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THE EFFECT OF DIGITAL MARKETING ON CUSTOMER LOYALTY WITH CUSTOMER SATISFACTION AS AN INTERVENING VARIABLE AMONG E-COMMERCE USERS IN MEDAN CITY

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Abstract

This study aims to analyze the effect of digital marketing on customer loyalty with customer satisfaction as an intervening variable among e-commerce users in Medan City. A quantitative approach was applied using non-probability sampling, specifically purposive sampling. The sample consisted of 130 respondents who are active e-commerce users in Medan City and have made at least three online transactions in the past six months. Data were collected through online questionnaires using a five-point Likert scale and analyzed using Structural Equation Modeling-Partial Least Square (SEM-PLS) with SmartPLS 4.0 software. The results show that: (1) digital marketing has a positive and significant effect on customer satisfaction ($\beta = 0.718$; $p < 0.001$); (2) customer satisfaction has a positive and significant effect on customer loyalty ($\beta = 0.524$; $p < 0.001$); (3) digital marketing has a positive and significant effect on customer loyalty ($\beta = 0.289$; $p < 0.001$); and (4) customer satisfaction partially mediates the effect of digital marketing on customer loyalty ($\beta = 0.376$; $p < 0.001$). The implication is that e-commerce actors serving the Medan City market need to optimize the digital marketing dimensions, namely cost, interactive, incentive program, site design, and informative, to build customer satisfaction, which will ultimately foster long-term customer loyalty.

Keywords: Digital Marketing, Customer Satisfaction, Customer Loyalty, E-Commerce, SmartPLS

1. INTRODUCTION

Digital transformation has fundamentally reshaped the business landscape, particularly in commercial activities. The emergence of e-commerce platforms has created new business models that eliminate geographical and time barriers between sellers and buyers. According to the report by We Are Social and Meltwater (2024), 78.5% of internet users in Indonesia shop online weekly, making Indonesia one of the most dynamic e-commerce markets in Southeast Asia. The Indonesian Internet Service Providers Association (APJII, 2024) reported that internet penetration in Indonesia has reached 79.5%, with 221.5 million users. This growth is accompanied by an increase in e-commerce transactions, which, according to Bank Indonesia (2024), are estimated to reach IDR 533 trillion in 2024. This fact demonstrates that e-commerce has become the backbone of the national digital economy. Medan City, as the economic center of North Sumatra and the third-largest city in Indonesia, holds significant e-commerce market potential. According to the Statistics Indonesia of Medan City (BPS, 2024), the population of Medan reaches 2.5 million people, with internet penetration rates above the national average. This positions Medan City as one of the primary target markets for e-commerce platforms in Indonesia.

Nevertheless, competition among e-commerce platforms is intense. Consumers have many alternatives, making it easy to switch from one platform to another. Under such conditions, building customer loyalty becomes a major challenge. Oliver (1999) explains that customer loyalty is a deep commitment to consistently repurchase a preferred product or service in the future, despite situational influences and marketing efforts that have the potential to cause switching behavior. One strategy widely used to enhance customer loyalty in the digital era is digital marketing. Chaffey and Ellis-Chadwick (2019) define digital marketing as the application of digital technologies to form online channels to market in order to achieve corporate goals through better managing customer needs. Digital marketing activities can enhance customer satisfaction through ease of access, personalized offers, and closer interactions with customers. Customer satisfaction serves as a key variable bridging the influence of marketing activities on customer loyalty. Kotler and Keller (2016) describe customer satisfaction as a person's feeling after comparing the perceived performance of a product with their expectations. Anderson and Srinivasan (2003) found that customer satisfaction in the e-commerce context (e-satisfaction) significantly influences online customer loyalty (e-loyalty).

Previous research conducted by Mulyansyah and Sulistyowati (2020) and Lubis and Andayani (2018) demonstrated a positive influence of digital marketing on customer loyalty. However, Tjiptono and Diana's (2020) findings indicate that the direct effect of digital marketing on customer loyalty is not always consistent, suggesting the need for mediating variables such as customer satisfaction to fully explain the underlying mechanism. Based on the above background, this research aims to: (1) analyze the effect of digital marketing on customer satisfaction; (2) analyze the effect of customer satisfaction on customer loyalty; (3) analyze the effect of digital marketing on customer loyalty; and (4) analyze the mediating role of customer satisfaction in the relationship between digital marketing and customer loyalty among e-commerce users in Medan City.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Digital Marketing

Chaffey and Ellis-Chadwick (2019) define digital marketing as the application of digital technologies to contribute to marketing activities aimed at achieving profitable acquisition and retention of customers in a multi-channel buying process. Kotler et al. (2021) extend this concept by stating that digital marketing in the era of Marketing 5.0 involves integrating digital marketing with technologies such as artificial intelligence, big data, and the Internet of Things to create more personalized customer experiences.

Ryan (2017) identifies five main dimensions of digital marketing in the e-commerce context: (1) cost, related to the price offered and transaction costs; (2) interactive, the platform's ability to facilitate two-way interaction; (3) incentive program, promotional programs such as discounts and cashback; (4) site design, the design of the platform's interface that is attractive and user-friendly; and (5) informative, the completeness and clarity of product information. These five dimensions are commonly used as indicators of digital marketing in e-commerce research (Mulyansyah & Sulistyowati, 2020).

2.2 Customer Satisfaction

Kotler and Keller (2016) define customer satisfaction as a person's feeling after comparing the perceived performance of a product with their expectations. If performance falls below expectations, the customer is dissatisfied; if performance meets expectations, the customer is satisfied; and if performance exceeds expectations, the customer is highly satisfied. Anderson and Srinivasan (2003) introduced the concept of e-satisfaction as customer satisfaction with prior purchasing experience on a particular e-commerce platform.

Tjiptono and Diana (2020) explain that customer satisfaction is measured through several indicators: (1) conformity to expectations, the alignment between perceived performance and customer expectations; (2) intention to revisit, the customer's intention to use the platform again; and (3) willingness to recommend, the customer's willingness to recommend the platform to others.

2.3 Customer Loyalty

Oliver (1999) defines customer loyalty as a deeply held commitment to rebuy or re-patronize a preferred product or service consistently in the future, despite situational influences and marketing efforts that have the potential to cause switching behavior. In the digital context, Anderson and Srinivasan (2003) introduced the term e-loyalty, defined as a customer's favorable attitude toward an e-commerce platform that results in repeat purchasing behavior.

Griffin (2002) identifies four indicators of customer loyalty: (1) making regular repeat purchases; (2) purchasing across product and service lines; (3) recommending to others; and (4) demonstrating immunity to competitor pulls. These indicators are widely used in customer loyalty research, both in traditional and digital contexts.

2.4 Previous Research

Mulyansyah and Sulistyowati (2020) examined the effect of digital marketing on Tokopedia consumers in Surabaya and found that digital marketing positively influences customer satisfaction. Lubis and Andayani (2018), in their study of e-commerce consumers in Medan, found that digital marketing has a positive effect on customer loyalty. The work of Anderson and Srinivasan (2003) provides an important foundation showing the relationship between e-satisfaction and e-loyalty. Hasan's (2021) research in the Indonesian online retail sector demonstrates that customer satisfaction acts as a mediator in the relationship between digital service quality and customer loyalty. Similar findings were reported by Sasono et al. (2021), who discovered that customer satisfaction mediates the effect of digital marketing on repurchase intention. Based on this literature review, customer satisfaction is positioned as the intervening variable in this study.

3. HYPOTHESIS DEVELOPMENT AND CONCEPTUAL FRAMEWORK

3.1 The Effect of Digital Marketing on Customer Satisfaction

Effective digital marketing activities create a comfortable shopping experience for e-commerce customers. User-friendly site design, complete product information, competitive prices, and attractive incentive programs contribute to the formation of customer satisfaction. Mulyansyah and Sulistyowati (2020) found that digital marketing significantly influences e-commerce consumer satisfaction. Sasono et al. (2021) further confirm that the optimization of digital marketing enhances positive customer perceptions, leading to satisfaction.

H1: Digital marketing has a positive and significant effect on customer satisfaction among e-commerce users in Medan City.

3.2 The Effect of Customer Satisfaction on Customer Loyalty

Satisfied customers tend to make repeat purchases and recommend the platform to others. Anderson and Srinivasan (2003) found that e-satisfaction has a significant effect on e-loyalty. Similarly, Hasan (2021) explains that customer satisfaction is the strongest predictor of loyalty in the online retail context, as repeated positive experiences build customers' emotional commitment to the platform.

H2: Customer satisfaction has a positive and significant effect on customer loyalty among e-commerce users in Medan City.

3.3 The Effect of Digital Marketing on Customer Loyalty

Digital marketing not only plays a role in attracting new customers but also in retaining existing ones. Digital loyalty programs, data-based personalized offers, and continuous communication through email marketing and app notifications build long-term bonds with customers. Lubis and Andayani (2018) demonstrated that digital marketing positively affects e-commerce customer loyalty. Kotler et al. (2021) also emphasize the role of digital marketing in building a customer journey that leads to advocacy.

H3: Digital marketing has a positive and significant effect on customer loyalty among e-commerce users in Medan City.

3.4 The Mediating Role of Customer Satisfaction

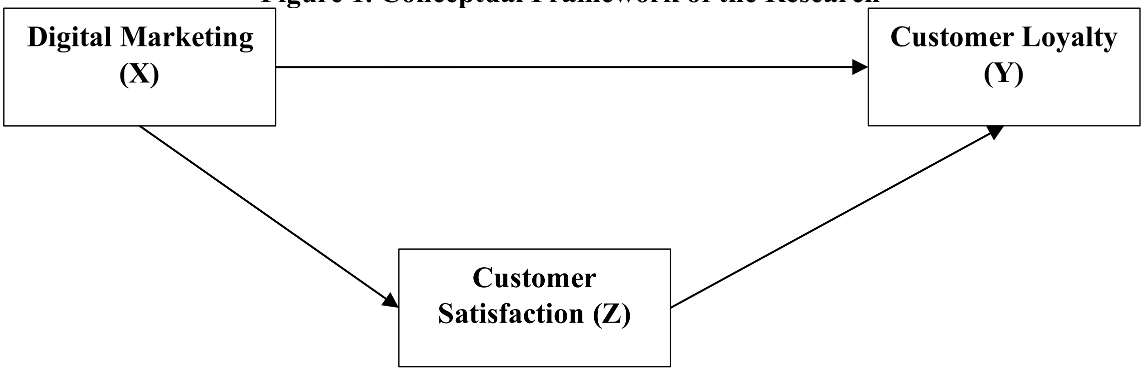
Customer satisfaction is believed to act as a bridge between digital marketing activities and customer loyalty. Digital marketing activities first form customer satisfaction, and satisfied customers will then exhibit loyalty toward the platform. Sasono et al. (2021) and Hasan (2021) demonstrate the mediating role of customer satisfaction in the relationship between digital marketing activities and consumer loyalty behavior.

H4: Customer satisfaction mediates the effect of digital marketing on customer loyalty among e-commerce users in Medan City.

3.5 Conceptual Framework

Based on the literature review and hypothesis development, the conceptual framework of this research can be illustrated as follows: Digital Marketing (X) as the independent variable influences Customer Satisfaction (Z) as the intervening variable (H1), Customer Satisfaction (Z) influences Customer Loyalty (Y) as the dependent variable (H2), Digital Marketing (X) also directly influences Customer Loyalty (Y) (H3), and Customer Satisfaction (Z) mediates the effect of Digital Marketing (X) on Customer Loyalty (Y) (H4).

Figure 1. Conceptual Framework of the Research



4. RESEARCH METHOD

4.1 Research Design and Approach

This research employs a quantitative approach using explanatory research, which aims to test causal relationships between variables based on the proposed hypotheses (Sekaran & Bougie, 2016). The research was conducted in Medan City, with the unit of analysis being individual e-commerce users.

4.2 Population and Sample

The population of this study consists of all e-commerce users domiciled in Medan City. Since the population size is not precisely known, the sampling technique used is non-probability sampling, specifically purposive sampling, with the following respondent criteria: (1) domiciled in Medan City; (2) at least 17 years old; (3) an active user of at least one e-commerce platform (Shopee, Tokopedia, Lazada, TikTok Shop, or others); and (4) has made at least three online purchase transactions within the last six months.

The sample size determination follows Hair et al.'s (2022) guidelines, which recommend a minimum sample size of ten times the largest number of structural paths directed at a particular endogenous construct. In this study, two paths lead to the Customer Loyalty construct, so the minimum sample size is 20 respondents. To enhance statistical power, this study uses 130 respondents, which is considered adequate for SEM-PLS analysis on a model with moderate complexity.

4.3 Data Collection Technique

Primary data were collected through online questionnaires distributed via Google Forms through social media platforms such as WhatsApp, Instagram, and Facebook during February-March 2026. The questionnaire used a five-point Likert scale, with scores ranging from 1 (strongly disagree) to 5 (strongly agree).

4.4 Operational Definition and Variable Measurement

The digital marketing variable (X) is measured using five dimensions from Ryan (2017): cost, interactive, incentive program, site design, and informative, with a total of 10 indicator items. The customer satisfaction variable (Z) is measured using three indicators from Tjiptono and Diana (2020): conformity to expectations, intention to revisit, and willingness to recommend, with 6 indicator items. The customer loyalty variable (Y) is measured using four indicators from Griffin (2002): repeat purchase, purchase across product lines, recommendation, and immunity to competitors, with 5 indicator items.

Table 1. Operationalization of Research Variables

Variable	Dimension	Indicator	Source
Digital Marketing (X)	Cost Interactive Incentive Program Site Design Informative	Competitive pricing, ease of interaction, discount and cashback programs, attractive interface design, completeness of product information (10 items)	Ryan (2017)
Customer Satisfaction (Z)	Conformity to expectations Intention to revisit Willingness to recommend	Conformity of performance with expectations, intention to use again, willingness to recommend to others (6 items)	Tjiptono & Diana (2020)
Customer Loyalty (Y)	Repeat purchase Purchase across lines Recommendation Immunity to competitors	Frequency of repeat purchases, variety of products purchased, positive recommendations, resistance to competitor offers (5 items)	Griffin (2002)

Source: Compiled from various literatures (2026)

4.5 Data Analysis Technique

Data analysis employs Structural Equation Modeling-Partial Least Square (SEM-PLS) using SmartPLS 4.0 software. The choice of SEM-PLS is based on several considerations: (1) the research is oriented toward prediction and theory development; (2) the research model involves latent variables with reflective indicators; and (3) the relatively small sample size makes the PLS approach more suitable than covariance-based SEM (Hair et al., 2022).

The SEM-PLS analysis stages include: (1) outer model evaluation (measurement model), consisting of convergent validity through outer loading and Average Variance Extracted (AVE), discriminant validity through the Fornell-Larcker criterion and Heterotrait-Monotrait ratio (HTMT), as well as reliability through Cronbach's Alpha and Composite Reliability; and (2) inner model evaluation (structural model), which includes the coefficient of determination (R^2), predictive relevance (Q^2), effect size (f^2), and hypothesis testing through the bootstrapping procedure with 5,000 subsamples.

5. RESULTS AND DISCUSSION

5.1 Respondent Characteristics

The study involved 130 respondents who are e-commerce users in Medan City. The demographic characteristics of the respondents are presented in Table 2.

Table 2. Respondent Characteristics

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	52	40.0
	Female	78	60.0
Age	17-25 years	65	50.0
	26-35 years	42	32.3
	36-45 years	16	12.3
	>45 years	7	5.4
Platform Used	Shopee	68	52.3
	Tokopedia	28	21.5
	TikTok Shop	22	16.9
	Lazada/Others	12	9.3
Shopping Frequency/Month	1-3 times	58	44.6
	4-6 times	46	35.4
	>6 times	26	20.0

Source: Primary data processing (2026)

5.2 Outer Model Evaluation (Measurement Model)

The outer model evaluation was conducted to test the validity and reliability of the indicators. The outer loading test results showed that all indicators have loading values above 0.70, thus meeting the requirements of convergent validity. The Average Variance Extracted (AVE) values for all constructs are also greater than 0.50, which means the constructs can explain more than 50% of the variance in their indicators (Hair et al., 2022).

Table 3. Construct Validity and Reliability Test Results

Construct	Cronbach's Alpha	Composite Reliability (rho_c)	AVE	Description
Digital Marketing (X)	0.924	0.937	0.601	Reliable & Valid
Customer Satisfaction (Z)	0.896	0.920	0.659	Reliable & Valid
Customer Loyalty (Y)	0.867	0.904	0.654	Reliable & Valid

Source: SmartPLS 4.0 data processing (2026)

Based on Table 3, all constructs have Cronbach's Alpha and Composite Reliability values above 0.70, as well as AVE above 0.50. This indicates that the research instrument has good internal consistency and convergent validity is fulfilled (Hair et al., 2022).

The discriminant validity test using the Heterotrait-Monotrait ratio (HTMT) shows that the values between constructs are all below 0.90, namely the HTMT between Digital Marketing and Customer Satisfaction is 0.781; between Digital Marketing and Customer Loyalty is 0.754; and between Customer Satisfaction and Customer Loyalty is 0.812. These results confirm that each construct is empirically distinct from one another (Henseler et al., 2015).

5.3 Inner Model Evaluation (Structural Model)

The inner model evaluation was conducted to assess the predictive capability of the model. The R^2 (R-square) value indicates how much variance in the endogenous variable can be explained by the exogenous variables.

Table 4. R-Square (R^2) and Q-Square (Q^2) Values

Endogenous Variable	R^2	Q^2 (predict)	Category
Customer Satisfaction (Z)	0.516	0.312	Moderate
Customer Loyalty (Y)	0.634	0.401	Substantial

Source: SmartPLS 4.0 data processing (2026)

The results in Table 4 show that the R^2 value of Customer Satisfaction is 0.516, meaning 51.6% of the variance in customer satisfaction can be explained by digital marketing. Meanwhile, the R^2 of Customer Loyalty is 0.634, indicating that 63.4% of the variance in customer loyalty is jointly explained by digital marketing and customer satisfaction. The Q^2 values > 0 for both endogenous variables indicate that the model has good predictive relevance (Hair et al., 2022).

5.4 Hypothesis Testing

Hypothesis testing was conducted using the bootstrapping procedure with 5,000 subsamples. A hypothesis is accepted if the t-statistic value is greater than 1.96 and the p-value is less than 0.05 at a 5% significance level. The hypothesis testing results are presented in Table 5.

Table 5. Hypothesis Testing Results

H	Path	Coefficient (β)	t-statistic	p-value	Result
H1	Digital Marketing → Customer Satisfaction	0.718	13.452	0.000	Accepted
H2	Customer Satisfaction → Customer Loyalty	0.524	7.128	0.000	Accepted
H3	Digital Marketing → Customer Loyalty	0.289	3.756	0.000	Accepted
H4	Digital Marketing → Customer Satisfaction → Customer Loyalty (Indirect Effect)	0.376	6.289	0.000	Accepted

Source: SmartPLS 4.0 data processing (2026)

Based on Table 5, all hypotheses proposed in this study are accepted at a significance level of $p < 0.001$. The total effect of digital marketing on customer loyalty is 0.665 (i.e., 0.289 + 0.376), meaning that digital marketing makes a substantial contribution to customer loyalty both directly and through the mediation of customer satisfaction.

5.5 Discussion

The H1 testing results show that digital marketing has a positive and significant effect on customer satisfaction ($\beta = 0.718$; $p < 0.001$). This finding confirms the research of Mulyansyah and Sulistyowati (2020) and Sasono et al. (2021), which states that effective digital marketing activities can build customer satisfaction. For e-commerce users in Medan City, the dimensions of cost (competitive pricing), interactive (ease of communication with sellers), incentive program (discounts and cashback), site design (user-friendly platform appearance), and informative (completeness of product information) are key factors in building a satisfying shopping experience.

The H2 testing results indicate that customer satisfaction has a positive and significant effect on customer loyalty ($\beta = 0.524$; $p < 0.001$). This finding aligns with the research of Anderson and Srinivasan (2003) and Hasan (2021), which emphasize the role of satisfaction as the strongest predictor of loyalty in the online retail context. In the e-commerce context in Medan City, customer satisfaction with previous shopping experiences is a key determinant of the decision to transact again on the same platform.

The H3 testing results show that digital marketing has a positive and significant effect on customer loyalty ($\beta = 0.289$; $p < 0.001$). These results support the research of Lubis and Andayani (2018) and Kotler et al. (2021). Digital marketing strategies such as personalized product recommendations, push notifications, and member loyalty programs can encourage repeat purchasing behavior from customers.

The H4 testing results indicate that customer satisfaction mediates the effect of digital marketing on customer loyalty ($\beta = 0.376$; $p < 0.001$). Since the direct effect (H3) remains significant when customer satisfaction is included in the model, the type of mediation is partial mediation (Hair et al., 2022). Interestingly, the indirect effect coefficient (0.376) is greater than the direct effect (0.289), showing that the role of customer satisfaction as a mediator is highly dominant in the formation of customer loyalty among e-commerce users in Medan City.

The practical implication of this finding is that e-commerce actors serving the Medan City market need to ensure that their digital marketing activities not only attract attention but are also able to generate genuine satisfaction for customers. This can be achieved by improving after-sales service quality, providing flexible return policies, ensuring on-time delivery, and being responsive in handling customer complaints.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Based on the analysis and discussion, it can be concluded that: (1) digital marketing has a positive and significant effect on customer satisfaction among e-commerce users in Medan City; (2) customer satisfaction has a positive and significant effect on customer loyalty; (3) digital marketing has a positive and significant effect on customer loyalty; and (4) customer satisfaction partially mediates the effect of digital marketing on customer loyalty. These results highlight the importance of integrating digital marketing strategies with efforts to build customer satisfaction for e-commerce actors serving the Medan City market.

6.2 Recommendations

For e-commerce actors serving the Medan City market, it is recommended to: (1) implement competitive pricing strategies while maintaining product quality; (2) strengthen interactive features such as live chat, responsive customer service, and customer reviews; (3) provide consistent incentive programs such as vouchers, cashback, and free shipping; (4) continuously update the platform interface design to remain modern and user-friendly; and (5) present accurate, complete product information accompanied by high-quality visuals.

This research has limitations regarding the scope of respondents, which is only 130 individuals limited to e-commerce users in Medan City. Future research is recommended to: (1) expand the scope of respondents to other cities in North Sumatra to obtain a more comprehensive picture; (2) compare customer loyalty across e-commerce platforms (Shopee, Tokopedia, TikTok Shop, etc.); (3) add other variables such as perceived value, trust, or switching cost; and (4) employ a longitudinal approach to observe the dynamics of loyalty changes over time.

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