



## **The influence of product quality and online shopping experience on customer loyalty through customer satisfaction with Azarine sunscreen products**

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### **ABSTRACT**

*Increasing public awareness of the importance of protecting skin from ultraviolet (UV) rays has driven demand for sunscreen products, including in Indonesia. Azarine, a local brand, dominates the e-commerce market with significant sales. This study aims to analyse the influence of product quality and online shopping experience on customer loyalty, with customer satisfaction as a mediating variable. The method employed was a quantitative approach with a purposive sampling technique, involving 100 female students from Trunojoyo University, Madura, who had purchased Azarine sunscreen products online. Data collection was conducted through questionnaires, and data analysis used the Structural Equation Modelling–Partial Least Squares (SEM-PLS) technique using SmartPLS 4.1 software. The results showed that product quality and online shopping experience had a positive and significant effect on customer satisfaction. In addition, both variables also had a direct and indirect effect on customer loyalty through customer satisfaction. Customer satisfaction proved to be a significant mediating variable in shaping customer loyalty. These findings emphasise the importance of strategies to improve product quality and strengthen the digital shopping experience as steps to build and maintain customer loyalty, especially in the increasingly competitive skincare industry.*

**Keywords:** Product Quality, Online Shopping Experience, Customer Satisfaction, Customer Loyalty

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**Abstrak**

Peningkatan kesadaran masyarakat terhadap pentingnya perlindungan kulit dari paparan sinar ultraviolet (UV) telah mendorong pertumbuhan permintaan terhadap produk sunscreen, termasuk di Indonesia. Azarine sebagai salah satu merek lokal menunjukkan dominasi di pasar e-commerce dengan penjualan yang signifikan. Penelitian ini bertujuan untuk menganalisis pengaruh kualitas produk dan pengalaman berbelanja online terhadap loyalitas pelanggan, dengan kepuasan pelanggan sebagai variabel mediasi. Metode yang digunakan adalah pendekatan kuantitatif dengan teknik purposive sampling terhadap 100 mahasiswi Universitas Trunojoyo Madura yang pernah membeli produk sunscreen Azarine secara online. Pengumpulan data dilakukan melalui kuesioner, dan analisis data menggunakan teknik Structural Equation Modeling–Partial Least Squares (SEM-PLS) melalui perangkat lunak SmartPLS 4.1. Hasil penelitian menunjukkan bahwa kualitas produk dan pengalaman berbelanja online berpengaruh positif dan signifikan terhadap kepuasan pelanggan. Selain itu, kedua variabel tersebut juga berpengaruh langsung dan tidak langsung terhadap loyalitas pelanggan melalui kepuasan pelanggan. Kepuasan pelanggan terbukti menjadi variabel mediasi yang signifikan dalam membentuk loyalitas pelanggan. Temuan ini menegaskan pentingnya strategi peningkatan kualitas produk dan penguatan pengalaman belanja digital sebagai langkah untuk membangun dan mempertahankan loyalitas pelanggan, khususnya dalam industri perawatan kulit yang semakin kompetitif.

**Kata Kunci:** *Kualitas Produk, Pengalaman Berbelanja Online, Kepuasan Pelanggan, Loyalitas Pelanggan*

## 1. Introduction

Indonesian public awareness of the importance of skin care, particularly protection from ultraviolet (UV) rays, has increased significantly over the past decade. Sunscreen has become a highly sought-after skin care product due to its ability to protect skin from damage risks such as premature aging and skin cancer. Data from the World Health Organization shows that regular sunscreen use is an effective way to prevent UV damage.

This phenomenon has also driven the growth of the skincare industry in Indonesia, particularly for local products like Azarine, which has successfully topped the list of sunscreen sales on e-commerce platforms with a 14.3% market share in the first quarter of 2024 (Andini, 2024). This growth is influenced not only by the quality of the products offered but also by the increasingly prioritized online shopping experience, which fosters brand loyalty among consumers.

According to Kotler & Armstrong (2018), product quality reflects the extent to which a product meets or exceeds customer expectations in terms of performance, durability, features, and conformance to specifications. On the other hand, the online shopping experience is related to how consumers perceive the ease, security, and convenience of conducting digital transactions (Assegaff, 2021). These factors play a significant role in influencing satisfaction levels, which ultimately drives customer loyalty (Tjiptono, 2019).

Several previous studies support the importance of product quality on customer loyalty. Research by Meliana et al., (2023) indicates that product quality has a direct and significant influence on customer satisfaction and loyalty. Another study by Abigail et al., (2024) emphasizes the role of the online shopping experience as a factor that strengthens customer

satisfaction, which in turn impacts consumer loyalty. These studies consistently demonstrate that product quality and the online shopping experience can be important predictors in shaping loyalty, particularly through the mediation of customer satisfaction.

However, there is limited research that simultaneously examines the relationship between product quality, online shopping experience, and customer loyalty, with satisfaction as a mediating variable in the context of local skincare products. This opens the door for further exploration of the role of these variables in an integrated manner. By focusing on Azarine sunscreen products as the subject of study, this research aims to fill the existing gap in the literature and make an empirical contribution to understanding the factors that influence customer loyalty in the local beauty industry.

## **2. Theoretical Background and Hypothesis**

Product quality refers to a product or service's ability to meet or exceed customer expectations, encompassing functional aspects, aesthetics, durability, and reliability (Kotler & Armstrong, 2018). Tjiptono & Chandra (2016) suggest that product quality can be measured through eight dimensions: performance, reliability, features, conformance, durability, serviceability, aesthetics, and perceived quality. Product quality is a crucial factor influencing customer satisfaction and loyalty. When a product meets or even exceeds customer expectations, the perceived satisfaction tends to shape loyalty (Meliana et al., 2023a).

The online shopping experience is a subjective perception that consumers undergo throughout the shopping process on digital platforms, from product search and transaction to delivery (Assegaff, 2021). Ling et al. (2010) explained that online shopping experiences can be measured through several indicators: (1) experience using e-commerce, (2) competence in online shopping, (3) comfort when using the platform, and (4) ease of use of the system. A good shopping experience not only increases customer satisfaction but also strengthens the desire to make repeat purchases and recommend the product to others (Theresia & Wardana, 2019). Furthermore, a positive online shopping experience is a key determinant in building customer loyalty, especially among young, digitally active consumers (Ningsih & Hurnis, 2023).

Customer satisfaction is an emotional response to a consumer's evaluation of the match between initial expectations and the perceived reality of a product or service (Tjiptono, 2019). When consumers are satisfied, they are more likely to make repeat purchases and develop a sense of brand loyalty. According to Tjiptono (2019), there are four main indicators of customer satisfaction: (1) feelings of satisfaction, (2) repurchase intention, (3) desire to recommend the product, and (4) fulfillment of expectations after purchase. Customer satisfaction often acts as a mediating variable, strengthening the relationship between product quality or shopping experience and customer loyalty (Abigail et al., 2024).

Customer loyalty refers to a consumer's consistent commitment to repurchase or reuse a product/service in the future, despite the presence of numerous alternative options (Kotler & Keller, 2018). Loyalty consists of two aspects: attitude and behavior. Attitude encompasses trust and commitment, while behavior is reflected in repeat purchases and recommendations to others (Sasongko, 2021). Susilawati et al., (2022) state that customer loyalty can be measured through three indicators: repeat purchases, resistance to negative influences (retention), and recommendations to others (referrals). Loyal customers not only provide long-term benefits but also act as effective promotional agents through word of mouth.

### **Product Quality and Customer Satisfaction**

The primary principle for companies to survive in this increasingly competitive environment is to offer high-quality products that remain relevant, ensuring customers continue to choose them (Kotler & Armstrong, 2018). A high-quality product will create customer satisfaction. Conversely, if the product quality offered is poor, dissatisfaction will arise not only among existing customers but also among potential customers, which will negatively impact their perception of the brand.

Companies or manufacturers must pay close attention to product quality because customer satisfaction depends on it (Daga, 2017). Furthermore, customer satisfaction is often determined by the quality of the product or service offered (Afnina & Hastuti, 2018). Based on research conducted by Intan et al., (2024), Rochmah & Muzdalifah (2024), and Febiana & Marliani (2024), quality has a positive and significant impact on customer satisfaction. Based on this description, the following hypothesis is proposed:

**H1:** Product Quality has a significant effect on Customer Satisfaction.

### **Online Shopping Experience and Customer Satisfaction**

Experience is considered crucial in shaping customers' perceptions of what they expect from online retailers. Research conducted by Kartika & Ganarsih (2019) states that customer experience is the creation of consumer satisfaction through experience. Wicaksono & Sukpto, (2021) state that when customers purchase goods online, they will have an online shopping experience that will impact their ultimate satisfaction. Therefore, the better a customer's online shopping experience, the higher their customer satisfaction. Therefore, to enhance the online shopping experience and customer satisfaction, it is essential to design and manage every aspect in an integrated manner, thereby creating an optimal online shopping experience for customers.

Research conducted by Foster (2017), Widyakto et al., (2024), Surahman & Sunaryar (2024), and Ravsyanjani et al., (2025) shows that online shopping experience has a positive and significant impact on customer satisfaction. Based on this description, the following hypothesis is proposed:

**H2:** The online shopping experience has a significant effect on Customer Satisfaction.

### **Product Quality and Customer Loyalty**

Maintaining customer loyalty is a challenging task that carries significant responsibility (Bali, 2022). Companies must produce high-quality products because doing so enables them to establish a unique position with their customers. A positive impression is created by the brand associated with the company's products, allowing the products to penetrate a larger market more quickly. Maintaining customer loyalty requires serious effort and significant responsibility from the company.

Previous research by Bali (2022) suggests that product quality is a key determinant of customer loyalty. Customers who receive high-quality products are more likely to become loyal consumers. A company that offers high-quality products that meet customer needs is more likely to have customers purchase those products repeatedly, resulting in customer loyalty (Nyonyie et al., 2019). Companies must focus on producing high-quality products that create a positive impression and establish a strong brand image in the minds of consumers. Several studies conducted by experts, including those by Febiana & Marliani (2024), Meliana et al., (2023b), and Rochmah & Muzdalifah (2024), indicate that product quality has a positive and significant effect on customer loyalty. Based on this description, the following hypothesis is proposed:

**H3:** Product quality has a significant effect on customer loyalty.

**H5:** Product Quality influences Customer Loyalty through Customer Satisfaction.

### **Online Shopping Experience and Customer Loyalty**

The shopping experience a customer experiences when purchasing a product on an online platform is a crucial consideration. Retaining customers on that platform focuses not only on product quality but also on the shopping experience (Nirawati et al., 2020). Each interaction contributes to perceived value and customer satisfaction. A smooth and enjoyable experience increases the likelihood of repeat purchases and recommendations to their social networks (Ridwan et al., 2022). Several studies have shown that the online shopping experience has a positive and significant impact on customer loyalty (Nirawati et al., 2020; Ridwan et al., 2022; Amri, 2020). Based on this description, the following hypothesis is proposed:

**H4:** The online shopping experience has a significant effect on customer loyalty.

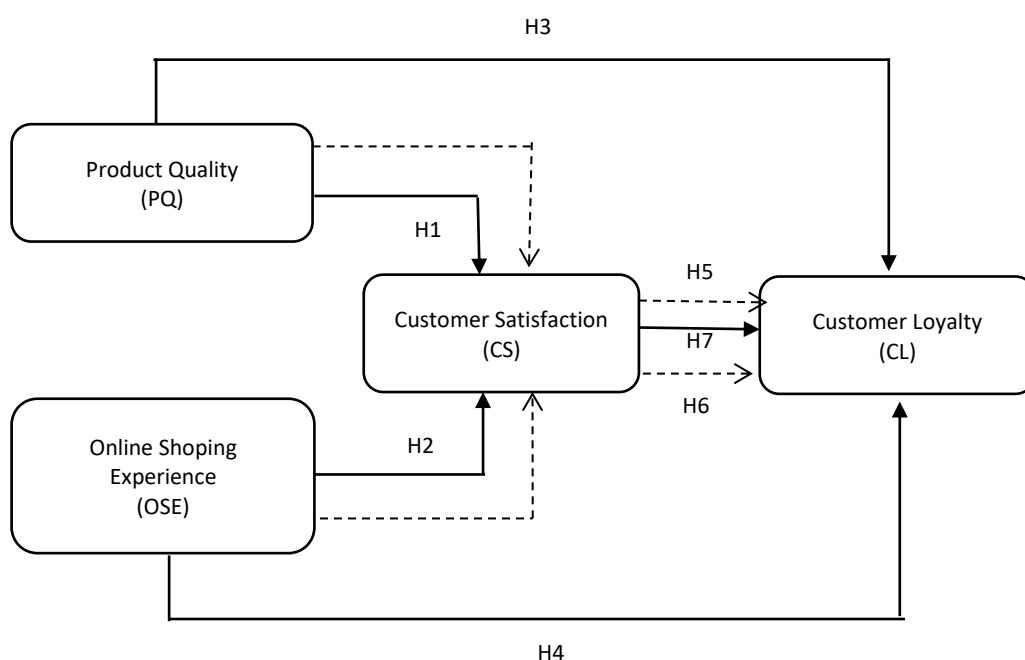
**H6:** The online shopping experience has a significant impact on Customer Loyalty through Customer Satisfaction.

### **Customer Satisfaction and Customer Loyalty**

Customer satisfaction is a key factor in fostering customer loyalty. Furthermore, research by Jankova & Lazdins, (2024) states that factors influencing customer loyalty include customer satisfaction, customer trust, customer commitment, and perceived service quality. It can be concluded that companies need to design an integrated strategy that not only maximizes satisfaction through high-quality products and services but also builds trust through transparency, fosters commitment through reward programs, and manages perceived service quality in a responsive and proactive manner.

Several other studies that align with the above findings include those by Ravsyjanjani et al., (2025), Putra & Santika (2023), and Anggraini & Suryoko (2018), which show that Customer Satisfaction positively and significantly influences Customer Loyalty. Based on this description, the following hypothesis is proposed:

**H7:** Customer satisfaction has a significant effect on customer loyalty.



**Figure 1.** Research Model

### 3. Methods

This study employed a quantitative approach with a causal approach. This approach was chosen because it allows researchers to objectively measure relationships between variables through numerical data and statistical testing. Meanwhile, causality was used to determine the direct and indirect effects between the independent variables (product quality and online shopping experience) on the dependent variable (customer loyalty), with customer satisfaction as a mediating variable.

#### Sample and Procedure

The subjects of this study were female students at Trunojoyo University, Madura, who had purchased Azarine sunscreen products through an e-commerce platform. This population was selected because this group was deemed relevant to the characteristics of the primary consumers of sunscreen products: young women who actively shop online. The study population included all active female students at Trunojoyo University, Madura, who had purchased and used Azarine sunscreen products online. The sampling technique used was purposive sampling, which determines the sample based on specific criteria that align with the research objectives. The sample size for this study was 100 respondents.

#### Measurement

The data used in this study were primary data obtained directly from respondents through an online questionnaire. In addition, secondary data was obtained from scientific journals, articles, company reports, and Azarine's official website to strengthen the theoretical and contextual foundations of the research. The data collection instrument was a closed-ended questionnaire with a five-point Likert scale, which measured respondents' level of agreement with several statements related to four main variables: product quality, online shopping experience, customer satisfaction, and customer loyalty.

#### Data Analysis Technique

The data analysis technique employed was Structural Equation Modeling – Partial Least Squares (SEM-PLS), utilizing SmartPLS software version 4.1 for assistance. The analysis was conducted in two stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model). In the outer model evaluation stage, construct validity and reliability were tested using outer loading values, Average Variance Extracted (AVE), and composite reliability. Furthermore, in the inner model evaluation stage, relationships between variables were examined using path coefficients and t-statistics, with the bootstrapping method employed. The R-square test was used to determine the contribution of the independent variables to the dependent variable, while the F-square test was used to assess the strength of the influence of each relationship path between variables. Additionally, mediation testing was conducted to determine the role of customer satisfaction as an intermediary variable in the relationship between product quality and online shopping experience, influencing customer loyalty.

### 4. Result and Discussion

The measurement model assessment indicates that all constructs meet the criteria for convergent validity, as evidenced by Average Variance Extracted (AVE) values exceeding 0.50. In

addition, all indicators demonstrate outer loading values above 0.70, confirming that they adequately represent their respective constructs. The results of discriminant validity show that each indicator loads highest on its intended construct, indicating clear distinctions among constructs. Furthermore, composite reliability and Cronbach's alpha values greater than 0.70 confirm that the measurement instruments are reliable and suitable for further analysis.

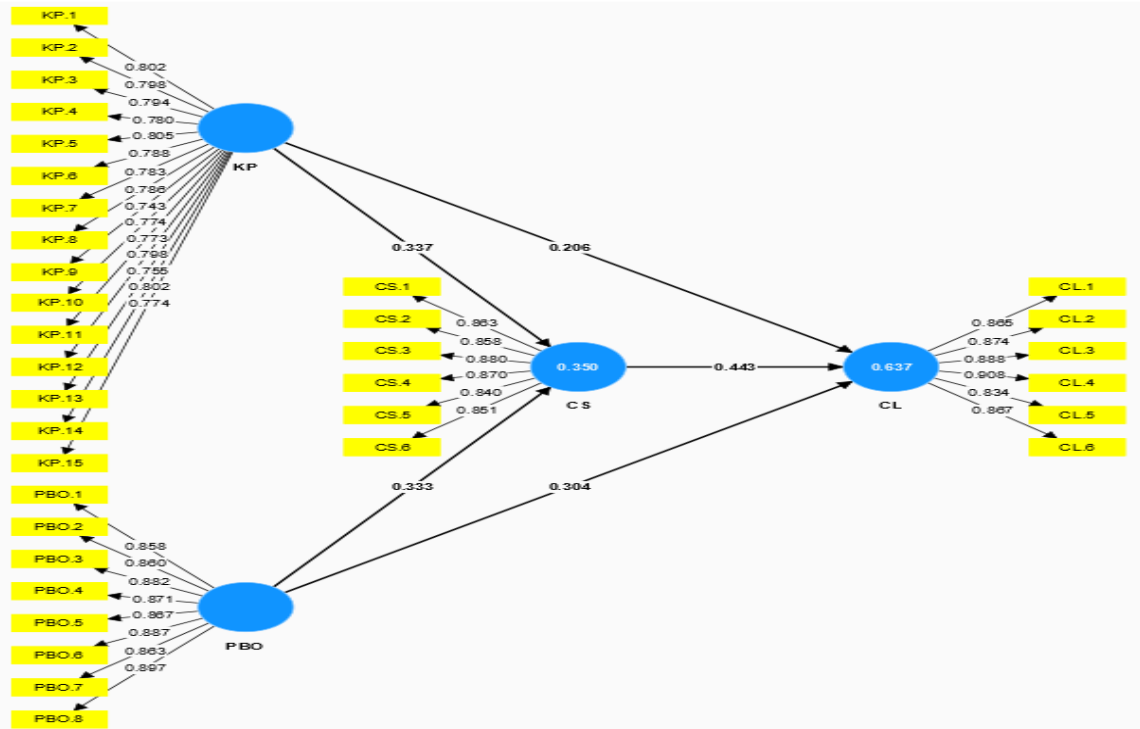


Figure 2. Structural Model

Table 1. Results of Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation	T Statistics	P Value	Decision
PQ → CS	0,337	0,343	0,117	2,886	0,004	Suported
PQ → CL	0,206	0,208	0,095	2,163	0,031	Suported
OSE → CS	0,333	0,333	0,111	2,989	0,003	Suported
OSE → CL	0,304	0,300	0,099	3,075	0,002	Suported
CS → CL	0,443	0,442	0,120	3,677	0,000	Suported
PQ → CS → CL	0,149	0,154	0,072	2,063	0,039	Suported
OSE → CS → CL	0,147	0,150	0,070	2,120	0,034	Suported

$R^2$  (Customer Satisfaction) = 0.350

$R^2$  (Customer Loyalty) = 0.637

Source: processed with SmartPLS (2025)

Based on Table 1, the hypothesis testing results indicate that all proposed relationships are statistically significant. Product quality has a positive and significant effect on customer



satisfaction ( $\beta = 0.337$ ;  $p = 0.004$ ), supporting H1, while the online shopping experience also significantly influences customer satisfaction ( $\beta = 0.333$ ;  $p = 0.003$ ), supporting H2. These findings suggest that improvements in product quality and online shopping experience contribute to higher levels of customer satisfaction.

Furthermore, product quality ( $\beta = 0.206$ ;  $p = 0.031$ ) and online shopping experience ( $\beta = 0.304$ ;  $p = 0.002$ ) both have significant positive effects on customer loyalty, supporting H3 and H4. Customer satisfaction also shows a strong and significant influence on customer loyalty ( $\beta = 0.443$ ;  $p < 0.001$ ), thereby supporting H7.

In addition to the direct effects, the mediation analysis confirms that customer satisfaction significantly mediates the relationship between product quality and customer loyalty ( $\beta = 0.149$ ;  $p = 0.039$ ), as well as between online shopping experience and customer loyalty ( $\beta = 0.147$ ;  $p = 0.034$ ), supporting H5 and H6. The  $R^2$  values indicate that the model explains 35.0% of the variance in customer satisfaction and 63.7% of the variance in customer loyalty. Overall, the results confirm that customer satisfaction plays a key mediating role in strengthening the effects of product quality and online shopping experience on customer loyalty.

## Discussion

### *The Influence of Product Quality on Customer Satisfaction with Azarine Sunscreen*

The results of this study support the first hypothesis (H1), indicating that product quality has a positive and significant effect on customer satisfaction with Azarine sunscreen. Higher consumer perceptions of product performance, reliability, additional features, conformity to specifications, durability, serviceability, aesthetics, and perceived quality lead to increased levels of satisfaction. When product quality is perceived as reliable and consistent with expectations, consumers tend to feel more satisfied with their purchase decisions, in line with the perspective proposed by Kotler and Armstrong (2001).

This finding is consistent with prior empirical studies emphasizing the critical role of product quality in shaping customer satisfaction. Intan et al. (2024) found that taste, presentation, and service consistency significantly influenced customer satisfaction among café visitors in Medan. Similarly, Afrina and Hastuti (2018) demonstrated that precise design and high-quality raw materials enhanced perceived value and satisfaction in the furniture industry. In the cosmetic sector, Febiana and Marliani (2024) reported that durability, color intensity, and comfort of use significantly affected customer satisfaction with Maybelline eyebrow pencil products in Bandung. These findings reinforce the conclusion that superior product quality is a key determinant of customer satisfaction across industries.

### *The Influence of Online Shopping Experience on Customer Satisfaction with Azarine Sunscreen*

The second hypothesis (H2) is supported, showing that the online shopping experience has a positive and significant effect on customer satisfaction with Azarine sunscreen. A well-designed digital shopping environment—characterized by ease of access, intuitive navigation, and fast service—enhances consumers' overall purchasing experience. Easy access to applications or official websites, lightweight and device-compatible platforms, and responsive interfaces reduce waiting time and create positive initial impressions, which contribute directly to customer satisfaction.



These dimensions of the online shopping experience are interrelated. Consumers who can easily access the platform, quickly locate products, and complete transactions efficiently tend to perceive the shopping process as more satisfying. This finding aligns with previous research. Abigail et al. (2024) found that ease of navigation, clear product information, and smooth payment processes significantly increased satisfaction among local skincare consumers. Wicaksono and Sukapto (2021) also reported that transaction speed, data security, and customer service interactions were strongly associated with customer satisfaction. Similarly, Foster (2017) and Ravsyanjani et al. (2025) emphasized that mobile accessibility, delivery reliability, interface quality, and transparent after-sales services play essential roles in enhancing consumer satisfaction in Indonesian e-commerce contexts.

#### *The Influence of Product Quality on Customer Loyalty to Azarine Sunscreen*

The findings support the third hypothesis (H3), indicating that product quality has a positive and significant effect on customer loyalty to Azarine sunscreen. Customer loyalty reflects consumers' willingness to repurchase the product consistently despite the presence of competing brands. When consumers perceive product quality as reliable and satisfactory, they are more inclined to recommend the product and remain loyal, even when exposed to negative information or alternative options.

Improving product quality strengthens trust and perceived value, which in turn fosters loyalty. Reliability, durability, superior specifications, appealing aesthetics, and good serviceability collectively enhance the overall quality perception and contribute to a loyalty cycle, where satisfied consumers engage in repeat purchases and positive word-of-mouth (Nyonyie et al., 2019). These findings are consistent with prior studies, including Febiana and Marliani (2024), Rochmah and Muzdalifah (2024), Meliana et al. (2023a), and Iqbal et al. (2024), all of which confirm that product quality is a fundamental driver of customer loyalty across different industries and platforms.

#### *The Influence of Online Shopping Experience on Customer Loyalty to Azarine Sunscreen*

The fourth hypothesis (H4) is supported, demonstrating that the online shopping experience has a positive and significant effect on customer loyalty. A seamless digital shopping process—such as quick ordering, real-time delivery tracking, and receiving products in good condition—encourages consumers to make repeat purchases and recommend the platform to others. Even in the presence of alternative platforms offering discounts, consumers with positive shopping experiences tend to remain loyal.

This finding supports previous studies highlighting the role of the online shopping experience in building long-term loyalty. Ravsyanjani et al. (2025) and Abigail et al. (2024) confirmed that satisfying online interactions significantly enhance customer loyalty in the Indonesian market. At the MSME level, Prakoso et al. (2023) found that ease of digital transactions strengthened loyalty, while Ariyono et al. (2022) showed that a positive end-to-end user experience was essential for retaining loyal Traveloka customers.

#### *The Mediating Role of Customer Satisfaction in the Relationship between Product Quality and Customer Loyalty*

The fifth hypothesis (H5) is confirmed, indicating that product quality influences customer loyalty indirectly through customer satisfaction. High product quality—such as effective UV

protection, comfort, water resistance, and suitability for different skin types—creates positive consumption experiences that enhance satisfaction, which subsequently strengthens loyalty. Customer satisfaction serves as a psychological foundation that encourages consumers to remain loyal despite competitive pressures.

This mediating role of customer satisfaction is consistent with previous research. Abigail et al. (2024) and Naini et al. (2022) found that customer satisfaction significantly mediates the relationship between product quality and loyalty. Febiana and Marliani (2024) further supported this conclusion by demonstrating that satisfaction plays a key intermediary role in the cosmetic industry.

#### *The Mediating Role of Customer Satisfaction in the Relationship between Online Shopping Experience and Customer Loyalty*

The sixth hypothesis (H6) is supported, showing that the online shopping experience positively influences customer loyalty through customer satisfaction. Convenience, speed, and reliability in digital services enhance satisfaction, which subsequently drives loyalty behaviors such as repeat purchases and platform preference (Mofokeng, 2021).

This result aligns with prior findings by Abigail et al. (2024) and Ravsyantjani et al. (2025), who demonstrated that improvements in interface quality, delivery performance, and after-sales service increase satisfaction and indirectly strengthen customer loyalty.

#### *The Influence of Customer Satisfaction on Customer Loyalty to Azarine Sunscreen*

The seventh hypothesis (H7) is supported, confirming that customer satisfaction has a positive and significant effect on customer loyalty to Azarine sunscreen. When consumers perceive that the brand consistently fulfills its promises—such as reliable protection, comfortable texture, and practical packaging—trust is built, leading to stronger loyalty.

This finding is consistent with prior studies showing that satisfied customers are more likely to engage in repeat purchases and word-of-mouth promotion. Meliana et al. (2023a), Rochmah and Muzdalifah (2024), and Iqbal et al. (2024) all reported similar results, reinforcing the central role of customer satisfaction in sustaining long-term customer loyalty.

## **5. Conclusion**

This research analyzed using the PLS-SEM method, concludes that product quality and online shopping experience play crucial roles in shaping customer satisfaction and customer loyalty toward Azarine sunscreen products. Product quality has a positive and significant effect on customer satisfaction and loyalty, indicating that reliable performance, durability, comfort, and perceived value strengthen long-term consumer commitment. Similarly, the online shopping experience significantly enhances customer satisfaction and loyalty, highlighting the importance of ease of access, navigation convenience, transaction speed, and service reliability in digital purchasing contexts.

Customer satisfaction is confirmed as a key mediating variable that strengthens the relationship between both product quality and online shopping experience with customer loyalty. Satisfied consumers are more likely to repurchase, recommend the product, and remain loyal despite competing alternatives. Overall, the findings emphasize that maintaining superior

product quality alongside an effective and seamless online shopping experience is essential for building sustainable customer satisfaction and long-term loyalty for Azarine sunscreen.

While this study offers important insights into the influence of product quality and online shopping experience on customer satisfaction and loyalty toward Azarine sunscreen, its findings should be interpreted cautiously due to limitations related to the use of a small convenience sample from a single location, the focus on one brand, a cross-sectional design, and reliance on self-reported data, although the results remain consistent with prior research and suggest that future studies should employ larger and more diverse samples, include additional variables, and apply longitudinal or experimental approaches to strengthen generalizability and causal interpretation.

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