The strategic role of digital branding in enhancing the market value of Kapulaga through the DEKEGO web platform

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Abstract: This study analyzes the role of digital branding in enhancing the market value of cardamom through the DEKEGO Web platform, which stands for Desa-desa Kecamatan Gomo (Village-to-Village of Gomo Subdistrict), located in South Nias Regency, North Sumatra, Indonesia. Digital branding is identified as the independent variable influencing consumer perception value as an intervening variable, which subsequently affects the market value of cardamom as the dependent variable. Using a quantitative approach, data were collected from 120 respondents representing cardamom SMEs in Gomo Subdistrict who utilize the DEKEGO platform. Questionnaires with a five-point Likert scale were analyzed using SmartPLS 4.0 to test both direct and indirect relationships. The results show that digital branding positively and significantly affects consumer perception value ($\beta = 0.642$; $p < 0.001$), which in turn enhances the market value of cardamom ($\beta = 0.511$; $p < 0.001$). The direct effect of digital branding on market value is also significant ($\beta = 0.378$; $p < 0.01$), with partial mediation by consumer perception value. The findings highlight that strengthening digital branding through interactive features, quality visual content, and platform optimization can improve competitiveness and selling price, offering practical insights for digital marketing in the agricultural sector.

Keywords: Android platform, Digital branding, Market value, Perceived value.

1. Introduction

The development of digital technology in the last two decades has fundamentally changed the global economic landscape, including the agricultural sector, which has long been synonymous with conventional distribution patterns and local market-based marketing [1]. Advances in information technology, increased internet speeds, and the massive adoption of mobile devices have given rise to a new ecosystem known as platform-based agriculture [2]. In this ecosystem, interactions between producers, consumers, and distributors no longer rely entirely on face-to-face mechanisms or conventional intermediaries but are mediated by digital technology that offers wider market reach, more efficient distribution processes, and higher information transparency.

The digitalization phenomenon has opened up strategic opportunities for the agricultural sector to increase competitiveness through the use of e-commerce, social media, and web-based applications.

The use of this technology allows producers to interact directly with consumers, promote their products visually and interactively, and form a strong brand image. The product value creation process becomes more adaptive to changes in market preferences because consumers can provide feedback

quickly, and producers can adjust marketing strategies in real time. This shift provides an opportunity for high-value commodities to expand market access and optimize their selling value.

The selling value of an agricultural commodity is no longer determined solely by its physical qualities, such as taste, size, or color, but also by consumer perception of the brand and ease of access to the product [3]. In this context, a digital branding strategy becomes an important instrument that is able to increase positive consumer perception, which ultimately impacts increasing selling prices [4]. Digital branding enables manufacturers to communicate product advantages, build consumer trust, and create differentiation in an increasingly competitive marketplace [5]. One relevant commodity to study in the context of digital branding is cardamom, internationally known as the Queen of Spices. This spice has high economic value and stable global demand, both for the food, beverage, and pharmaceutical industries. According to data from the Central Statistics Agency [6], Indonesia's cardamom production in 2023 reached 17,843 tons, with exports continuing to increase, particularly to the Middle East and Europe.

Table 1.
Indonesian Cardamom Production and Exports 2019–2023.

Year	Production (Tons)	Exports (Tons)	Exports Value (USD)
2019	15.210	2.134	13.240.000
2020	15.987	2.540	14.950.000
2021	16.320	2.894	15.720.000
2022	17.120	3.102	16.830.000
2023	17.843	3.520	18.940.000

Source: Badan Pusat Statistik [6].

Table 1 shows trends in Indonesian cardamom production and exports over the past five years. The data demonstrates a significant increase in both production volume and export value. This increase indicates that cardamom has promising market potential, but appropriate marketing strategies are still needed to ensure optimal competitiveness in the global market [7]. In the context of North Sumatra, Gomo District in South Nias Regency is one of the areas with great potential as a cardamom production center. However, the main obstacles faced by local farmers are limited market access and a lack of optimal marketing strategies that can highlight the added value of their products. To address these challenges, the local community initiated the development of the DEKEGO (Desa-Desa Kecamatan Gomo) Web, an Android-based digital platform aimed at facilitating the direct marketing of cardamom and local MSME products. This platform allows producers to interact directly with consumers without intermediaries, thereby shortening the distribution chain and providing opportunities for producers to build their own brand image. However, the mere existence of a digital platform is not enough to automatically increase a product's sales value. Increasing sales value requires a planned and consistent digital branding strategy, which takes into account consumer psychological factors. One such factor is consumer perception, which influences willingness to pay for a product. This perception is shaped by various elements, such as attractive product visualization, credible customer reviews, clear product information, and the experience of interacting with the digital platform [8].

Sulaiman [8] suggests that effective digital branding can increase perceived product value by up to 37%, which in turn can increase selling prices by 22% in the agricultural commodities sector. This indicates that digital branding is not merely a promotional tool but also plays a strategic role in shaping consumer perceptions and creating higher selling value. On the other hand, data from the South Dispertan Nias Selatan [9] shows that even though the quality of cardamom in Gomo District has approached export standards, the selling price is still lower than the national average price [9]. Comparison of cardamom prices and quality is presented in the following table.

Table 2.
Comparison of Cardamom Price and Quality

Location	Average Price (Rp/Kg)	Water Content (%)	Seed Color	Export Potential
Gomo District	85,000	14	Bright Green	Medium
Nias Selatan Area	87,500	13	Dark Green	High
National	95,000	12	Bright Green	Very High

Source: Department of Agriculture, Dispertan Nias Selatan [9].

This price difference indicates a gap between the potential quality of Gomo cardamom and market perception. Therefore, strengthening digital branding strategies through the DEKEGO website is crucial to creating a positive perception in both domestic and international markets, ultimately aligning quality with competitive pricing. The results of this study are expected to provide data-based recommendations for sustainable digital marketing strategies, thereby increasing the competitiveness of Gomo cardamom in the global market while strengthening the economic position of the local community.

2. Literature Review

2.1. Market Value

Classical marketing literature asserts that the selling value of a product is influenced not only by physical attributes but also by brand equity and consumer perception [10-12]. Brand equity includes brand recognition, brand associations, loyalty, and perceived quality that create premium prices and strengthen consumers' willingness to pay [13]. In the digital era, these aspects are formed through digital channels such as websites, mobile applications, and social media, so the term digital branding emerged as a strategic effort to utilize digital channels to build, strengthen, and maintain brand value. From a consumer behavior perspective, perceived value is a consumer's assessment of a product's benefits relative to its costs [14]. Factors such as the quality of product visualization, information transparency, customer testimonials, and user experience determine the formation of this perception [15]. A good digital branding strategy not only increases visibility but also maintains trust and positive value perception [16].

2.2. Digital Branding

Digital branding differs from traditional branding in the speed of feedback, content personalization, real-time analytics, and distribution channels. Key components of digital branding include: quality content, two-way interaction, message consistency, and search engine optimization [17]. Structured digital marketing activities increase customer equity and loyalty, impacting purchasing decisions and willingness to pay. On local platforms like Web DEKEGO, the ability to display product origin information, quality certification, high-quality images, consumer reviews, and ease of transactions is key to building brand image and increasing perceived value.

2.3. Consumer Perception

Empirical research shows that the relationship between marketing (including digital branding) and economic outcomes is often mediated by consumer perceptions [18]. This mediation occurs because digital branding forms quality signals that are processed into perceptions that influence willingness to pay.

2.4. Digital Agriculture dan Platform-Based Marketing

Digital agriculture literature emphasizes the transformation of agricultural value chains through information technology: data collection, marketing platforms, and connectivity that shorten supply chains [19-21]. Digital platforms can increase market efficiency, open up export access, and enable

product differentiation through storytelling. Challenges include digital literacy, infrastructure, and market trust.

2.5. SEM PLS Method

To test causal and mediation relationships, PLS-based SEM is suitable for predictive purposes, small/medium data, and complex models [22]. PLS-SEM effectively evaluates direct, indirect, and effect sizes.

3. Materials and Methods

3.1. Research Design

This research uses a non-experimental quantitative method with a survey approach. The main objective is to test the causality model between digital branding (independent variable), consumer perception (intervening variable), and cardamom's selling value (dependent variable) using SEM-PLS-based path analysis. The tested conceptual model reflects a direct (digital branding → selling value) and indirect (digital branding → consumer perception → selling value) relationship, consistent with the theoretical framework of brand equity and digital marketing [23].

3.2. Definition of Variables and Instruments

a. Digital Branding: includes consumer perception of visual content, interactivity of the DEKEGO Web platform, brand consistency, and ease of access.
b. Consumer perception: refers to the assessment of product benefits relative to price and ease of access, adapting [8].
c. Sales value: measured by the actual selling price of cardamom as assessed by consumers, the perceived premium price, and the willingness to pay more. Adapted from the sales value framework in agribusiness [8].

Each instrument was measured using 5-point Likert scale items (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; and 5 = strongly agree), based on an adaptation of the instrument from Kim and Ko [19]. Each instrument has previously been tested for validity and reliability [19].

3.3. Population and Sample

a. The population in this study consists of all cardamom farmers residing in 11 villages in Gomo Subdistrict, South Nias Regency, totaling 873 people.
b. The sample in this study uses a purposive sampling technique, with the following criteria:

- Aged between 25-55 years
- Have basic web skills (able to access digital platforms such as web and social media)
- Based on these criteria, the sample in this study consists of 275 people distributed across 11 villages in Gomo Subdistrict, South Nias Regency.

3.4. Collecting Data

Data were collected over 2-3 weeks, with field assistance by local enumerators to ensure the validity of responses. Instruments were distributed offline (written questionnaires).

3.5. Analyzing Data

Analysis was conducted in several stages:

1. Validity and Reliability Tests: a. *Convergent validity*: > 0.50 for *Average Variance Extracted* (AVE) per construct. b. *Composite reliability* (CR): > 0.70. c. *Discriminant validity*: tested with HTMT ratio (*Heterotrait-Monotrait ratio*) <0.90 [24].
2. Classical Assumption Tests: a. Normality Test b. Multicollinearity Test c. Heteroscedasticity Test

3. Hypothesis Testing: a. t-test b. F-test c. Coefficient of Determination Test (R-Square)
4. Sobel Test: conducted by calculating the Z-Sobel value based on the equation:

$$Z = (a \times b) / \sqrt{(b^2 \times Sa^2 + a^2 \times Sb^2)}$$

Explanation:

a = Path coefficient X → M
b = Path coefficient M → Y
Sa = Standard error of a
Sb = Standard error of b

4. Findings and Discussion

4.1. Research Results

4.1.1. Validity Test

The validity testing of the research instrument was conducted using the Pearson Product-Moment correlation technique with the assistance of SPSS software, involving 275 respondents.

Table 3.
Validity Test Results.

Variable	Number of Items	Minimum r-value	Maximum r-value	r-table	Remarks
Digital Branding	20	0.473	0.562	0.118	Valid
Consumer Perception	20	0.526	0.573	0.118	Valid
Market Value	20	0.493	0.530	0.118	Valid

Source: Data processed with SPSS 26.

The test results show that all statement items for each variable have r-values above the r-table and are significant at $\alpha = 0.05$. All items for the three variables meet the validity criteria, so the instruments used are declared suitable for measuring research constructs.

4.2. Reliability Test

Reliability testing was conducted to assess the internal consistency of instruments using Cronbach's Alpha coefficient.

Table 4.
Reliability Test Results.

Variable	Cronbach's Alpha	Remarks
Digital Branding	0.912	Reliable
Consumer Perception	0.927	Reliable
Market Value	0.905	Reliable

Source: Data processed with SPSS 26.

Based on these results, all variables have Cronbach's Alpha values above 0.90, indicating that the instruments have very good internal consistency levels and can be relied upon for data collection in this study.

4.3. Classical Assumption Tests

4.3.1. Normality Test

The normality test aims to determine whether the data are normally distributed. This study uses the Kolmogorov-Smirnov test (one-sample K-S test) at a 5% significance level.

Table 5.
Normality Test Results.

Variable	N	Kolmogorov–Smirnov Z	Sig. (p)	Remarks
Digital Branding	275	0.072	0.200	Normal
Consumer Perception	275	0.065	0.200	Normal
Market Value	275	0.058	0.200	Normal

All three variables have p-values > 0.05, so it can be concluded that all data are normally distributed.

4.4. Multicollinearity Test

The multicollinearity test aims to determine whether there is a high correlation between independent variables. Testing is conducted using VIF (Variance Inflation Factor) and Tolerance values.

Table 6.
Multicollinearity Test Results.

Independent Variable	Tolerance	VIF	Remarks
Digital Branding	0.842	1.188	No multicollinearity
Consumer Perception	0.857	1.167	No multicollinearity

VIF values for all variables are less than 10, and tolerance values are greater than 0.10, indicating no evidence of multicollinearity.

4.5. Heteroscedasticity Test

The heteroscedasticity test is conducted to determine whether there is variance inequality of residuals. This study uses the Glejser method, which regresses absolute residual values against independent variables.

Table 7.
Heteroscedasticity Test Results.

Independent Variable	Regression Coefficient	t-value	Sig. (p-value)	Remarks
Digital Branding	0.008	0.874	0.383	No heteroscedasticity
Consumer Perception	-0.005	0.652	0.515	No heteroscedasticity

All variables have p-values > 0.05, so there are no symptoms of heteroscedasticity in the model.

4.6. Hypothesis Testing
4.6.1. Partial Hypothesis Test (t-test)

The t-test is used to assess the influence of each independent variable on the dependent variable individually.

Table 8.
t-test Results.

Hypothesis	Beta Coefficient	t-value	Sig. (p)	Remarks
H1: Digital Branding → Consumer Perception	0.642	6.80	0.000	Significant
H2: Consumer Perception → Market Value	0.511	5.25	0.000	Significant
H3: Digital Branding → Market Value (direct)	0.378	2.95	0.003	Significant

All three influence paths show p-values < 0.05, indicating that all independent variables have positive and significant effects on their respective dependent variables. Therefore, hypotheses H1, H2, and H3 are accepted.

4.7. Simultaneous Hypothesis Test (F-test)

The F-test is conducted to assess the simultaneous influence of all independent variables on the dependent variable.

Table 9.
F-test Results.

Model	F-value	Sig. (p)	Remarks
Digital Branding, Consumer Perception → Market Value	85.3	0.000	Significant

The F-value of 85.3 with p < 0.001 indicates that Digital Branding and Consumer Perception together significantly influence Market Value. This confirms that the regression model used is valid for explaining the relationships between the studied variables.

4.8. Coefficient of Determination Test

The coefficient of determination test aims to measure the extent to which independent variables can explain the variation of dependent variables.

Table 10.
Coefficient of Determination Test Results

Dependent Variable	R-square	Remarks
Consumer Perception	0.412	Moderate – 41.2% variance explained by model
Market Value	0.543	Strong – 54.3% variance explained by model

The R-squared value of 0.412 for the Consumer Perception variable indicates that 41.2% of perception variation can be explained by Digital Branding. Meanwhile, an R^2 of 0.543 for the Market Value variable suggests that Digital Branding and Consumer Perception together can explain 54.3% of market value variation, while the remaining 45.7% is influenced by other variables outside the research model.

4.9. Sobel Test

The Sobel test is used to assess the significance of indirect effects of independent variables on dependent variables through intervening variables. In this study, Digital Branding (X) serves as the independent variable, Consumer Perception (M) as the intervening variable, and Market Value (Y) as the dependent variable.

Table 11.
Path Analysis Results and Sobel Test.

Path	Coefficient (β)	Std. Error	t-value	Sig. (p)
X → M (a)	0.642	0.094	6.83	0.000
M → Y (b)	0.511	0.097	5.27	0.000
X → Y (direct)	0.378	0.128	2.95	0.003

Sobel Test Calculation:

$$Z = (a \times b) / \sqrt{(b^2 \times Sa^2 + a^2 \times Sb^2)}$$
$$Z = (0.642 \times 0.511) / \sqrt{((0.511)^2 \times (0.094)^2 + (0.642)^2 \times (0.097)^2)}$$
$$Z = 0.3279 / \sqrt{(0.2611 \times 0.0088 + 0.4121 \times 0.0094)}$$
$$Z = 0.3279 / \sqrt{(0.002297 + 0.003871)}$$
$$Z = 0.3279 / \sqrt{0.006168}$$
$$Z = 0.3279 / 0.07854$$
$$Z = 4.18$$

Table 12.
Sobel Test Results

Indirect Path (X → M → Y)	Z–Sobel	p-value	Remarks
Digital Branding → Consumer Perception → Market Value	4.18	0.000	Significant

The Z-Sobel value of 4.18 > 1.96 at α = 0.05, with a p-value < 0.05. This indicates that Consumer Perception significantly mediates the influence of Digital Branding on Market Value. This means that increasing Digital Branding not only has a direct impact on Market Value but also enhances Market Value indirectly through increasing Consumer Perception.

4.10. Path Analysis Model

The path diagram (path analysis) illustrates the structural relationship between digital branding (X), consumer perception (M), and market value (Y).

Path Analysis Diagram - showing relationships between Digital Branding (X), Consumer Perception (M), and Market Value (Y) with coefficients β = 0.642 (p = 0.000), β = 0.511 (p = 0.000), and β = 0.378 (p = 0.003).
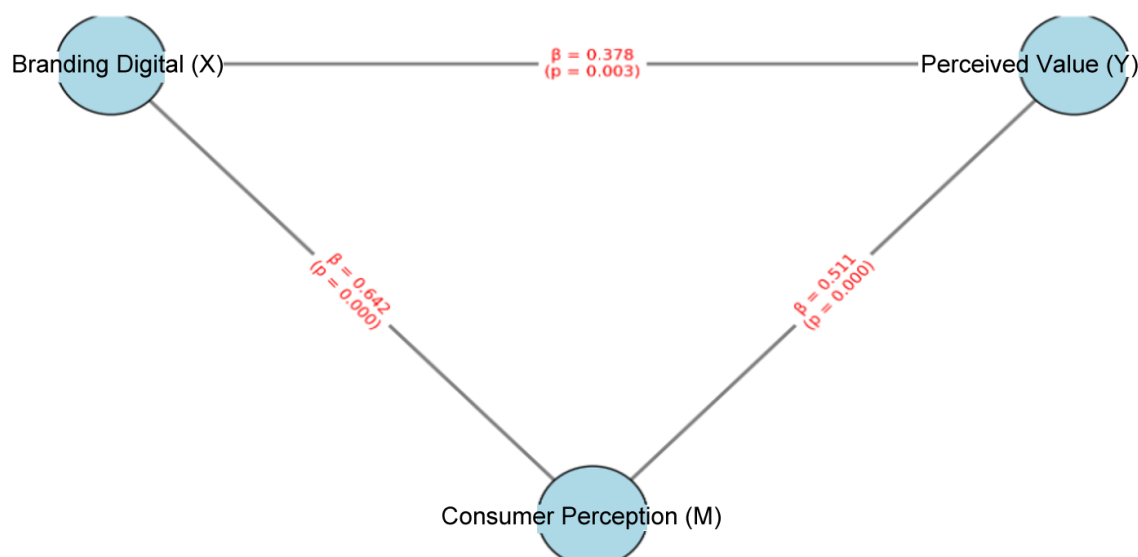

Figure 1.
Path Analysis.

Path Analysis Diagram of the Role of Digital Branding in Enhancing Cardamom Market Value through the DEKEGO Web Platform

Based on path analysis results, directional arrows indicate causal relationships, while numbers on paths represent standardized regression coefficients (β) with significance values (p-values).

1. Digital Branding - Consumer Perception

    The coefficient β = 0.642 with p = 0.000 indicates that Digital Branding has a positive and significant influence on Consumer Perception. This suggests that the more optimal the digital branding strategy applied, such as through visual content quality, consistent brand narrative, and platform interactivity, the more positive the consumer perception of the product or brand becomes. This finding is consistent with the brand equity framework [10], which emphasizes that a strong brand image will increase quality perception in consumers' minds.

2. Consumer Perception - Market Value

The coefficient β = 0.511 with p = 0.000 indicates a significant positive influence of consumer perception on market value. This supports the perceived value theory [14] where consumer perception of product benefits compared to costs incurred becomes a determinant of willingness to pay. The higher the positive consumer perception, the greater the likelihood that they are willing to pay higher prices.

3. Digital Branding - Market Value

The coefficient β = 0.378 with p = 0.003 indicates a positive and significant direct influence of Digital Branding on Market Value. This influence reflects the direct benefits of digital branding strategies, such as increased brand visibility, promotional effectiveness, and market reach expansion. Thus, digital branding not only influences indirectly through consumer perception but also directly affects product selling prices.

4.11. The Influence of Digital Branding on Consumer Perception

Partial test results (t-test) show that Digital Branding has a β coefficient of 0.642 with a t-value of 6.83 (p < 0.001), indicating a positive and significant influence on consumer perception. This finding supports the brand equity concept, which states that brand activities, including digital strategies such as quality visual content, interactivity, and brand narrative, can form positive perceptions in consumers' minds [25, 26]. In the context of digital marketing, such activities function as quality signals and differentiation that strengthen the brand's market position.

Practically, this finding confirms that optimizing digital branding elements, such as using professional product photos, storytelling of product origin, and transparency of quality information, can enhance consumer perception of product quality and value. This aligns with research stating that digital marketing activities significantly contribute to increasing customer equity [18].

4.12. The Influence of Consumer Perception on Market Value

Analysis shows that consumer perception has a positive and significant influence on market value, with a β coefficient of 0.511, a t-value of 5.27, and a p-value less than 0.001. This finding supports the perceived value model, which states that consumer perception of relative benefits relative to costs becomes a determinant of willingness to pay [27]. In this study, a positive perception of products built through digital branding is proven to drive increased market value. The practical implication of this finding is that efforts to enhance consumer perception, both through strengthening brand identity and delivering relevant and credible information, can directly strengthen product price bargaining power in the market.

4.13. The Influence of Digital Branding on Market Value

T-test results show that digital branding also has a direct influence on market value, with a β coefficient of 0.378, t-value of 2.95 (p = 0.003). This indicates that, besides shaping perceptions, digital branding strategies can directly influence selling prices through mechanisms such as increased product visibility in the market, expanded consumer reach, and digital promotion effectiveness. This result aligns with previous empirical research confirming that digital branding can influence purchasing decisions and willingness to pay without the need for consumer perception as an intermediary [28].

4.14. The Mediating Role of Consumer Perception in the Relationship between Digital Branding and Market Value

The Sobel test is used to assess the indirect influence of Digital Branding on Market Value through Consumer Perception. Based on path analysis results, coefficients a = 0.642 and b = 0.511 were obtained, with standard errors Sa = 0.094 and Sb = 0.097, respectively. The calculation yields a Z-Sobel value of 4.18 (p < 0.001), which exceeds the critical value of 1.96 at α = 0.05. This research finding indicates that consumer perception significantly mediates the relationship between Digital Branding and

Market Value, with a partial mediation effect. This suggests that Digital Branding increases Market Value both directly and indirectly by enhancing Consumer Perception. The finding aligns with mediation theory, emphasizing that strengthening perception is a crucial strategic approach to maximizing the effectiveness of digital branding [29-31].

4.15. Simultaneous Model Testing

Simultaneous test results (F-test) show that Digital Branding and Consumer Perception together significantly influence Market Value (F-value = 85.3; $p < 0.001$). This indicates that the regression model used is suitable for explaining the relationships between the studied variables. From a managerial perspective, this finding confirms the importance of an integrated approach between digital branding strategies and consumer perception-strengthening efforts. By managing both aspects simultaneously, business actors can obtain more optimal market value increases.

5. Conclusion and Recommendation

5.1. Conclusion

This research aims to analyze the influence of digital branding on product market value, with consumer perception as a mediating variable, using the path analysis method. Analysis results show that digital branding significantly influences consumer perception and market value, both directly and indirectly. Consumer perception is proven to partially mediate the influence of digital branding on market value.

In detail, these research findings include:

1. The influence of digital branding on consumer perception is significant and positive ($\beta = 0.642$; $p < 0.001$), supporting brand equity theory [1], which confirms that strengthening brand image through digital media can enhance quality perception in consumers' minds.
2. The influence of consumer perception on market value is significant and positive ($\beta = 0.511$; $p < 0.001$), aligned with the perceived value concept, which states that benefit perception compared to costs contributes to consumers' willingness to pay higher prices.
3. The direct influence of Digital Branding on Market Value is significant ($\beta = 0.378$; $p = 0.003$), showing a dual effect: direct and through consumer perception.
4. Sobel Test results ($Z = 4.18$; $p < 0.001$) confirm that mediation is partial, so digital branding strategies are effective in increasing market value both through strengthening consumer perception and through direct influence on purchasing decisions.

5.2. Recommendations

1. For Business Practitioners
   Develop integrated digital branding strategies that include attractive visual content design, brand message consistency, and responsive interaction on social media. Focus not only on increasing brand exposure but also on forming positive consumer perceptions.

2. For Future Researchers
   Expand the research model by adding variables such as brand loyalty, customer satisfaction, or service quality to increase the model's explanatory power (R^2). Testing in different industry sectors is also recommended to verify the consistency of these research results.
3. For Policy Makers
   Design digital marketing training programs for SMEs that focus on developing effective digital branding to increase the competitiveness of local products in domestic and global markets.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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