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The Role of Green Marketing and Sustainability Practices in Increasing Brand Equity in the Indonesian E-commerce Sector

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Abstract: This study aims to analyze the effect of green marketing and sustainability practices on brand equity in the Indonesian e-commerce sector. A quantitative approach with an explanatory research design was used to test the relationship between variables. Data were collected through an online survey using a structured questionnaire from 200 respondents who are e-commerce consumers in Indonesia. The analysis was conducted using Structural Equation Modeling (SEM) to test the direct and indirect effects. The results showed that green marketing has a significant positive effect on brand equity ($\beta = 0.42$, $p < 0.001$). Sustainability practices also have a positive effect on brand equity ($\beta = 0.38$, $p < 0.004$). In addition, sustainability practices are proven to mediate the relationship between green marketing and brand equity with an indirect effect of 0.15 ($p = 0.032$). These findings indicate that green marketing strategies integrated with sustainability practices can increase consumer loyalty and trust, which ultimately strengthen brand equity. This study provides theoretical contributions to the green marketing and sustainability literature, and offers practical guidance for e-commerce companies to adopt environmentally friendly strategies effectively. Managerial implications include the importance of transparent communication and consistent adoption of sustainability practices to create competitive advantage. This study also opens up opportunities for further exploration in other sectors or with different methods.

Keywords: Green Marketing, Sustainability Practices, Brand Equity, E-Commerce, Sustainability.

INTRODUCTION

The development of the e-commerce sector in Indonesia has become one of the main pillars in supporting the national digital economy. Based on reports from the Central Statistics Agency (BPS) and Google-Temasek (2023), the e-commerce sector contributed up to 75.6% of the total value of Indonesia's digital economy, which is estimated to reach USD 82 billion in 2022. This figure is projected to continue to increase, along with increasingly widespread internet penetration and changes in people's shopping behavior towards online platforms. Indonesia is currently the largest e-commerce market in Southeast Asia, with major players such as Tokopedia, Shopee, and Bukalapak leading the market in providing online shopping

services that are increasingly integrated with the needs of modern society (Google-Temasek, 2023).

However, this rapid growth presents new challenges, one of which is the increasing environmental impact. The increasing volume of e-commerce transactions means an increase in the use of single-use packaging, carbon emissions from logistics, and e-waste. In this context, consumers are increasingly critical of business practices carried out by companies, especially regarding environmental impact. According to a survey conducted by Nielsen (2022), 73% of consumers in Indonesia stated that they prefer brands that are committed to environmental sustainability. This shows that there is great pressure for e-commerce business actors to adopt environmentally friendly and sustainable strategies.

One strategic approach that can be taken is the implementation of green marketing and sustainability practices. Green marketing, as an effort to promote environmentally friendly products or services, has proven effective in increasing consumer loyalty and company competitiveness. According to Polonsky (1994), green marketing covers all aspects of marketing strategy, from product design, production processes, to communication with consumers. Meanwhile, sustainability practices include activities designed to reduce negative impacts on the environment, such as the use of renewable energy, waste management, and recycling programs.

In the e-commerce sector, implementing green marketing and sustainability practices often faces complex challenges. For example, many platforms still face difficulties in ensuring that their supply chains truly meet sustainability standards. On the other hand, consumers are often less informed about the sustainability efforts undertaken by e-commerce companies, which affects their perception of the brand. A study by Chen et al. (2020) shows that effective communication about sustainability initiatives plays a vital role in building brand equity. Brand equity, which includes elements such as brand awareness, perceived quality, and brand loyalty, is essential to maintaining a competitive advantage in a competitive market such as e-commerce.

In the Indonesian context, research related to green marketing and sustainability practices in the e-commerce sector is still relatively limited. Most studies focus more on the manufacturing or traditional retail sectors. A study by Atmoko and Setyawan (2013) revealed that green marketing can increase brand equity through the formation of a positive brand image. However, the study has not specifically highlighted the unique characteristics of the e-commerce sector, such as high dependence on digital technology and logistics. In addition, the role of sustainability practices as a mediating or moderating variable in the relationship between green marketing and brand equity is also rarely explored.

In the long term, this research also aims to encourage the adoption of more environmentally friendly business practices in Indonesia, in line with the global agenda to achieve the Sustainable Development Goals (SDGs), especially in the aspect of responsible consumption and production (SDG 12). Thus, this research is not only academically relevant, but also has practical and strategic impacts on the sustainability of the e-commerce industry in Indonesia.

Framework of thinking

Green marketing is a marketing strategy designed to promote environmentally friendly products or services. Polonsky (1994) states that green marketing involves environmental considerations throughout the marketing process, from product design to distribution. In the context of e-commerce, green marketing includes marketing campaigns that emphasize the use of environmentally friendly packaging, green-labeled products, and corporate transparency regarding environmental conservation commitments. A study by Sanidewi and Paramita (2018) found that the implementation of green marketing not only builds a positive brand image but

also increases customer loyalty, which ultimately strengthens brand equity. Based on this, the proposed hypothesis is:

H1: Green marketing has a positive influence on brand equity.

Sustainability practices encompass corporate actions aimed at supporting environmental sustainability. These practices include waste management, renewable energy use, and recycling programs, as well as initiatives that reduce negative impacts on the environment. In e-commerce, sustainability practices are often manifested through reducing the carbon footprint in product delivery, using recycled materials for packaging, and adopting environmentally friendly technologies. Sustainability practices can act as a factor that strengthens the influence of green marketing on brand equity, as environmentally conscious consumers tend to evaluate brands more positively if they see consistency in the company's sustainability efforts (Chen et al., 2020). Thus, the proposed hypothesis is:

H2: Sustainability practices have a positive influence on brand equity.

Brand equity refers to the added value that a brand has from a consumer's perspective. According to Aaker (1991), brand equity consists of several elements, including brand awareness, brand loyalty, and perceived quality. In the context of green marketing and sustainability practices, brand equity can be strengthened through positive consumer perceptions of the company's commitment to the environment. A study by Chen et al. (2020) shows that when companies consistently implement sustainability strategies that are in line with consumer values, this can increase brand loyalty and perceived quality, thereby strengthening brand equity.

H3: Sustainability practices mediate the relationship between green marketing and brand equity.

Overall, this study proposes a conceptual relationship between green marketing, sustainability practices, and brand equity, with sustainability practices acting as a mediator. The conceptual model of this study can be described as follows:

Table 1. Framework of Thinking

Independent Variable	Mediating Variable	Dependent Variable	Tested Relationships	Hypothesis
Green Marketing	-	Brand Equity	Green marketing has a direct impact on brand equity.	H1
Green Marketing	Sustainability Practices	Brand Equity	Sustainability practices mediate the relationship between green marketing and brand equity.	H3
Sustainability Practices	-	Brand Equity	Sustainability practices have a direct impact on brand equity.	H2

Research methods

This research method uses a quantitative approach with an explanatory research design that aims to test the causal relationship between green marketing, sustainability practices, and brand equity in the context of e-commerce in Indonesia. Quantitative research is chosen because it allows researchers to measure the relationship between variables objectively and systematically (Creswell, 2014).

The research population was consumers of e-commerce platforms in Indonesia who had made purchases from platforms that implemented green marketing strategies or sustainability practices, such as the use of environmentally friendly packaging or recycling programs. The sampling technique used purposive sampling, with the respondent criteria being consumers who were aware of or exposed to environmental initiatives from certain e-commerce platforms.

The minimum sample was determined to be 200 respondents, in accordance with the recommendations of Hair et al. (2014) for Structural Equation Modeling (SEM)-based analysis.

Data collection was conducted through an online survey using a structured questionnaire. The questionnaire was divided into three main sections covering the variables of green marketing, sustainability practices, and brand equity. Each section consists of statements measured using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The green marketing variable includes indicators such as promotion of environmentally friendly products and the company's commitment to environmental preservation. The sustainability practices variable includes indicators such as recycling programs and carbon footprint reduction. The brand equity variable includes indicators of brand awareness, brand loyalty, and perceived quality.

The data obtained were analyzed using Structural Equation Modeling (SEM) analysis techniques. The analysis process began with validity and reliability tests to ensure that the research instrument had accuracy in measuring variables. Validity tests were conducted using Confirmatory Factor Analysis (CFA), while reliability was tested using Cronbach's alpha values with a minimum limit of 0.7 as an acceptable criterion (Hair et al., 2014). After the instrument was validated, regression analysis was conducted to test the relationship between variables in the research model.

Hypothesis testing is conducted based on the path coefficient value and significance level. The hypothesis is considered supported if the significance value is $p < 0.05$. In addition, mediation analysis is conducted to test the role of sustainability practices as a mediating variable between green marketing and brand equity. The bootstrapping method is used to ensure the mediation effect, in accordance with the approach recommended by Preacher and Hayes (2008). The overall research method is designed to provide reliable results in explaining the role of green marketing and sustainability practices on brand equity. The results of the study are expected to provide theoretical contributions to the literature on green marketing and sustainability, as well as provide practical guidance for e-commerce companies in Indonesia.

RESULTS AND DISCUSSION

Results

The results of descriptive statistics show the average value (mean), standard deviation, reliability (Cronbach's Alpha), and regression coefficient for each variable.

Table 2. Descriptive

Variables	Mean	Standard Deviation	Cronbach's Alpha	Regression Coefficient (β)	p-value
Green Marketing	4.12	0.65	0.87	0.42	0.001
Sustainability Practices	3.98	0.72	0.84	0.38	0.004
Brand Equity	4.25	0.68	0.89	-	-

Descriptive analysis shows that the average score for green marketing is 4.12 (SD = 0.65), indicating that respondents agree that green marketing strategies are implemented by e-commerce platforms. The reliability of this variable was tested using Cronbach's Alpha with a result of 0.87, indicating a good level of reliability (Hair et al., 2014). Regression analysis shows that green marketing has a significant effect on brand equity with a regression coefficient of $\beta = 0.42$ ($p = 0.001$), supporting the hypothesis H1 that green marketing has a positive effect on brand equity. The average score for sustainability practices is 3.98 (SD = 0.72), indicating that sustainability practices on e-commerce platforms are considered quite good by consumers. The reliability of this variable is also high with a Cronbach's Alpha of 0.84. Regression analysis shows that sustainability practices have a significant effect on brand equity with $\beta = 0.38$ ($p =$

0.004). These results support the hypothesis H2 that sustainability practices have a positive effect on brand equity. Brand equity has the highest average score among the three variables, which is 4.25 (SD = 0.68), indicating that consumers have a positive perception of the brand equity of the e-commerce platform studied. The reliability of this variable is very high with a Cronbach's Alpha of 0.89. Mediation analysis was conducted to test the hypothesis H3 regarding the role of sustainability practices as a mediating variable between green marketing and brand equity. The results of the analysis using the bootstrapping approach (Preacher & Hayes, 2008) showed that sustainability practices significantly mediate the relationship between green marketing and brand equity ($p < 0.05$). The mediation effect contributed 35% to strengthening the relationship between variables.

Table 3. results of SEM (Structural Equation Modeling) path analysis

Path	Estimate (β)	Standard Error	Critical Ratio (CR)	p- value
Green Marketing → Brand Equity	0.42	0.05	8.40	0.001
Sustainability Practices → Brand Equity	0.38	0.06	6.33	0.004
Green Marketing → Sustainability Practices	0.45	0.04	11.25	0.001

Green marketing has a significant positive effect on brand equity with an estimated value of 0.42, indicating that increasing green marketing strategies can significantly improve consumer brand perception. The p value = 0.001 confirms that this relationship is significant at the 99% confidence level, supported by a critical ratio of 8.40. Sustainability practices also have a positive effect on brand equity, with an estimated value of 0.38. Increasing sustainability practices, such as waste management and reducing carbon footprints, have been shown to increase brand awareness and loyalty. This relationship is significant with $p = 0.004$, supported by a critical ratio of 6.33. Green marketing has a significant effect on sustainability practices with an estimated value of 0.45. This shows that the implementation of green marketing strategies encourages companies to adopt better sustainability practices. This relationship is significant with $p = 0.001$, supported by a critical ratio of 11.25. The overall results show that green marketing not only has a direct effect on brand equity, but also influences through sustainability practices as a mediating variable. These findings reinforce the importance of integrating both strategies to create a strong and sustainable brand in the e-commerce sector.

Discussion

Green marketing was found to have a significant influence on brand equity with an estimated value of 0.42 and a p-value of 0.001. These results are consistent with previous research by Sanidewi and Paramita (2018) which found that green marketing strategies increase consumers' positive perceptions of brands, especially in the context of environmentally friendly products. Polonsky (1994) also explained that effective green marketing can create brand loyalty because consumers appreciate the company's efforts to support sustainability. In the context of e-commerce, strategies such as promoting environmentally friendly packaging and transparency about environmental impacts are key elements to attract the attention of environmentally conscious consumers.

Sustainability practices have a significant effect on brand equity with an estimated value of 0.38 and a p-value of 0.004. This finding supports the results of Chen et al.'s (2020) study, which states that sustainability practices, such as recycling programs and reducing carbon footprints, can increase brand loyalty and consumer trust. A study by Atmoko and Setyawan (2013) also shows that consistency in sustainability practices provides a positive signal to consumers regarding a company's commitment to the environment. In the context of

Indonesian e-commerce, the adoption of environmentally friendly technology in the supply chain is a major factor in building positive brand perceptions.

Green marketing was also found to have a significant influence on sustainability practices with an estimated value of 0.45 and a p-value of 0.001. These results indicate that companies that focus on green marketing tend to adopt better sustainability practices. This finding is in line with research by Leonidou et al. (2013), which explains that the implementation of green marketing motivates companies to improve internal processes to support sustainability. In the context of e-commerce, this can be realized through better waste management, the use of renewable energy, and collaboration with environmentally friendly logistics partners.

The mediation effect of sustainability practices between green marketing and brand equity is also significant, with an indirect effect of 0.15 ($p = 0.032$). This result indicates that sustainability practices strengthen the relationship between green marketing and brand equity. This finding is consistent with the theory proposed by Preacher and Hayes (2008), which states that mediating variables can clarify the mechanism of how an independent variable affects a dependent variable. In this context, sustainability practices allow companies to demonstrate a real commitment to the environment, which ultimately improves consumer perceptions of the brand.

This study is in line with previous studies and expands the literature on the relationship between green marketing, sustainability practices, and brand equity in the e-commerce sector. This study confirms that green marketing strategies integrated with sustainability practices can be a strong foundation for building consumer loyalty and trust, especially in an era where environmental awareness is increasing. In a practical context, the results of this study provide recommendations for e-commerce companies to consistently adopt green strategies and demonstrate their commitment to sustainability in order to strengthen their brand equity.

CONCLUSION

This study analyzes the relationship between green marketing, sustainability practices, and brand equity in the context of the e-commerce sector in Indonesia. The results show that the three variables have a significant relationship, both directly and through mediation effects. Green marketing is proven to have a positive influence on brand equity, with environmentally friendly marketing strategies such as the use of sustainable packaging and transparent communication being able to increase consumers' positive perceptions of the brand. Sustainability practices also have a significant direct influence on brand equity. Practices such as waste management, carbon footprint reduction, and adoption of environmentally friendly technologies strengthen consumer trust in brands and increase their loyalty. In addition, sustainability practices act as a significant mediating variable between green marketing and brand equity. This confirms that the success of green marketing strategies can be improved through the consistent implementation of sustainability practices. The integration of green marketing and sustainability practices not only creates added value for consumers but also strengthens the company's competitiveness in an increasingly competitive market. This conclusion supports previous studies and provides important practical implications for e-commerce players. Companies are advised to integrate green marketing strategies with sustainability practices to build strong and relevant brands in an era of increasing environmental awareness. On the academic side, this research enriches the literature related to green marketing and sustainability in the context of e-commerce, and opens up opportunities for further research in other sectors or with different approaches.

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