates were numerically close and their difference was not formally tested, the findings do not establish that either predictor has a meaningfully stronger association with customer satisfaction.

The descriptive findings indicate that respondents generally evaluated Shopee's electronic service quality, promotional activities, and shopping experience favorably. Product reviews, seller ratings, transaction security, delivery tracking, promotional incentives, and ordering convenience were among the positively evaluated attributes. However, technical problem handling and the frequency of direct promotional communication received comparatively lower evaluations. From a managerial perspective, Shopee should therefore strengthen technical service recovery, provide clearer complaint-status information, improve communication during disruptions, maintain transparent promotional conditions, and give users greater control over the frequency and relevance of promotional notifications.

These conclusions should be interpreted within several limitations. The cross-sectional design measured all variables at one point in time and therefore cannot establish temporal ordering or definitive causal relationships. The use of non-probability incidental sampling, a sample of 97 respondents, and a single-city setting also limits statistical generalization. In addition, 63.92 percent of respondents were female, and 63.92 percent were aged 17 to 24 years, which means that the findings primarily reflect a relatively young and female-dominated respondent composition rather than the full diversity of Shopee users.

All variables were reported by the same respondents through the same questionnaire format at the same time. Consequently, common method bias and shared response tendencies cannot be ruled out, and the high coefficient of determination may partly reflect common measurement conditions. Several customer satisfaction items were also conceptually close to the electronic service quality indicators, particularly those concerning complaint handling, delivery tracking, application visualization, ordering, payment, and navigation. The context-adapted instrument was assessed through item-to-

total correlations and Cronbach's Alpha, but confirmatory factor analysis, convergent validity assessment, and discriminant validity testing were not conducted. The platform-enabled personal selling dimension also contains technology-mediated communication and recommendation elements, so its equivalence to conventional personal selling requires further empirical validation.

Future research should employ larger probability-based or stratified samples across multiple cities, demographic groups, and marketplace platforms to improve the transferability of the findings. Longitudinal, panel, or experimental designs would provide stronger evidence regarding temporal relationships and changes in satisfaction after service failures, promotional exposure, or service recovery. Future studies should also use multi-source data, temporal separation, marker-variable procedures, or behavioral and transactional records to reduce and assess common method bias. A refined item pool should be evaluated through confirmatory factor analysis and structural equation modeling so that factorial, convergent, and discriminant validity can be examined before testing structural relationships. Further models may investigate trust and perceived value as mediating variables, while perceived risk, service recovery, user age, gender, transaction experience, and platform-use intensity may be examined as additional predictors or moderators. Survey findings may also be triangulated with complaint records, customer reviews, interviews, focus group discussions, or operational service data.

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