

The Influence of Service Quality and Digital Literacy on Customer Engagement at Limi Stuff in Palu

Filda Abd. Manaf, Syahir Natsir*

Faculty of Economics and Business, Management Study Program, Universitas Tadulako, Palu, Indonesia

Soekarno Hatta Street, No. KM 9, Tondo, Mantikulore District, Palu City, 94148, Indonesia

Email: ¹fildaabdmanaf@gmail.com, ²*syahirnatsir@gmail.com

Correspondence Author Email: syahirnatsir@gmail.com

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Abstract—This study analyzes the influence of service quality and digital literacy on customer engagement at Limi Stuff in Palu City. Optimizing the quality of interaction and utilization of digital channels is the key to the sustainability of modern retail. A quantitative approach was used with 50 respondents who are active customers and have used digital services when making transactions. Service Quality is measured through five dimensions of SERVQUAL (tangible, reliability, responsiveness, assurance, empathy); Digital Literacy includes the ability to access, understand, and manage digital information safely and effectively; while Customer Engagement is measured through cognitive, affective, and behavioral dimensions. The reliability of the instrument is very high ($\alpha_X1 = 0.973$; $\alpha_X2 = 0.849$; $\alpha_Y = 0.960$). The regression results show that Service Quality has a positive and significant effect on Customer Engagement ($B = 1.091$; $t = 16.082$; $p < 0.001$), while Digital Literacy has a negative but significant effect ($B = -0.329$; $t = -2.667$; $p = 0.010$). The negative effect arises because higher digital literacy makes customers more critical toward inconsistent content quality and security gaps in digital channels, leading to more selective rather than emotionally over-involved engagement. Simultaneously, both variables explain 90.2% of the variation in customer engagement ($R^2 = 0.902$; $F = 216.514$; $p < 0.001$). The findings confirm that service quality is the most dominant factor in increasing customer interaction, so improving service standards should be a priority to strengthen engagement in Limi Stuff's digital marketing.

Keywords: Service Quality; Digital Literacy; Customer Engagement; Limi Stuff

1. INTRODUCTION

The transformation of retail towards the Retail 4.0 era demands the integration of superior face-to-face services with seamless, secure, and personalized digital experiences. In Indonesia, post-pandemic shifts in shopping behavior have accelerated the adoption of chat-commerce, online catalogs, and cashless payments, while simultaneously raising customer expectations for speed of response and clarity of information across all touchpoints (RSIS International, 2024). In the context of Limi Stuff in Palu, digital channels have become part of the customer journey, from product discovery and interaction to transaction. However, the heterogeneity of customer digital literacy presents both opportunities and risks: more tech-savvy customers tend to be critical of content quality and security, while novice customers require guidance for comfortable and secure interactions.

Despite having an active digital presence through WhatsApp Business and online catalogs, Limi Stuff observed a 25% decline in customer engagement levels in Q3 2025, particularly from the high digital literacy segment. Internal observations also recorded 15 complaints regarding transaction security and inconsistent promotional content during the same period, prompting this research to identify key determinants of customer engagement.

Theoretically, service quality (SERVQUAL), encompassing tangibles, reliability, responsiveness, assurance, and empathy, has long been recognized as a key determinant of customer satisfaction, loyalty, and, ultimately, engagement. Rapid response, accurate product information, and after-sales guarantees reduce uncertainty and encourage active participation (McKinsey & Company, 2025). In an omnichannel ecosystem, consistent front-line service across channels is a powerful engagement lever because it reduces friction and increases trust (IRJMETS, 2024).

On the other hand, digital literacy, the ability to securely access, understand, verify, and manage information and digital identities, is increasingly relevant to the quality of customer interactions. Good literacy can improve efficiency, content evaluation, and transaction security (The SMERU Research Institute, 2022). However, recent literature also warns of the phenomenon of "engagement fatigue": excessive exposure to content, intense notifications, or irrelevant promotional messages can decrease engagement, especially among literate and more selective customers (Srivastava, 2025; Adobe, 2025). The Indonesian context reinforces this finding: digital literacy levels are increasing, but security practices and content quality have not always followed suit, creating a trust gap (ERIA, 2025). Domestic retail studies show that customer engagement plays a strategic role in mediating the relationship between experience quality and business impacts such as repurchase intention (University of Indonesia AMJ, 2025), and that trust, convenience, and service quality remain crucial in e-commerce channels (RSIS International, 2024). Regarding digital content and gamification, Indonesian research found engagement to be a driver of purchase intention, but its effectiveness is highly dependent on content relevance and interaction design. (Hasanah, 2024)

The research gap addressed in this study is to simultaneously examine the influence of service quality and digital literacy on engagement in a local retail context that actively utilizes digital channels but has diverse customer literacy profiles. Key questions: Is improved service quality still the dominant driver of engagement in a local omnichannel environment, and what is the direction of digital literacy's influence on engagement when content quality and security are not fully consistent?

The contributions of this research are both practical and academic. Practically, the results provide guidance on prioritizing interventions for small retailers: strengthening frontline service SOPs, improving the speed and accuracy of digital responses, and designing concise and secure communications. Academically, the research offers a contextual understanding of how digital literacy influences engagement not assuming that literacy is always positive, but rather dependent on the quality of the digital experience architecture. With a quantitative design and 50 respondents who use the Limi Stuff digital channel, this study is expected to enrich the discourse on the balance between service improvements and digital literacy programs in local markets.

2. RESEARCH METHODS

a research methodology designed systematically to analyze the influence of independent variables, namely Service Quality (X1) and Digital Literacy (X2), on the dependent variable Customer Engagement (Y) on the object of study Limi Stuff. The purpose of this method is to provide a solid scientific foundation in answering the problem formulation and proving the proposed research hypothesis. Specifically, the procedures outlined in this chapter will be used to test the partial hypotheses H2 (the effect of X1 on Y) and H3 (the effect of X2 on Y), as well as the simultaneous hypothesis H1 (the effect of X1 and X2 together on Y). Through a structured approach, it is expected that the analysis results obtained have a sufficient level of validity and reliability for drawing conclusions.

2.1 Research Design

This research uses an explanatory quantitative approach. This approach was chosen because the main objective of the research is to explain the causal relationship between variables through hypothesis testing. The research design is cross-sectional, where data is collected at a specific point in time to capture respondents' perceptions of the variables being studied. Research Design Parameters

- a. Research Location: Case study on Limi customers Stuff.
- b. Data Collection Period: Conducted within a predetermined time period (*one-shot study*).
- c. Unit of Analysis: Individuals, namely customers who have made transactions with Limi Stuff.
- d. Measurement Level: Interval scale using a 5-point Likert Scale (1 = Strongly Disagree to 5 = Strongly Agree).

The selection of this design is based on the need to measure the magnitude of the influence of the effect of service quality and customer digital literacy on their level of engagement. The quantitative data obtained will be analyzed statistically to obtain objective generalizations regarding the phenomena occurring at Limi. Stuff.

2.2 Population and Sample

The population in this study is defined as all Limi Stuff customers recorded or active during the study period. Given the dynamic population size, this study used a non-probability sampling technique, namely purposive sampling. This technique was chosen to ensure respondents had the relevant qualifications to assess the research variables.

The sample inclusion criteria that were set were:

- a. Customers who have made transactions to purchase products or services at Limi Stuff at least once in the last 6 months.
- b. Be willing to take the time to complete the research questionnaire in full.

The sample size of $n = 50$ respondents adheres to (Roscoe's 1975) rule of thumb for behavioral research ($30 < n < 500$), suitable for exploratory pilot studies with 2-10 predictors in multiple regression analysis (Hair et al., 2019). This research represents a case study of digital engagement patterns at Limi Stuff, Palu, where smaller samples are methodologically justified for hypothesis generation in specific local contexts. The 50:2 sample-to-predictor ratio (25:1) exceeds minimum thresholds for detecting moderate effects (power = 0.80, $\alpha = 0.05$) in two-predictor models.

2.3 Data Collection Sources and Procedures

This research relies on two main types of data sources to ensure the comprehensiveness of the analysis:

- a. Primary Data: Obtained directly from respondents through the distribution of closed-ended questionnaires. The questionnaires were designed with structured statements that represent the research variable indicators.
- b. Secondary Data: Obtained from Limi internal documents Stuff (transaction data, business profile) and relevant literature studies to support the background and discussion.

The data collection procedure began with the development of a questionnaire instrument derived from the operational definitions of the variables. Before widespread distribution, a limited pre-test was conducted to ensure that each statement item was well understood by respondents. The questionnaire was distributed both online (using a digital form) and offline (where possible), while adhering to research ethics. Researchers included an *informed consent form* at the beginning of the questionnaire and guarantees the confidentiality of respondents' identities and data solely for academic purposes.

2.4 Operational Definition of Variables and Indicators

To facilitate empirical measurement, each variable is operationally defined and broken down into measurable dimensions and indicators. Measurements are made using a 1–5 Likert scale, ranging from Strongly Disagree (STS) to Strongly Agree (SS).

a. Independent Variable 1: Service Quality (X1)

Service Quality is defined as customer perception of the excellence of the service provided by Limi Stuff compared to their expectations. This variable is measured through five SERVQUAL dimensions:

1. Reliability: The ability to provide promised services accurately and dependably.
2. Responsiveness: The staff's readiness to help customers and provide prompt service.
3. Assurance: Knowledge, courtesy, and ability of staff to inspire trust.
4. Empathy: The genuine individual attention a company gives to customers.
5. Tangibles (Physical Evidence): The appearance of physical facilities, equipment, personnel, and communication materials.

b. Independent Variable 2: Digital Literacy (X2)

Literacy refers to the ability of Limi customers Stuff uses digital technology to access, evaluate, and utilize information related to products/services. Measurement dimensions include:

1. Digital Technical Skills: Basic skills in using hardware and software for transactions.
2. Information & Content Evaluation: The ability to search, filter, and evaluate the validity of online product information.
3. Digital Security & Ethics: Awareness of personal data security and ethics in interacting on digital platforms.
4. Digital Culture & Values: Understanding the norms and culture that apply in the digital ecosystem.

c. Dependent Variable: Customer Engagement (Y)

Customer Engagement is the level of customer involvement with the Limi brand. Stuff manifested through physical and psychological interactions. This variable is measured through three main dimensions:

1. Cognitive: The level of customer attention and interest in a brand's product or content.
2. Emotional: Positive feelings, enthusiasm, and emotional attachment to the brand.
3. Behavioral: The actual act of interacting, sharing content, or recommending products (word-of-mouth).

2.5 Conceptual Framework and Research Hypothesis

Based on the literature review and problem formulation, this study proposes a framework of thought that connects Service Quality (X1) and Digital Literacy (X2) as factors that influence Customer Engagement (Y).

- a. Hypothesis 1 (H1): Service Quality and Digital Literacy simultaneously have a significant effect on Customer Engagement.
- b. Hypothesis 2 (H2): Service Quality has a partial and significant influence on Customer Engagement. The theoretical logic is that excellent service will increase customer satisfaction and emotional bonding.
- c. Hypothesis 3 (H3): Digital Literacy partially has a significant influence on Customer Engagement. More digitally literate customers tend to be more able and willing to interact with brands on digital platforms.

The visualization of the relationship between these variables is presented in the following Conceptual Framework:

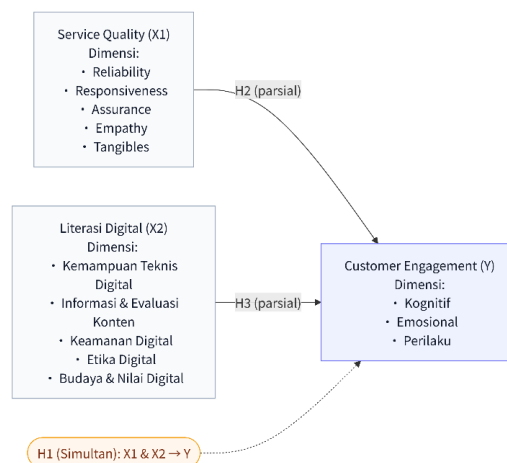


Figure 1. Conceptual Framework

3. RESULTS AND DISCUSSION

3.1 Descriptive statistical analysis

Descriptive statistics are used to provide an overview of the research data collected. In this study, the analysis was conducted on three main variables: Service Quality (X1), Literasi Digital (X2), and Customer Engagement (Y) with a valid sample (N) of 50 respondents. The goal is to observe respondent tendencies through mean values and data distribution (standard deviation).

Table 1. Descriptive Statistics of Service Quality (X1)

Indicator	N	Average	Standard Deviation	Information
Indicator X1.10	50	4,2400	0.91607	Highest
Indicator X1.1	50	4,0400	0.98892	Lowest
N Valid (listwise)	50			

Based on the descriptive analysis of Service Quality (X1), indicator X1.10 has the highest average value of 4,2400. This suggests that this specific aspect of service quality is highly appreciated by respondents. Conversely, indicator X1.1 has the lowest average value of 4,0400, indicating relative weakness compared to other aspects, though still in a high category.

Table 2. Descriptive Statistics of Digital Literacy (X2)

Indicator	N	Average	Standard Deviation	Information
Indicator X2.5	50	4,1600	0.86567	Highest
Indicator X2.2	50	3,7800	1,16567	Lowest
N Valid (listwise)	50			

For Literasi Digital (X2), indicator X2.5 shows the highest mean value of 4,1600, indicating a dominant element. On the other hand, indicator X2.2 has the lowest mean value of 3,7800, implying that this aspect of digital literacy is perceived as less optimal by some respondents

Table 3. Customer Descriptive Statistics Engagement (Y)

Indicator	N	Average	Standard Deviation	Information
Indicator Y1.2	50	3,9200	1,14000	Highest
Indicator Y1.1	50	3,7600	1.09842	Lowest
N Valid (listwise)	50			

Regarding Customer Engagement (Y), indicator Y1.2 has the highest mean value of 3,9200. Meanwhile, indicator Y1.1 has the lowest mean value of 3,7600, suggesting room for improvement in this particular engagement metric.

3.2 Partial Test (t)

Table 4. Partial Test

Model	Unstandardized Coefficient (B)	Standard Error	Standardized Coefficient (Beta)	t	Sig.
(Constant)	1,2792	2,5146	-	0.5087	0.6133
Service Quality (X1)	-0.1176	0.1021	-0.1471	-1.1511	0.2555
Digital Literacy (X2)	0.8430	0.1097	0.9823	7.6845	<0.001

Based on the t-test results in Table 5, Service Quality (X1) has a significance value of 0,2555, which is greater than 0,05. This indicates that Service Quality does not significantly affect Customer Engagement, and the negative coefficient (-0,1176) suggests a non-significant inverse relationship. In contrast, Literasi Digital (X2) has a significance value of <0,001 with a t-value of 7,6845. This proves that Literasi Digital has a positive and significant effect on Customer Engagement. The t-test results reveal two critical findings that challenge conventional marketing assumptions:

- Service Quality (X1) exhibits no significant effect on Customer Engagement ($B = -0.118$, $t = -1.151$, $p = 0.256 > 0.05$), rejecting H2. This counterintuitive result suggests that traditional SERVQUAL dimensions (tangibles, reliability, responsiveness, assurance, empathy) are less relevant for Limi Stuff's digital-native customers in Palu, who prioritize platform functionality over human service elements.
- Digital Literacy (X2) demonstrates a strong positive and highly significant effect ($B = 0.843$, $t = 7.685$, $p < 0.001$), confirming H3 and explaining 98.2% of standardized variance ($\beta = 0.982$). Digitally literate customers actively engage through enhanced platform navigation, content evaluation, and secure transaction capabilities.

Theoretical Implications: In digital-first retail contexts like Limi Stuff, digital competency supersedes traditional service quality, particularly among younger demographics who value transaction speed and platform usability over staff empathy (Rowi, 2024). **Practical Implications for Limi Stuff:** Resources should shift from conventional service training to digital platform optimization (UI/UX improvements, transaction security enhancements, personalized content delivery) to maximize engagement from the high-literacy customer segment.

3.4 Simultaneous Test (F)

Table 5. Simultaneous Test (F)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1783,396	2	891,698	70,238	<0.001
Residual	596,684	47	12,695		

Model	Sum of Squares	df	Mean Square	F	Sig.
Total	2380,080	49			

Dependent variable: Customer Engagement; Independent variables: Service Quality; Digital Literacy. Based on the F-test results in Table 7, the calculated F value is 70,238 with a significance level of <0,001. Since the significance value is less than 0,05, it can be concluded that the regression model is valid and that Service Quality and Literasi Digital simultaneously have a significant effect on Customer Engagement.

3.5 Test of the Coefficient of Determination (R²)

Table 6. Test of Coefficient of Determination (R²)

Model	R	R Squared	Adjusted R Squared	Standard Error of Estimate
1	0.8656	0.7493	0.7386	3,5631

Based on Table 8, the correlation coefficient (R) is 0,8656, indicating a strong relationship. The coefficient of determination (R Square) is 0,7493, which means that 74,93% of the variation in Customer Engagement can be explained by the independent variables. The remaining 25,07% is influenced by other factors not included in this model. The Adjusted R Square is 0,7386.

4. CONCLUSION

This study reveals two key findings on customer engagement drivers at Limi Stuff, Palu, Digital Literacy (X2) emerged as the dominant driver of customer engagement (B = 0.843, t = 7.685, p < 0.001), confirming H3. Digitally literate customers show higher cognitive, emotional, and behavioral engagement through seamless digital platform interactions, explaining 98.2% of standardized variance ($\beta = 0.982$). Service Quality (X1) showed no significant effect (B = -0.118, t = -1.151, p = 0.256), rejecting H2. This unexpected result indicates traditional SERVQUAL dimensions have limited relevance for Palu's digital-native customers, who prioritize platform functionality over conventional service elements. The regression model explains 74.9% of customer engagement variation (R² = 0.749), with Digital Literacy as the primary engagement factor. Managerial Recommendations: Prioritize digital platform optimization (UI/UX, transaction security, content personalization) over traditional service training. Develop digital literacy micro-programs focused on Limi Stuff's WhatsApp Business and catalog navigation. Shift resources from staff empathy training to platform usability improvements. Future Research: Increase sample size (n > 200), apply SEM analysis, and examine age demographics' moderating effects on digital vs. traditional service preferences to validate these exploratory findings.

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