



The Effect of Product Quality on Customer Loyalty Toward N'pure Centella Asiatica Toner, with Customer Satisfaction as a Mediator

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DOI:10.15294/eeaj.v15i3.58557

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Abstract

Intensifying competition in Indonesia's local skincare industry has made customer loyalty increasingly important for sustaining market performance. However, product quality alone may not fully explain why customers continue purchasing a skincare product, as repeat purchasing may also depend on whether product performance meets prior expectations and generates satisfaction. Although previous research has extensively examined the relationships between product quality, customer satisfaction, and customer loyalty, further empirical investigation is needed to clarify how customer satisfaction mediates the relationship between perceived product quality and loyalty in the local skincare context. Drawing on Expectation Confirmation Theory (ECT), this study examines the direct relationship between product quality and customer loyalty and the mediating role of customer satisfaction among users of N'Pure Centella Asiatica Toner. A quantitative survey was conducted involving 100 customers who had made repeat purchases through Shopee, and the data were analyzed using path analysis. The findings indicate that product quality is positively associated with customer satisfaction and customer loyalty, while customer satisfaction is positively associated with loyalty and mediates the relationship between product quality and loyalty. These findings highlight customer satisfaction as a potential mechanism through which perceived product quality translates into loyalty. The study extends the application of ECT to local skincare consumption and underscores the importance of aligning product performance with customer expectations to support sustained customer relationships.

Keywords: *Product Quality; Customer Satisfaction; Customer Loyalty; N'Pure Centella Asiatica*

Article Info

Article History: Received: July 6, 2026 | Accepted: September 19, 2026 | Published: October 19, 2026

How To Cite

Mukhlishoh, L., & Rakhmawati, D. Y. (2026). The Effect of Product Quality on Customer Loyalty Toward N'pure Centella Asiatica Toner, with Customer Satisfaction as a Mediator. *Economic Education Analysis Journal*, 15(3) 2026, 366-376.

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p-ISSN 2252-6544
e-ISSN 2502-356X

INTRODUCTION

Customer loyalty is one of the key issues in marketing research because it plays a crucial role in creating competitive advantage and ensuring a company's long-term sustainability. Customer loyalty is not only reflected in repeat purchasing behavior but also in customers' commitment to continue using a brand, recommend it to others, and resist switching to competing brands. Therefore, understanding the mechanisms underlying the formation of customer loyalty has become a key focus in marketing literature, especially as increasing business competition demands that companies not only acquire new customers but also retain existing ones (Bourdeau et al., 2024).

Various previous studies have shown that product quality is one of the primary factors influencing customer loyalty (Islam et al., 2020). High-quality products can create a positive consumption experience, enhance customers' perceived value, and foster long-term relationships between customers and the brand (Supriyanto et al., 2021). However, recent studies suggest that product quality alone does not fully explain the development of customer loyalty (Yum & Yoo, 2023). Before deciding to make a repeat purchase or continue using a brand, customers first evaluate whether the product's performance meets their expectations (Tahir et al., 2024).

Therefore, customer satisfaction is increasingly viewed as a crucial mechanism that bridges the relationship between product quality and customer loyalty (Marcos & Coelho, 2021). Empirical evidence shows that good product quality can increase customer satisfaction, which in turn drives repurchase intent, positive word of mouth recommendations, and long term customer loyalty (Abigail et al., 2024). The relationship between product quality, customer satisfaction, and customer loyalty can be explained more comprehensively through Expectation Confirmation Theory (ECT). This theory explains that customer satisfaction is formed through a process of evaluating customers' expectations before using a product against the product's actual performance after use. If the product's performance meets or even exceeds customer expectations, confirmation occurs, resulting in satisfaction (Zaato et al., 2023;).

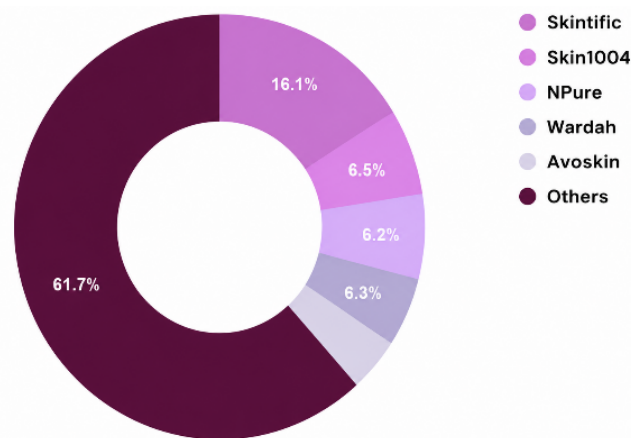
Conversely, if the product's performance falls short of expectations, disconfirmation occurs, leading to dissatisfaction and reducing the customer's likelihood of making repeat purchases or maintaining loyalty to a brand (Agarwal & Dhingra, 2023). Compared to satisfaction-loyalty models that emphasize only the direct relationship between satisfaction and loyalty, the Expectation-Confirmation Theory offers a more comprehensive explanation because it takes into account the customer's psychological evaluation process after using a product (Anabila et al., 2021). Although the relationship between product quality, customer satisfaction, and customer loyalty has been extensively studied, previous research findings remain inconsistent (Mofokeng, 2021). Some studies report that product quality has a direct effect on customer loyalty, while others indicate that this effect occurs through customer satisfaction as a mediating variable, either fully or partially (Restuputri et al., 2021; Singh & Singh, 2024;).

These differing results suggest that the mechanism by which product quality shapes customer loyalty is not yet fully understood. Furthermore, most previous studies have been conducted in the contexts of services, retail, and e-commerce, while the application of Expectation Confirmation Theory (ECT) to product categories that require repeated use before customers can evaluate their performance remains relatively limited (Koay et al., 2022). This situation highlights the need for further research to test ECT's ability to explain the formation of customer loyalty in the context of products with such characteristics. One product category with these characteristics is the skincare industry (Albaity & Rahman, 2021). Unlike most other customer products, the effectiveness of skincare products generally cannot be evaluated after just a single use rather, repeated use is required before customers can assess whether the benefits obtained align with their initial expectations (Karim & Rabiul, 2022).

Consequently, customer satisfaction in the skincare industry heavily depends on the process of confirming pre-use expectations against actual post-use experiences. These characteristics make the skincare industry a relevant context for expanding the application of Expectation Confirmation

Theory in explaining the mechanisms underlying the relationship between product quality, customer satisfaction, and customer loyalty (Hidayat & Idrus, 2023). The skincare industry in Indonesia is experiencing rapid growth as public awareness of the importance of skincare continues to rise (Chen et al., 2023). This growth has spurred the emergence of various local skincare brands offering products with relatively similar benefits, making the market increasingly competitive. Under these conditions, companies are no longer merely required to produce high-quality products but must also be able to create customer satisfaction that encourages customers to continue using their products and not switch to other brands. Consequently, customer loyalty has become a key factor determining a company's sustainability amid the increasingly dynamic competition in the skincare industry (Akoglu & Özbek, 2021). The growth of the skincare industry is also driven by the digital transformation, which has changed customer behavior and reshaped the dynamics of the skincare market. Advances in digital technology are encouraging customers to increasingly use digital platforms when purchasing skincare products, making digital channels one of the primary means customer use to meet their skincare needs (Silitonga & Soelasih, 2025)

Shopee in Indonesia has become the marketplace with the highest usage rate. According to (Juliawanti, 2025), in 2025, 53.22% of Indonesian internet users accessed Shopee an increase from the previous year's figure of 41.65%. This phenomenon indicates that Shopee has become the primary marketing channel for skincare products while simultaneously intensifying competition among brands. One of the local skincare brands competing in this market is N'Pure. One of its flagship products is the N'Pure Centella Asiatica toner, which uses Centella asiatica as its main active ingredient. Previous research has shown that Centella asiatica possesses antioxidant activity and has the potential to support skin regeneration and provide anti-aging effects, making it widely used in skincare product formulations (Thong-on et al., 2024).



Source: Net24News

Figure 1. Market Share of Indonesian Skincare Brand

As shown in Figure 1, N'Pure is one of the skincare brands holding a competitive position in the Indonesian market with a market share of 6.3%. This indicates that N'Pure is capable of competing amid the intense competition in the skincare industry. However, a competitive market position does not necessarily reflect long-term customer loyalty. Amid the abundance of skincare products with relatively similar benefits, customers have the opportunity to switch to other brands. Therefore, understanding the factors that influence customer loyalty is crucial for the company to retain its customers sustainably (Citra et al., 2026). Skincare customers have many product alternatives with relatively similar benefits, so the decision to repurchase is heavily influenced by the product usage experience. If the perceived benefits do not meet initial expectations, customers may switch to other brands even if the product has high sales therefore, the context of the N'Pure Centella Asiatica toner

is relevant for examining how product quality can foster customer loyalty through customer satisfaction.

Although the relationship between product quality, customer satisfaction, and customer loyalty has been extensively studied, previous research has generally focused on the service, retail, or e-commerce sectors. Furthermore, prior studies still present mixed findings regarding the role of customer satisfaction as a mediating variable in the relationship between product quality and customer loyalty. Meanwhile, research applying Expectation Confirmation Theory (ECT) to explain the mechanisms of customer loyalty formation in the local skincare industry remains relatively limited. Given that skincare products require repeated use before their benefits can be evaluated, this context is relevant for expanding the application of ECT in explaining how product quality fosters customer loyalty through customer satisfaction. Based on the above discussion, this study is expected to make three contributions. Theoretically, this study expands the application of Expectation Confirmation Theory in explaining the mechanisms of customer loyalty formation in the skincare industry. Empirically, this study provides evidence regarding the relationship between product quality, customer satisfaction, and customer loyalty in the context of the local Indonesian skincare industry, specifically for the N'Pure Centella Asiatica toner. Practically, the research findings are expected to serve as input for skincare companies in formulating strategies to improve product quality and customer satisfaction in order to build sustainable customer loyalty. Therefore, this study aims to analyze the effect of product quality on customer loyalty toward the N'Pure Centella Asiatica toner, with customer satisfaction serving as a mediating variable.

METHOD

This study employed a quantitative cross-sectional survey design to examine the relationships of TikTok live streaming and content marketing with purchase intention for Glad2Glow products. The study was conducted among students of the Business Education Study Program, Class of 2022, at Universitas Negeri Surabaya (UNESA). The accessible population consisted of 99 students. The population was derived from 100 active students in the 2022 cohort after excluding the researcher. Although the accessible population was relatively small, the study did not employ a census design. Instead, respondents were selected using purposive sampling because the research required participants with direct experience of the marketing stimuli under investigation. Accordingly, the sample consisted of 80 respondents who met the predetermined eligibility criteria.

This study employs a quantitative approach with an explanatory research design to test the causal relationship between product quality, customer satisfaction, and customer loyalty. This approach was chosen because the objective of the study is to test hypotheses regarding the direct effect of product quality on customer loyalty and the indirect effect through customer satisfaction as a mediating variable, based on empirical data obtained from respondents (Ghanad, 2023; Kinyua et al., 2021). The study was conducted in Surabaya, Indonesia, during April 2026. The study population consisted of all customer of N'Pure Centella Asiatica toner residing in Surabaya who had made at least one repeat purchase. The sample was selected using non-probability sampling with a purposive sampling method because the exact population size was unknown and the study required respondents with characteristics aligned with the research objectives. The respondent criteria included being a user of N'Pure Centella Asiatica toner, having made at least one repeat purchase via Shopee, residing in Surabaya, and being at least 17 years old.

The sample size was determined based on the guidelines of Hair et al. (2019), namely five to ten times the number of research indicators. Using 10 research indicators, the minimum required sample size is 100 respondents thus, the sample size is considered adequate for path analysis based on linear regression. The use of purposive sampling allows for the selection of respondents who match the study's characteristics however, as a consequence, the research findings can primarily be generalized to populations with similar characteristics. Primary data were collected using a closed-ended questionnaire distributed online via Google Forms. Before completing the questionnaire,

respondents were provided with an explanation of the study's objectives, the voluntary nature of their participation, and assurances that their identities would not be recorded and that all information provided would be used solely for academic purposes. Thus, the anonymity and confidentiality of respondents' data were maintained throughout the research process. The research instrument was developed by adapting indicators from several relevant previous studies, which were then modified to suit the context of N'Pure Centella Asiatica toner use without altering the conceptual meaning of each construct. This adaptation process was conducted to ensure that each item could represent the characteristics of product quality, customer satisfaction, and customer loyalty within the context of the skincare industry.

The product quality variable was measured using four indicators developed through adaptation and modification from the studies (Harijanto & Herdinata, 2024) and (Pandiangan & Nisa, 2024), which include product appeal, product value, product performance, and conformity to specifications. Customer loyalty was measured using three indicators developed through adaptation and modification from the studies (Wantoro et al., 2025) and (Haryandika & Santra, 2021), which include repurchase intention, willingness to recommend the company to others, and resistance to switching to competitors, while customer satisfaction was measured using four indicators developed through adaptation and modification from the studies (Alexander & Soetiyono, 2025) and (Taufik, 2025), which include overall experience, price-value fit, and conformity to expectations. All indicators were operationalized into 26 statements using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to the main data collection, the instrument was first tested on 30 respondents to evaluate its measurement quality. The validity of the instrument was analyzed using Pearson's product-moment correlation, while reliability was evaluated using Cronbach's alpha coefficient, with a value greater than or equal to 0.70 as the threshold for acceptable internal consistency (Hair et al., 2019).

This approach was chosen because the study employed path analysis based on linear regression using SPSS therefore, the validity and reliability testing followed procedures generally recommended for regression-based research. The test results showed that all items had correlation coefficients that met the validity criteria, and each construct had a Cronbach's Alpha value above 0.70 thus, the instrument was deemed valid and reliable for use in the main data collection. Data analysis was conducted using IBM SPSS Statistics. Prior to hypothesis testing, the regression model was evaluated through tests for normality, multicollinearity, heteroscedasticity, and linearity to ensure that the model met the assumptions of regression, thereby ensuring that the estimation results were unbiased. Next, the direct effects between variables were analyzed using path analysis, while indirect effects via mediating variables were tested using the Sobel Test.

The Sobel Test was chosen because it aligns with the linear regression-based path analysis approach used in this study to test the significance of mediating effects based on path coefficients obtained from the regression model. Although the bootstrapping approach is recommended in mediation analysis based on structural equation modeling because it does not require the normality of indirect effects, the Sobel Test is still widely used in regression-based research to evaluate the significance of indirect effects when models are analyzed using SPSS (Preacher & Hayes, 2004; Hair et al., 2019).

RESULTS AND DISCUSSION

Before hypothesis testing was conducted, the research model was first tested using classical assumption tests, including tests for normality, multicollinearity, heteroscedasticity, and linearity. The results of the normality test using the One-Sample Kolmogorov-Smirnov test showed that the significance value of the residuals was above 0.05, indicating that the data were normally distributed. Furthermore, the results of the multicollinearity test showed that all variables had a Variance Inflation Factor (VIF) value less than 10, indicating that there was no multicollinearity in the research model. The results of the heteroscedasticity test also showed a significance value above 0.05, indicating that

the model is free from heteroscedasticity. Additionally, the results of the linearity test showed that all relationships between variables had a linearity significance value less than 0.05, confirming that the relationships between variables are linear. With all these assumptions met, the regression model is deemed suitable for hypothesis testing.

Table 1. The Results of the Partial Coefficient Test (t-Test)

	Model	Unstandarized Coefficients		Standarized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	Product Quality (X) → Customer Loyalty (Y)	0.291	0.138	0.232	2.106	0.038
	Product Quality (X) → Customer Satisfaction (Z)	0.831	0.071	0.765	11.774	0.000
	Customer Satisfaction (Z) → Customer Loyalty (Y)	0.605	0.127	0.523	4.755	0.000

Table 1 shows that all relationships between variables exhibit a positive and significant direction of influence. The positive direction of influence is indicated by beta coefficients that are all positive, while significance is indicated by calculated t-values greater than 1.96 and p-values less than 0.05. These findings indicate that improving product quality can increase customer satisfaction and loyalty. Furthermore, customer satisfaction was also found to play a role in increasing customer loyalty.

Table 2. Test of the Coefficient of Determination R^2

Model Summary				
Model	R	R Square	Adjusted R	Std. Error of the Estimate
1	0.632	0.400	0.394	3.005
2	0.710	0.504	0.494	2.764

As shown in Table 2, the first model yielded an R^2 value of 0.400, indicating that product quality explains 40.0% of the variation in customer loyalty. After customer satisfaction was included as a mediating variable, the R^2 value increased to 0.504, meaning the model explains 50.4% of the variation in customer loyalty. This increase indicates that adding the customer satisfaction variable enhances the model's ability to explain customer loyalty.

Table 3. Path Analysis Results

Impact	Direct	Indirect	Total
Product Quality (X) → Customer Loyalty (Y)	0,232		
Product Quality (X) → Customer Satisfaction (Z)	0,765	0,400	0,632
Customer Satisfaction (Z) → Customer Loyalty (Y)	0,523		

The results of the path analysis show that product quality has a direct effect on customer satisfaction of 0.765, while the direct effect of product quality on customer loyalty is 0.232. Meanwhile, customer satisfaction has a direct effect on customer loyalty of 0.523. The indirect effect of product quality on customer loyalty through customer satisfaction is 0.400, resulting in a total effect of 0.632. Furthermore, mediation testing using the Sobel test showed that the Sobel statistic was greater than 1.96 with a significance level of less than 0.05. These results confirm that customer satisfaction significantly mediates the relationship between product quality and customer loyalty.

This study shows that product quality plays a significant role in shaping customer loyalty, both directly and through customer satisfaction as a mediating variable. The results indicate that product quality has a positive and significant effect on customer satisfaction and customer loyalty, while customer satisfaction also has a positive and significant effect on customer loyalty. Furthermore, the mediation analysis indicates that the indirect effect of product quality on customer loyalty via customer satisfaction is greater than its direct effect. These findings suggest that customer loyalty is influenced not only by perceptions of product quality but also by customers' experiences after using the product, which in turn shape their satisfaction.

These findings can be explained by Expectation Confirmation Theory (ECT), which states that customers compare a product's perceived performance with their expectations prior to purchase. If the product's performance meets or exceeds expectations, customers experience confirmation, leading to satisfaction. This satisfaction subsequently drives post-purchase behaviors, such as repeat purchases, recommendations to others, and the desire to continue using the same product. Thus, product quality does not automatically generate loyalty but first fosters customer satisfaction as a consequence of evaluating the product usage experience.

The greater influence of product quality on customer satisfaction compared to its direct influence on customer loyalty indicates that customer satisfaction is a crucial mechanism in building loyalty. With skincare products, customers generally cannot evaluate product quality based solely on appearance or information available before purchase. An assessment of product quality only forms after customers have used the product for a certain period and compared the results obtained with their initial expectations. Therefore, satisfaction serves as a crucial bridge between product quality and customer loyalty. The results of this study align with research by Abigail et al., (2024), Fikry et al., (2025), Alim et al., (2025), and Rahmawati & Dhameria, (2025), which indicate that product quality is one of the primary determinants of customer satisfaction and loyalty. However, this study provides a different empirical context because it focuses on local skincare products, which fall under the category of experience goods products whose benefits can only be evaluated after repeated use. These findings suggest that the mechanisms described in the ECT are also relevant for explaining customer behavior in the skincare industry, where loyalty is formed through a post-purchase evaluation process.

The research findings also reinforce the role of customer satisfaction as a mediating variable in the relationship between product quality and customer loyalty. The fact that the indirect effect is greater than the direct effect indicates that product quality will have a stronger impact on loyalty if it first leads to customer satisfaction. In other words, customers who perceive product quality to meet their expectations are more likely to feel satisfied, and that satisfaction subsequently fosters loyalty to the product. These findings are consistent with the research by Arsita et al., (2025), Utami & Handrito, (2023), and Ahmed et al., (2025), which show that customer satisfaction acts as a mediator in the relationship between product quality and customer loyalty. However, this study expands upon previous findings by providing empirical evidence in the context of local skincare products marketed through e-commerce platforms. This indicates that the development of customer loyalty toward skincare products is influenced not only by the product quality itself but also by the usage experience that confirms customers' expectations.

Theoretically, this study expands the application of Expectation Confirmation Theory to the context of local skincare products in Indonesia. Previous studies have primarily applied ECT to the service sector, digital services, and e-commerce, whereas this study demonstrates that the theory can also explain the process of customer loyalty formation for skincare products. These findings reinforce the argument that customer satisfaction serves as a psychological mechanism linking product quality to customer loyalty through the process of expectation confirmation following product use. Practically, the research results indicate that efforts to increase customer loyalty are not sufficient if they rely solely on offering high-quality products. Companies must also ensure that the product quality perceived by customers truly meets or exceeds their expectations, thereby generating satisfaction. Consequently, strategies to enhance customer loyalty should focus on creating a product usage experience that is consistent with customers' claims and expectations.

CONSLUSION

This study shows that product quality has a positive and significant effect on customer loyalty, both directly and indirectly through customer satisfaction as a mediating variable. These findings indicate that product quality that meets customer expectations will increase customer satisfaction, which in turn fosters customer loyalty. Thus, customer satisfaction acts as a mechanism that strengthens the relationship between product quality and customer loyalty for N'Pure Centella

Asiatica toner. Theoretically, this study reinforces the application of Expectation Confirmation Theory (ECT) by providing empirical evidence that customer satisfaction explains how product quality can shape customer loyalty. Practically, the results suggest that skincare companies need to maintain consistent product quality and ensure that product benefits align with customer expectations in order to enhance satisfaction and build long-term customer loyalty. This study has limitations because it used a purposive sampling technique with respondents limited to customers of N'Pure Centella Asiatica toner in Surabaya who made purchases through Shopee therefore, the results cannot yet be generalized broadly. Additionally, this study employed a cross-sectional design, meaning that the relationships between variables only reflect the respondents' conditions at a single point in time. Therefore, future research is recommended to test this model in different regions, e-commerce platforms, or product categories, as well as to consider other variables such as brand trust, brand image, customer experience, or perceived value to gain a more comprehensive understanding of how customer loyalty is formed.

DECLARATION OF GENERATIVE AI

The authors declare that no generative AI or AI-assisted technologies were used in the writing process of this manuscript.

CONFLICTING INTEREST STATEMENT

The authors states that there is no conflict of interest in the publication of this article.

FUNDING INFORMATION STATEMENT

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

AUTHORSHIP CONTRIBUTION STATEMENT

Layyinatul Mukhlishoh: Conceptualization, Methodology, Writing - Original Draft, Data curation, Validation. Dwi Yuli Rakhmawati: Supervision, Writing - Review & Editing.

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