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The Role of AI-Based Digital Marketing in Sustainable Value Creation: Customer Engagement as a Mediator in an Online Cosmetics Store

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ABSTRACT

The expansion of e-commerce, social media, and artificial intelligence (AI) has created new ways for cosmetic MSMEs to communicate with customers and build relationships. However, AI adoption among MSMEs remains focused on basic content activities rather than customer analysis, personalization, and marketing automation. This study examines the relationship between AI-Based Digital Marketing and Sustainable Value Creation, with Customer Engagement as a mediator at TokoHokkie688 Online Cosmetics Store. Grounded in the Resource-Based View (RBV), this quantitative study involved 150 customers selected through purposive sampling. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings show significant relationships between AI-Based Digital Marketing and Customer Engagement, Customer Engagement and Sustainable Value Creation, as well as AI-Based Digital Marketing and Sustainable Value Creation. Customer Engagement also significantly mediates the relationship between AI-Based Digital Marketing and Sustainable Value Creation, with an indirect effect of $\beta = 0.320$ ($t = 5.871$, $p < 0.001$, 95% CI = 0.218–0.435). The findings indicate that customer engagement represents an important mechanism linking AI-supported marketing with perceived long-term value. The study extends the application of RBV by examining AI-related marketing capabilities within the context of an Indonesian cosmetic MSME.

Keywords: AI-Based Digital Marketing, Customer Engagement, Sustainable Value Creation, Cosmetic MSMEs, TokoHokkie688.

INTRODUCTION

The development of digital technology has altered the way businesses conduct marketing and interact with consumers. The widespread use of social media, e-commerce, and mobile applications has enabled businesses to communicate with customers through broader and more data-driven channels. Consequently, digital marketing has become an important means of reaching target customers, strengthening communication, and supporting marketing decisions (Chaffey & Ellis-Chadwick, 2022).

Indonesia provides a relevant setting for examining digital transformation among MSMEs. DataReportal, (2025) reported approximately 212 million internet users in Indonesia in early 2025, while Google et al., (2024) estimated the national digital economy at around US$90 billion in 2024. The expansion of internet access and digital economic activity

provides MSMEs with greater opportunities to use digital channels for customer communication, market access, and business development.

Artificial Intelligence (AI) has subsequently become increasingly integrated into marketing activities. Its applications allow businesses to process customer information, automate selected marketing tasks, anticipate consumer preferences, and deliver more individualized digital experiences. Recommendation systems, chatbots, predictive analytics, and automated content tools illustrate how AI can extend the functions of conventional digital marketing (Verma et al., 2021) (Haleem et al., 2022).

Despite these opportunities, MSMEs may face difficulties in adopting AI because of limited digital expertise, financial capacity, data-management capabilities, and organizational knowledge (OECD, 2021). Consequently, the application of AI in smaller businesses may remain concentrated on relatively simple marketing tasks, including the preparation of promotional captions and content ideas, rather than more advanced applications such as customer analytics and marketing automation.

Preliminary observations and an interview with the owner indicate that TokoHokkie688 currently employs AI primarily to support the preparation of promotional captions, content ideas, and product descriptions. More advanced applications involving customer behavior analysis and automated marketing communication remain limited.

Nevertheless, limited direct use of AI by TokoHokkie688 does not mean that customers are excluded from AI-supported marketing experiences. Customers may encounter algorithmic recommendations, personalized content, and search results through the digital platforms used by the store, including Shopee, TikTok Shop, and Instagram. Thus, AI-Based Digital Marketing in this study reflects the customer's experience within the broader digital platform environment rather than only the AI tools directly operated by the store.

The continuing development of Indonesia's cosmetics market creates opportunities as well as competitive pressures for MSMEs in this sector. Businesses need marketing approaches that can attract customers while also supporting longer-term relationships. In this context, the use of AI within digital marketing may assist cosmetic MSMEs in improving customer experiences and strengthening marketing effectiveness (Kumar et al., 2019) (Kotler et al., 2021) (Arfah, 2025).

The Resource-Based View (RBV) provides the theoretical foundation for this study. From the RBV perspective, competitive advantage can emerge when firms effectively utilize resources and capabilities that are valuable, rare, difficult to imitate, and difficult to substitute. In this research, AI-Based Digital Marketing is positioned as a strategic capability through which TokoHokkie688 can improve personalization, customer-data utilization, and digital communication. These capabilities may subsequently strengthen Customer Engagement and contribute to Sustainable Value Creation.

Previous research provides evidence that AI-supported technologies can influence customer experience and engagement Ameen et al., (2021) associate AI applications with more personalized customer interactions, while Prentice et al., (2020) demonstrate the relevance of AI-supported service quality to Customer Engagement. Sung et al., (2021) further indicate that interactive technologies can encourage customer participation. At the same time, Customer Engagement has been linked to value creation, customer loyalty, and longer-term business relationship (Wang, 2022, Budiman & Ardhiyansyah, 2023). AI also enables businesses to process customer information and

support personalization, automation, and decision-making (Dwivedi et al., 2021) (Davenport et al., 2020) (Rust & Huang, 2014) (Wirtz & Pitardi, 2023).

Recent research shows that Artificial Intelligence has developed beyond the function of marketing automation into a strategic capability that supports customer analysis, data-driven decision-making, marketing personalization, marketing performance measurement, and improved customer experience. Therefore, AI has become one of the key technologies driving the transformation of digital marketing strategies across various business sectors (Kumar et al., 2024).

Despite these developments, research specifically examining AI-Based Digital Marketing, Customer Engagement, and customer-perceived Sustainable Value Creation within Indonesian cosmetic MSMEs remains limited. Existing studies frequently focus on larger organizations, general consumers, or outcomes such as satisfaction and experience. This study therefore examines whether Customer Engagement provides a mechanism linking AI-Based Digital Marketing with perceived long-term value in the TokoHokkie688 context (Arfah, 2025) (Prasasti et al., 2025).

This issue has become increasingly important as more cosmetic MSMEs use digital platforms such as Shopee, Instagram, and TikTok to reach customers. However, their use is often still limited to promotional purposes and has not fully utilized Artificial Intelligence capabilities to build more personalized customer relationships. In fact, the use of AI for promotional personalization, customer behavior analysis, automated services, and product recommendations has the potential to increase Customer Engagement and ultimately create Sustainable Value. Therefore, research is needed to explain the mechanism through which AI-Based Digital Marketing can generate sustainable business value through Customer Engagement at TokoHokkie688 (Gunduzyeli, 2024) (Putra, 2024).

The contribution of this study lies in examining AI-Based Digital Marketing as a marketing capability within an Indonesian cosmetic MSME and testing Customer Engagement as the mechanism connecting this capability with customer-perceived Sustainable Value Creation. Rather than treating sustainable value as direct evidence of financial or operational performance, the study focuses on customers' perceptions of long-term value and relationships.

Accordingly, this study aims to examine the effect of AI-Based Digital Marketing on Sustainable Value Creation through Customer Engagement among customers of TokoHokkie688 Online Cosmetics Store. The study also seeks to provide theoretical insight into the application of RBV to AI-supported marketing in MSMEs and practical insight into the use of AI-assisted digital marketing to strengthen customer relationships.

Previous studies have examined AI in relation to customer experience, customer engagement, and digital marketing outcomes (Kumar et al., 2019; Prentice et al., 2020 ; Sung et al., 2021; Rust & Huang, 2014; Wang, 2022). However, limited attention has been given to the mediating role of Customer Engagement in linking AI-Based Digital Marketing with customer-perceived Sustainable Value Creation in Indonesian cosmetic MSMEs. This study addresses this gap by examining TokoHokkie688 as an online cosmetics MSME.

LITERATURE REVIEW

Resource-Based View (Grand Theory)

The Resource-Based View (RBV) explains competitive advantage through the way firms acquire, develop, and utilize strategic resources and capabilities. Barney, (1991) argues that resources can become sources of sustained competitive advantage when they possess the characteristics of being valuable, rare, difficult to imitate, and non-substitutable. Within digital business environments, technological capabilities can therefore become strategically relevant when firms are able to integrate them with organizational knowledge and customer-related resources.

In digital marketing, AI can be understood not merely as an operational tool but as a capability that supports the use of customer information, personalization, automated communication, and product recommendations. The strategic value of AI consequently depends on how effectively the technology is combined with marketing knowledge and customer resources. Such integration may strengthen Customer Engagement and create conditions that support Sustainable Value Creation.

AI-Based Digital Marketing

Earlier studies generally emphasized the operational role of AI in marketing, particularly its ability to automate activities, process customer information, and improve the speed of marketing communication (Verma et al., 2021) (Haleem et al., 2022). From this perspective, AI primarily functioned as a means of improving marketing efficiency rather than as a strategic organizational capability (Behera et al., 2020).

More recent studies position AI as a broader marketing capability that can support personalization, customer behavior analysis, demand prediction, and data-driven decision-making (Lim et al., 2022) (Donthu et al., 2021) (Mustak et al., 2021). Personalization can improve the relevance of digital interactions and customer experiences (Chandra et al., 2022) (Arfah, 2025). However, the application of these capabilities among MSMEs remains less extensively examined than in larger organizations. This study therefore considers AI-Based Digital Marketing as a capability that may influence customer engagement and perceived long-term value.

Customer Engagement

Customer Engagement represents the extent to which customers actively involve themselves in interactions with a brand. Such involvement can be expressed through attention to digital content, emotional responses, participation, feedback, and continued interaction with the business. In a digital marketing environment, engagement is therefore not limited to a single transaction but reflects an ongoing relationship between customers and the firm (Prentice et al., 2020) (Wang, 2022) (Rust & Huang, 2014).

From an RBV perspective, customer engagement can also represent an intangible relational resource because repeated interaction, customer knowledge, and feedback may support stronger customer relationships over time (Lazuardi et al., 2025) Therefore, Customer Engagement is positioned as a mediator that may explain how AI-supported marketing activities relate to customer-perceived Sustainable Value Creation.

Sustainable Value

Sustainable Value Creation refers to the development of value that can be maintained through continued innovation, customer relationships, and the effective use of organizational and technological resources. For MSMEs, digital technologies can support this process by improving communication, service delivery, and the ability to respond to changing customer needs (Gunduzyeli, 2024) (Awa et al., 2025).

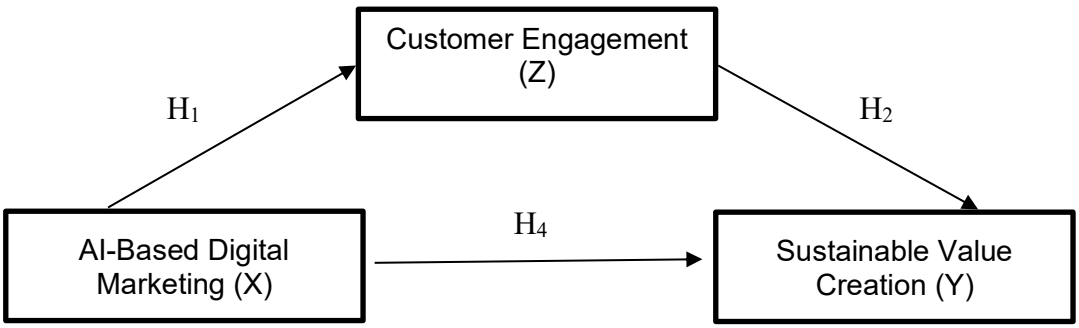
This customer-perceived perspective is important because the study does not directly measure financial performance or actual business sustainability. Instead, it examines whether customers perceive the store as providing continuing value through its digital marketing and customer relationships. Digital transformation, customer engagement, and innovation may contribute to such perceptions (Putra, 2024) (Budiman & Ardhiyansyah, 2023).

Sustainable value can also emerge through interactions among firms, customers, technologies, and digital platforms. Within this service ecosystem, AI can facilitate more relevant communication and personalized recommendations, while customer participation contributes information that can be used to improve the value delivered over time. Thus, sustainable value extends beyond short-term business outcomes and includes the maintenance of mutually beneficial customer relationships (Vargo & Lusch, 2016).

Table 1.
Measurement Indicators and Sources

Variable	Dimensions/Indicators	Measurement sources
AI-Based Digital Marketing (X)	Customer information processing, personalization, AI-supported recommendations, automated marketing communication	Kumar et al. (2019) ; Davenport et al. (2020) ; Huang & Rust (2021)
Customer Engagement (Z)	Cognitive, emotional, and behavioral involvement	Prentice et al. (2020) ; Wang (2022)
Sustainable Value Creation (Y)	Continuing customer benefits, relationship quality, trust, and perceived long-term value	Vargo & Lusch (2016) ; Budiman & Ardhiyansyah (2023)

Source: Authors' synthesis (2026)



H3: Customer Engagement mediates the relationship between AI-Based Digital Marketing and Sustainable Value Creation.

Figure 1. Theoretical Framework

Description:
X : AI-Based Digital Marketing refers to the use of AI-supported tools and functions in digital marketing activities to improve relevance and personalization.
Z : Customer Engagement refers to customers' cognitive, emotional, and behavioral involvement with TokoHokkie688 and serves as the mediating variable.
Y : Sustainable Value Creation refers to customers' perceptions of continuing benefits, trust, relationship quality, and long-term value received from TokoHokkie688.

Hypotheses:
H_1 : AI-Based Digital Marketing has a positive effect on Customer Engagement.
H_2 : Customer Engagement has a positive effect on Sustainable Value Creation.
H_3 : Customer Engagement mediates the effect of AI-Based Digital Marketing on Sustainable Value Creation.
H_4 : AI-Based Digital Marketing has a positive effect on Sustainable Value Creation.

RESEARCH METHOD

This study employed a quantitative approach and focused on TokoHokkie688, an online cosmetics MSME operating through Shopee, TikTok Shop, Instagram, and other digital channels. The population consisted of customers who had purchased from or interacted with the store's digital marketing activities.

Respondents were selected using purposive sampling based on four criteria:
(1) having purchased from TokoHokkie688 at least once during the previous 12 months.
(2) being at least 17 years old.
(3) having encountered or interacted with the store's digital marketing activities.
(4) being willing to participate in the survey.

The questionnaire used indicators adapted from relevant previous studies and employed a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The study used 27 indicators. Based on the 5–10 times indicator guideline for PLS-SEM (Hair et al., 2022), the minimum sample was 135 respondents. A total of 150 valid responses were retained for analysis. Data were analyzed using PLS-SEM. The measurement model was assessed through outer loadings, AVE, composite reliability, and HTMT, while the structural model was evaluated using inner VIF, f^2, R^2, Q^2predict, and bootstrapping Hair et al. (2022).

Variables:
X = AI-Based Digital Marketing
Z = Customer Engagement
Y = Sustainable Value Creation

In this study, Customer Engagement serves as a mediating variable that explains the mechanism through which AI-Based Digital Marketing contributes to Sustainable Value Creation. The research respondents are customers of TokoHokkie688 who have either made a purchase or interacted with the store's digital marketing activities.

RESULT

A total of 150 questionnaire responses were collected through the online survey. Before conducting the PLS-SEM analysis, the responses were reviewed based on respondent eligibility, completeness of answers, possible duplicate submissions, and unusual response patterns. Following this screening process, all 150 responses were retained for further analysis. The measurement model was subsequently examined in terms of convergent validity, discriminant validity, and construct reliability, while the structural model was evaluated using bootstrapping, inner VIF, effect size (f^2), R^2, and Q^2predict.

Table 2.

Construct	Number of Indicators	Outer Loading Range	Decision
AI-Based Digital Marketing	9	0.782 – 0.842	Valid
Customer Engagememt	9	0.749 – 0.861	Valid
Sustainable Value Creation	9	0.728 – 0.880	Valid

Summary of Outer Loading Results
Source: Smart PLS, 2026

All indicators achieved outer loading values above 0.70, ranging from 0.782–0.842 for AI-Based Digital Marketing, 0.749–0.861 for Customer Engagement, and 0.728–0.880 for Sustainable Value Creation. The indicators were therefore retained.

Table 3.
HTMT Test

Code	AI-Based Digital Marketing	Customer Engagement	Sustainable Value Creation
AI-Based Digital Marketing			
Customer Engagement	0.605		
Sustainable Value Creation	0.642	0.773	

Source: Smart PLS, 2026

HTMT values ranged from 0.605 to 0.773 and remained below 0.90, indicating adequate discriminant validity among the three constructs.

Table 4.
Reliability Test

Code	Cronbach's alpha	Rho_A	Composite reliability (rho_c)	Average variance extracted (AVE)
AI-Based Digital Marketing	0.931	0.942	0.942	0.644
Customer Engagement	0.934	0.945	0.945	0.655
Sustainable Value Creation	0.933	0.944	0.944	0.655

Source: Smart PLS, 2026

The reliability and validity results met the recommended thresholds, with Cronbach's Alpha and Composite Reliability above 0.70 and AVE above 0.50 for all constructs.

Table 5.
Bootstrapping Test

Code	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	CI 2,5%	CI 97,5%
AI -> CE	0.567	0.572	0.057	9.993	<0.001	0.454	0.677
CE -> SVC	0.567	0.567	0.056	10.201	<0.001	0.460	0.672

AI -> SVC	0.281	0.280	0.064	4.410	<0.001	0.144	0.399

Source: Smart PLS, 2026

AI-Based Digital Marketing had a positive and significant effect on Customer Engagement (β = 0.567, t = 9.993, p < 0.001). Customer Engagement also had a positive and significant effect on Sustainable Value Creation (β = 0.567, t = 10.201, p < 0.001). In addition, AI-Based Digital Marketing had a significant direct effect on Sustainable Value Creation (β = 0.281, t = 4.410, p < 0.001).

Table 6.
Specific Indirect Effects (Mediation Test)

Hypothesis	Indirect Relationship	β	t - statistic	p - value	95% CI	Decision
H3	AI-Based Digital marketing -> Customer Engagement -> Sustainable Value Creation	0.320	5.871	<0.001	0.218 – 0.435	Supported

Source: Smart PLS, 2026

The indirect effect of AI-Based Digital Marketing on Sustainable Value Creation through Customer Engagement was positive and significant (β = 0.320, t = 5.871, p < 0.001, 95% CI = 0.218–0.435). Because the confidence interval does not include zero, H3 is supported. The direct effect also remains positive and significant, indicating complementary partial mediation.

Table 7.
Results of Structural Model Evaluation

Code	Inner VIF	f^2	Effect size
AI-Based Digital Marketing -> Customer Engagement	1.000	0.473	Large
Customer Engagement -> Sustainable Value Creation	1.473	0.520	Large
AI-Based Digital Marketing -> Sustainable Value Creation	1.473	0.128	Small

Source Smart PLS, 2026

All inner VIF values were below the commonly used threshold, indicating no concerning multicollinearity among the structural predictors. The f^2 values were 0.473 for AI-Based Digital Marketing → Customer Engagement, 0.520 for Customer Engagement → Sustainable Value Creation, and 0.128 for the direct effect of AI-Based Digital Marketing → Sustainable Value Creation.

Table 8.
R^2 Result

Code	R-square	R-square adjusted
Customer Engagement	0.321	0.316
Sustainable Value Creation	0.581	0.574

Source: Smart PLS, 2026

AI-Based Digital Marketing explains 32.1% of the variance in Customer Engagement, while AI-Based Digital Marketing and Customer Engagement jointly explain 58.1% of the variance in Sustainable Value Creation.

Table 9.
Q^2 Result

Code	Q²predict	RMSE	MAE
Sustainable Value Creation	0.231	1.075	0.893

Source: Smart Pls, 2026

The Q²predict value for Sustainable Value Creation was 0.231, indicating predictive relevance for this endogenous construct. No verified Q² predict value for Customer Engagement is reported because it was not available in the analyzed output.

DISCUSSION

The Effect of AI-Based Digital Marketing on Customer Engagement

The results demonstrate a positive and significant relationship between AI-Based Digital Marketing and Customer Engagement ($\beta = 0.567$, $t = 9.993$, $p < 0.001$). This indicates that customers who perceive digital marketing activities as more relevant and responsive tend to show stronger engagement with TokoHokkie688.

The finding is in line with previous evidence concerning the role of AI in customer experience and engagement. Ameen et al., (2021), highlight the contribution of AI to personalized interactions, while Prentice et al., (2020). link AI-supported service quality with Customer Engagement. Sung et al., (2021) similarly indicate that interactive technologies can stimulate customer participation. These findings provide support for interpreting AI-Based Digital Marketing as a capability that can facilitate more relevant and responsive customer interactions.

In the TokoHokkie688 context, however, the finding should not be interpreted as evidence that the store independently operates advanced AI systems. The store's direct AI use remains relatively limited, particularly in promotional captions, content ideas, and product descriptions. Customers may nevertheless encounter AI-supported recommendations, personalized content, and algorithm-based search through Shopee, TikTok Shop, and Instagram. Thus, the observed relationship may reflect customers' overall experience with AI-supported digital marketing within the platform ecosystem (Situmorang et al., 2026).

From an RBV perspective, the result suggests that AI becomes strategically meaningful when it is integrated with customer information and marketing knowledge. Thus, the value of AI is not determined solely by the technology itself but by how TokoHokkie688 applies it within its marketing activities to improve customer interactions. For the store, this means that AI can be developed beyond content generation toward more personalized and responsive communication (Barney, 1991) (Huang & Rust, 2021).

The Effect of Customer Engagement on Sustainable Value Creation

The analysis shows a positive and significant relationship between Customer Engagement and Sustainable Value Creation ($\beta = 0.567$, $t = 10.201$, $p < 0.001$). The result indicates that stronger customer involvement is associated with stronger customer perceptions of continuing value from TokoHokkie688.

Customer interaction with digital content, communication with the store, feedback, and repeated contact can provide information about customer preferences and expectations. Such information may help the business refine its communication and service practices. The finding is consistent with Wang, (2022) who emphasizes the relevance of Customer

Engagement within value-related and relationship-building processes. From the RBV perspective, customer knowledge and continuing relationships can also represent intangible resources that support value development over time (Barney, 1991) (Lazuardi et al., 2025).

The Effect of AI-Based Digital Marketing on Sustainable Value Creation

The results also demonstrate a positive and significant direct relationship between AI-Based Digital Marketing and Sustainable Value Creation ($\beta = 0.281$, $t = 4.410$, $p < 0.001$). This result indicates that AI-supported marketing is associated with customer perceptions of continuing value even when the mediating role of Customer Engagement is considered separately.

AI-supported marketing can contribute to more relevant content, customer-information processing, personalization, and digital communication. In the MSME context, these capabilities may improve the firm's ability to respond to customer needs and maintain relationships. Previous research similarly connects digital marketing with MSME visibility and competitiveness Setyorini & Simbolon, (2025) and with business recovery in the Medan MSME context (Nainggolan et al., 2022). The strategic role of AI in personalization and data-based marketing is also emphasized by (Manik et al., 2026) (Huang & Rust, 2021) (Kumar et al., 2024).

The Mediating Role of Customer Engagement

The mediation test indicates that AI-Based Digital Marketing is positively and significantly associated with Sustainable Value Creation through Customer Engagement ($\beta = 0.320$, $t = 5.871$, $p < 0.001$, 95% CI = 0.218–0.435). Because the confidence interval excludes zero and the direct relationship remains significant, Customer Engagement functions as a complementary partial mediator. The result suggests that AI-supported marketing may contribute to perceived long-term value partly by encouraging continued interaction between customers and the store.

This finding suggests that AI-supported marketing may be associated with perceived long-term value partly because relevant and responsive digital communication encourages customers to interact with the store. These interactions can generate customer information, feedback, and relationship continuity, which are relevant to perceived value.

The result is consistent with the RBV perspective because technological capability and relational resources work together in the value-creation process. AI-based marketing therefore should not be viewed as an isolated source of value; its contribution is connected to how the business uses technology together with customer knowledge and engagement (Barney, 1991) (Huang & Rust, 2021).

CONCLUSION

This study examined the relationship between AI-Based Digital Marketing and Sustainable Value Creation, with Customer Engagement as a mediating variable at TokoHokkie688 Online Cosmetics Store. The findings support the proposed relationships between AI-Based Digital Marketing and Customer Engagement, Customer Engagement and Sustainable Value Creation, and AI-Based Digital Marketing and Sustainable Value Creation. Customer Engagement also mediates the relationship between AI-Based Digital Marketing and Sustainable Value Creation, indicating that

customer involvement represents an important mechanism through which AI-supported marketing relates to perceived long-term value.

From a Resource-Based View perspective, the findings suggest that technological capabilities and customer relationships should be considered together in understanding value creation in an online cosmetics MSME. AI-supported marketing may help the store provide more relevant digital content and customer interactions, while Customer Engagement may contribute to maintaining customer relationships and perceived value over time.

These findings should be interpreted within the scope of the study. Sustainable Value Creation was measured through customers' perceptions of continuing benefits and relationships rather than direct financial performance or actual business sustainability. For TokoHokkie688, gradual improvements in personalization, customer information utilization, and digital communication may provide opportunities to strengthen customer engagement.

Future research could examine other cosmetic MSMEs, compare digital platforms, and incorporate additional variables such as trust, customer experience, privacy concerns, and loyalty to provide a broader understanding of AI-supported digital marketing and sustainable value creation.

RECOMMENDATION

This study recommends that TokoHokkie688 optimize AI-based digital marketing by improving customer personalization, product recommendations, and digital communication to strengthen customer engagement and sustainable value creation. Future research should involve a larger sample and other cosmetic MSMEs to improve the generalizability of the findings and explore additional factors that may influence sustainable value creation.

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