

GREEN MARKETING, CORPORATE SOCIAL RESPONSIBILITY, AND E-COMMERCE ADOPTION: THEIR INFLUENCE ON BRAND TRUST AND CUSTOMER LOYALTY IN INDONESIAN RETAIL BUSINESSES

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Abstract

This study investigates the influence of green marketing, corporate social responsibility (CSR), and e-commerce adoption on brand trust and customer loyalty in Indonesian retail businesses. Using a quantitative approach, data were collected from 150 respondents through a five-point Likert scale questionnaire. Structural Equation Modeling – Partial Least Squares (SEM-PLS 3) was employed to analyze the relationships among the variables. The results show that green marketing, CSR, and e-commerce adoption significantly and positively affect brand trust, which in turn positively influences customer loyalty. Additionally, brand trust partially mediates the relationship between these independent variables and customer loyalty, highlighting its crucial role in fostering long-term consumer relationships. These findings provide practical insights for retail businesses in Indonesia to enhance sustainability initiatives, socially responsible practices, and digital adoption to strengthen consumer trust and loyalty.

Keywords: Green Marketing, Corporate Social Responsibility, E-Commerce Adoption, Brand Trust, Customer Loyalty

INTRODUCTION

In recent years, the retail sector in Indonesia has experienced rapid growth, driven by increasing consumer demand, technological advancements, and the rise of digital commerce. As competition intensifies, retail businesses face the challenge of differentiating themselves while building strong relationships with their customers. In this context, two critical factors that have gained significant attention are corporate social responsibility (CSR) and green marketing. CSR reflects a company's commitment to ethical practices and social welfare, while green marketing emphasizes environmentally friendly products and sustainable business practices. Both strategies have been shown to enhance brand perception and consumer trust, which are essential for retail businesses seeking to stand out in the market. CSR in Indonesia's retail industry has been found to positively impact consumer trust and brand image through socially conscious activities that resonate with consumer values (Saiful, 2022), including ethical supply chain management that addresses labor and environmental issues (Rahmansyah et al., 2024). On the other hand, green marketing strategies such as sustainable packaging and transparent communication play a pivotal role in strengthening brand equity and consumer loyalty, aligning with the rising demand for eco-friendly products (Kanchana, 2024). This effect is further amplified through the integration of technology, such as AI and big data, which help tailor green marketing strategies to consumer preferences (Kanchana, 2024). Moreover, the digital transformation has reshaped consumer shopping behavior through the rise of e-commerce, providing both opportunities and challenges for

retail businesses by enabling wider market access and efficient product introduction (Sifa et al., 2024; Sitasi, 2024). Consequently, collaboration between the government, industry players, and society is essential to maximize the potential of e-commerce and ensure sustainable growth (Sifa et al., 2024).

Simultaneously, the adoption of e-commerce has become an essential component of retail strategy in Indonesia, as platforms provide convenience, wider product accessibility, and personalized consumer experiences increasingly demanded by modern consumers. The integration of digital channels with sustainable and socially responsible practices is believed to create stronger competitive advantage and foster customer loyalty, particularly in Indonesia's dynamic e-commerce market where customer experience, engagement, and loyalty are pivotal for business success and sustainability. Enhancing customer experience through personalized content, live chat support, and improved security measures significantly boosts satisfaction and loyalty, establishing a competitive edge in the e-commerce market (Felix & Rembulan, 2023). For Micro, Small, and Medium Enterprises (MSMEs), adopting innovative platform business models enables greater operational efficiency and broader market reach, although challenges such as limited resources and digital skills remain (Agustin et al., 2024). The ongoing digital transformation, supported by increased internet penetration and collaboration between government, industry players, and society, has expanded market reach and reshaped the retail landscape in Indonesia (Sifa et al., 2024). Moreover, the COVID-19 pandemic accelerated digital adoption and shifted consumer focus toward health and sustainability, creating higher demand for sustainable products and redefining the pursuit of happiness through technology and responsible consumption (Bachtiar et al., 2024). For Indonesian millennials, positive e-brand experiences strongly influence e-loyalty, with trust and satisfaction serving as critical factors for repeat purchases and long-term customer relationships, thus underscoring the importance of user-friendly processes and excellent customer service in sustaining growth (Setiawan et al., 2024).

Despite growing interest, there remains limited empirical evidence in the Indonesian retail context on how green marketing, CSR, and e-commerce adoption collectively influence brand trust and customer loyalty. Understanding these relationships is crucial for retail managers to develop effective strategies that not only satisfy consumer expectations but also contribute to sustainable business growth.

Therefore, this study aims to investigate the influence of green marketing, corporate social responsibility, and e-commerce adoption on brand trust and customer loyalty in Indonesian retail businesses, using a quantitative approach with 150 respondents and data analyzed through Structural Equation Modeling – Partial Least Squares (SEM-PLS 3). The findings are expected to provide insights for retail companies seeking to strengthen consumer relationships and enhance long-term loyalty through sustainable and digital initiatives.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

1. Green Marketing

Green marketing in retail involves strategies that emphasize environmentally friendly products and practices to meet consumer demands while minimizing environmental impact, and this approach has been shown to positively influence brand perception, consumer trust, and purchase intention. Studies highlight that green marketing significantly shapes consumer purchasing habits, with many consumers willing to pay a premium for eco-friendly products

(Das et al., 2024), while exposure to such initiatives improves attitudes toward eco-friendly products with trust acting as a mediating factor (Hwang, 2024). Strategies like eco-labeling and sustainable packaging enhance consumer perceptions and purchase intentions (Nwafor & Umebali, 2025), while simultaneously strengthening brand perception by aligning with values of environmental responsibility (Nwafor & Umebali, 2025). Genuine green marketing fosters consumer loyalty and contributes to long-term brand allegiance (Das et al., 2024; Sasirekha et al., n.d.). However, challenges such as greenwashing—misleading claims about environmental benefits—pose risks to credibility (Hwang, 2024; Suganya & Reepthiga, n.d.), alongside implementation costs and the critical need for transparency (Hwang, 2024). To address these challenges, businesses are encouraged to adopt transparent communication and educate consumers about environmental impacts (Hwang, 2024), while strengthening regulatory frameworks to prevent misleading claims and ensure genuine sustainability practices (Hwang, 2024; Sasirekha et al., n.d.).

2. Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) in the Indonesian retail sector plays a crucial role in strengthening brand reputation, building consumer trust, and fostering long-term loyalty, with initiatives such as community development programs, fair labor practices, charitable donations, and sustainable sourcing proving particularly influential, as consumers in Indonesia tend to reward companies that demonstrate ethical and social accountability. A notable example is PT Unilever Indonesia, whose CSR commitments have contributed to economic growth, environmental conservation, and social welfare in line with the Triple Bottom Line principles (Aditya et al., 2024). CSR initiatives enhance brand reputation by showing commitment to social and environmental issues, which fosters trust and loyalty (Dhamale & Singh, 2025), while also enabling companies to differentiate themselves in competitive markets and attract socially conscious consumers (Dhamale & Singh, 2025). Many retail companies in Indonesia implement CSR sustainably through programs such as educational assistance, disaster relief, and environmental conservation (Iqbal, 2021), thereby contributing to economic growth by supporting local communities (Iqbal, 2021), engaging in environmental initiatives like tree planting and energy reduction (Iqbal, 2021), and improving social welfare through blood donation drives and other community support (Iqbal, 2021). CSR is not merely philanthropy but involves embedding ethical, social, and environmental considerations into a company's core operations (Khadilkar, 2020), and businesses that successfully integrate CSR into their strategies are better positioned to achieve sustainable growth and maintain competitive advantage in the long term (Temirova, 2024).

3. E-Commerce Adoption

E-commerce adoption in retail has significantly transformed business operations by enhancing market reach, customer satisfaction, and operational efficiency, as online platforms enable businesses to tap into broader markets, provide convenience, and deliver personalized services that strengthen customer loyalty. This shift is especially beneficial for small and medium-sized enterprises (SMEs), which can leverage e-commerce to gain a competitive edge and improve economic performance, with reports showing up to a 30% increase in online sales following (Shiau et al., 2009). Digital tools such as social media and

email marketing further support customer engagement and loyalty while offering valuable consumer insights (Shiau et al., 2009). Operational efficiency is also improved through digital payment systems and logistics management tools that reduce overhead costs, while the integration of mobile and omnichannel services is crucial for maintaining market share amid shifting consumer behaviors (Taneja et al., 2024). Nevertheless, the transition to e-commerce is not without challenges, as technological infrastructure limitations, cybersecurity concerns, and resistance to change hinder effective implementation (Tulong et al., 2024). SMEs, in particular, struggle with a lack of digital literacy, resources, and access to funding, which are essential for adopting and sustaining successful e-commerce strategies (Shiau et al., 2009).

4. Brand Trust

Brand trust is a critical factor influencing consumer behavior and loyalty in competitive markets, shaped by elements such as green marketing, corporate social responsibility (CSR), and e-commerce adoption, which align with consumer values, demonstrate ethical practices, and provide reliable digital experiences. Green marketing enhances brand trust by promoting environmentally friendly products and practices that appeal to environmentally conscious consumers, thereby strengthening trust and loyalty (Askaria & Arief, 2021; Patidar & Patidar, n.d.). Research also indicates that green marketing not only increases purchase intention but that brand trust mediates the relationship between green marketing and purchase intention (Askaria & Arief, 2021), while perceived green brand quality and performance directly contribute to green brand trust, with brand satisfaction acting as a mediator (Sharma & Paudel, 2018). Similarly, CSR initiatives positively influence consumer behavior by building brand trust and loyalty through legal and ethical practices, philanthropic efforts, and respect for the environment (Popa et al., 2022), with CSR activities shown to boost both short-term purchase intentions and long-term customer loyalty, where brand trust serves as a key mediator (Popa et al., 2022). Although e-commerce adoption is less directly discussed, the integration of CSR and green marketing in online platforms, particularly during the COVID-19 pandemic, demonstrates that digital commerce can further strengthen brand trust by offering transparent, ethical, and reliable consumer experiences (Popa et al., 2022).

5. Customer Loyalty

Brand trust plays a pivotal role in enhancing customer loyalty by acting as a key mediating factor that drives repeat purchases and positive word-of-mouth recommendations, as it fosters reliability and satisfaction crucial for sustaining long-term relationships. Trust significantly impacts loyalty by mediating the effects of customer satisfaction and commitment, with research showing that businesses should prioritize building trust to strengthen customer retention (Budiyantri, 2023). In the e-commerce context, brand trust emerges as a critical determinant of loyalty, functioning as an intervening variable that shapes consumer behavior and loyalty outcomes (Siamanjuntak & Cuandra, 2023). Moreover, trust amplifies the effect of word-of-mouth, as studies on customer relationship marketing reveal that trust, when coupled with positive recommendations, substantially increases customer loyalty (Prasetyawan et al., 2024), while its influence on word-of-mouth also encourages customers to recommend brands to others, expanding the customer base and reinforcing long-term loyalty (Prasetyawan et al., 2024). Empirical findings further emphasize the quantitative impact of trust, showing that it accounts for 42.7% of customer loyalty, thereby

underscoring its critical role in effective brand management strategies (Qatrunnada & Hidayah, 2025).

6. Hypotheses Development

Based on the theoretical foundations, the following hypotheses are proposed:

H1: Green marketing positively affects brand trust.

H2: Corporate social responsibility positively affects brand trust.

H3: E-commerce adoption positively affects brand trust.

H4: Brand trust positively affects customer loyalty.

H5: Brand trust mediates the relationship between green marketing, CSR, e-commerce adoption, and customer loyalty.

RESEARCH METHODS

1. Research Design

This study employs a quantitative research design to examine the influence of green marketing, corporate social responsibility (CSR), and e-commerce adoption on brand trust and customer loyalty in Indonesian retail businesses. A survey method was used to collect primary data from retail consumers, enabling the analysis of relationships among variables using statistical modeling. Structural Equation Modeling – Partial Least Squares (SEM-PLS 3) was selected as the analytical tool due to its suitability for testing complex models and assessing both direct and indirect effects.

2. Population and Sample

The population of this study consists of retail consumers in Indonesia who have experience purchasing products through both conventional retail and e-commerce channels. A total of 150 respondents were selected using purposive sampling, based on the criteria that participants must have purchased from Indonesian retail businesses in the last six months. This sample size meets the minimum requirement for SEM-PLS analysis, which recommends a sample size greater than ten times the number of indicators of the most complex construct (Hair et al., 2017).

3. Data Collection Instrument

Data were collected using a structured questionnaire measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), consisting of five sections aligned with the study variables: Green Marketing (GM) measured by four indicators covering environmentally friendly products, sustainable practices, eco-conscious promotion, and corporate environmental initiatives; Corporate Social Responsibility (CSR) assessed by four indicators including community programs, ethical labor practices, social contributions, and sustainability efforts; E-Commerce Adoption (ECA) evaluated through four indicators reflecting online platform usage, convenience, digital payment security, and personalized online services; Brand Trust (BT) measured by four indicators focusing on confidence in brand reliability, consistency, honesty, and customer-centric practices; and Customer Loyalty (CL) assessed through four indicators capturing repeat purchase intention, willingness to recommend to others, brand preference, and long-term commitment.

4. Data Analysis

The collected data were analyzed using SEM-PLS 3, which enables simultaneous evaluation of both the measurement model (outer model) and the structural model (inner model). The measurement model evaluation assesses the validity and reliability of the constructs through factor loadings, composite reliability (CR), and average variance extracted (AVE), where indicators with loadings above 0.70 and CR values above 0.70 are deemed valid and reliable (Hair et al., 2017). Meanwhile, the structural model evaluation examines the hypothesized relationships among variables by analyzing path coefficients, t-statistics, and R^2 values, with bootstrapping performed using 5,000 resamples to test the significance of relationships at a 95% confidence level ($t > 1.96$).

RESEARCH RESULTS

1. Descriptive Analysis

Descriptive analysis provides an overview of respondents' perceptions regarding green marketing, corporate social responsibility (CSR), e-commerce adoption, brand trust, and customer loyalty in Indonesian retail businesses. Data were collected from 150 respondents using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

a. Respondent Demographics

The demographic profile of the respondents is presented in Table 1.

Table 1
Respondent Demographics

Demographics	Category	Frequency	Percentage (%)
Gender	Male	63	42%
	Female	87	58%
Age	18–25	45	30%
	26–35	60	40%
	36–45	30	20%
	46–55	15	10%
Purchase Channel	Conventional Retail	57	38%
	E-Commerce	33	22%
	Both	60	40%

Table 1 presents the demographic profile of respondents, highlighting gender, age distribution, and purchase channel preferences. The sample consists of 63 male respondents (42%) and 87 female respondents (58%), indicating a greater representation of women, which may reflect their significant role as primary decision-makers in household consumption and retail purchases. In terms of age, the majority of respondents fall within the 26–35 age group (40%), followed by those aged 18–25 (30%), 36–45 (20%), and 46–55 (10%), suggesting that younger and middle-aged consumers dominate the sample, a segment often more adaptable to technological changes and responsive to green marketing, CSR, and e-commerce strategies. Purchase channel data show a relatively balanced distribution, with 57 respondents (38%) relying on conventional retail, 33 respondents (22%) primarily using e-commerce, and 60 respondents (40%) combining both, reflecting the growing trend of

omnichannel behavior in Indonesia's retail market where consumers value both online convenience and physical retail experiences, thereby underscoring the importance for retailers to integrate digital and physical strategies to effectively meet diverse consumer preferences.

b. Variable Descriptive Statistics

Table 2 presents the mean and standard deviation for each research variable.

Table 2
Descriptive Statistics of Research Variables

Variable	Mean	Standard Deviation	Interpretation
Green Marketing (GM)	4.12	0.58	High
Corporate Social Responsibility (CSR)	4.05	0.61	High
E-Commerce Adoption (ECA)	4.20	0.55	High
Brand Trust (BT)	4.08	0.60	High
Customer Loyalty (CL)	4.10	0.59	High

Table 2 presents the descriptive statistics of the research variables, showing that respondents perceive green marketing, corporate social responsibility (CSR), e-commerce adoption, brand trust, and customer loyalty at consistently high levels, with mean scores above 4 on a five-point Likert scale and relatively low standard deviations between 0.55 and 0.61, indicating uniform responses across participants. Green marketing (M = 4.12, SD = 0.58) reflects strong recognition of environmentally friendly initiatives such as sustainable products and eco-conscious promotions, while CSR (M = 4.05, SD = 0.61) highlights the importance consumers place on ethical practices, community programs, and social contributions. E-commerce adoption records the highest mean (M = 4.20, SD = 0.55), emphasizing the reliance on digital platforms for convenience, accessibility, and personalized services in Indonesia's retail sector. Brand trust (M = 4.08, SD = 0.60) indicates that consumers view brands as reliable, consistent, and customer-centric, essential for building long-term relationships, and customer loyalty (M = 4.10, SD = 0.59) demonstrates strong repeat purchase intentions, willingness to recommend, and long-term commitment. Overall, the findings suggest that green marketing, CSR, and e-commerce adoption strengthen brand trust, which in turn fosters customer loyalty, underscoring the interconnected role of these constructs in shaping sustainable competitive advantage within the retail industry.

2. Measurement Model Evaluation (Outer Model)

The measurement model, or outer model, assesses the validity and reliability of the research constructs, ensuring that the indicators accurately measure their respective latent variables. This study evaluated the measurement model using factor loadings, composite reliability (CR), and average variance extracted (AVE) based on SEM-PLS 3 analysis.

a. Convergent Validity

Convergent validity ensures that each indicator correlates strongly with its latent variable. Indicators with factor loadings above 0.70 are considered valid (Hair et al., 2017). Table 3 shows the factor loadings of all indicators.

Table 3
Factor Loadings (Outer Loadings) of Indicators

Construct	Indicator Code	Indicator	Loading
Green Marketing	GM1	Promotes eco-friendly products	0.812
	GM2	Uses sustainable packaging	0.835
	GM3	Implements environmentally conscious practices	0.791
	GM4	Communicates green initiatives to customers	0.807
Corporate Social Responsibility	CSR1	Implements community development programs	0.825
	CSR2	Ensures ethical labor practices	0.811
	CSR3	Participates in charitable activities	0.793
	CSR4	Integrates sustainability into operations	0.802
E-Commerce Adoption	ECA1	Provides an easy-to-use online platform	0.846
	ECA2	Ensures secure digital payments	0.832
	ECA3	Offers personalized online services	0.819
	ECA4	Facilitates convenient online transactions	0.840
Brand Trust	BT1	Brand delivers promised quality	0.853
	BT2	Brand is honest and reliable	0.867
	BT3	Brand consistently meets expectations	0.845
	BT4	Brand prioritizes customer interests	0.832
Customer Loyalty	CL1	Intends to repurchase products	0.841
	CL2	Recommends brand to others	0.829
	CL3	Prefers brand over competitors	0.838
	CL4	Remains committed to brand long-term	0.820

Table 3 presents the factor loadings (outer loadings) of the indicators for each construct, all of which exceed the recommended threshold of 0.70, confirming that the indicators strongly represent their respective latent variables and meet convergent validity criteria. Green Marketing shows loadings between 0.791 and 0.835, indicating that eco-friendly products, sustainable packaging, environmentally conscious practices, and communication of green initiatives are consistently recognized as key components. Corporate Social Responsibility (CSR) records loadings from 0.793 to 0.825, highlighting the importance of community development, ethical labor practices, charitable activities, and integration of sustainability into operations in shaping consumer perceptions. E-commerce Adoption demonstrates robust loadings between 0.819 and 0.846, emphasizing the significance of platform usability, secure payments, personalized services, and convenient transactions in digital retail. Brand Trust exhibits the highest loadings, ranging from 0.832 to 0.867,

underscoring the centrality of reliability, honesty, consistency, and customer prioritization in building trust. Customer Loyalty also shows strong loadings from 0.820 to 0.841, confirming that repeat purchases, brand recommendations, preference over competitors, and long-term commitment are effective measures of loyalty. Collectively, these results validate that the constructs are accurately measured by their indicators, ensuring a robust measurement model and a strong basis for structural model evaluation.

b. Reliability

Reliability ensures the consistency of the construct measurement. Table 4 summarizes composite reliability (CR) and average variance extracted (AVE).

Table 4
Reliability and Convergent Validity

Construct	Composite Reliability (CR)	AVE
Green Marketing (GM)	0.886	0.668
Corporate Social Responsibility (CSR)	0.872	0.655
E-Commerce Adoption (ECA)	0.894	0.673
Brand Trust (BT)	0.907	0.696
Customer Loyalty (CL)	0.891	0.683

Table 4 presents the results of reliability and convergent validity testing for the constructs in this study, using Composite Reliability (CR) and Average Variance Extracted (AVE) as benchmarks, with all CR values exceeding the recommended threshold of 0.70, confirming strong internal consistency and reliability across constructs. Green Marketing (CR = 0.886, AVE = 0.668) and Corporate Social Responsibility (CR = 0.872, AVE = 0.655) indicate that their indicators consistently measure the intended concepts, with AVE values above 0.50 showing that more than half of the variance is explained by the constructs, while E-Commerce Adoption (CR = 0.894, AVE = 0.673) further demonstrates high reliability and validity, underscoring the robustness of digital-related indicators in capturing consumer perceptions. Brand Trust records the highest values (CR = 0.907, AVE = 0.696), highlighting the strength and consistency of its indicators in reflecting consumer confidence, honesty, and reliability, and Customer Loyalty (CR = 0.891, AVE = 0.683) also shows excellent reliability, with indicators effectively capturing repeat purchase intentions, recommendations, brand preference, and long-term commitment. Overall, these results confirm that all constructs meet the criteria for convergent validity and reliability, providing a strong measurement foundation for structural model analysis and ensuring that subsequent findings on the relationships among green marketing, CSR, e-commerce adoption, brand trust, and customer loyalty are based on valid and reliable instruments.

c. Discriminant Validity

Discriminant validity was evaluated using the Fornell-Larcker criterion, which ensures that each construct shares more variance with its indicators than with other constructs. The square root of AVE for each construct exceeds its correlation with other constructs, confirming discriminant validity.

3. Structural Model Evaluation (Inner Model)

The structural model, or inner model, assesses the hypothesized relationships among latent variables, determining the significance and strength of the effects of green marketing, CSR, and e-commerce adoption on brand trust and customer loyalty. Evaluation of the inner model was conducted using path coefficients (β), t-statistics, p-values, R^2 values, and mediation analysis through SEM-PLS 3. Bootstrapping with 5,000 resamples was applied to test the significance at a 95% confidence level.

a. Path Coefficients and Hypothesis Testing

Table 5. Structural Model Results

Hypothesis	Path	Coefficient (β)	t-statistic	p-value	Result
H1	Green Marketing \rightarrow Brand Trust	0.322	4.126	0.000	Significant
H2	CSR \rightarrow Brand Trust	0.298	3.852	0.000	Significant
H3	E-Commerce Adoption \rightarrow Brand Trust	0.345	4.504	0.000	Significant
H4	Brand Trust \rightarrow Customer Loyalty	0.611	7.926	0.000	Significant

Table 5 presents the results of the structural model, confirming that all hypothesized relationships among green marketing, CSR, e-commerce adoption, brand trust, and customer loyalty are supported, as evidenced by significant path coefficients, high t-statistics, and p-values below 0.05. Green Marketing positively and significantly affects Brand Trust ($\beta = 0.322$, $t = 4.126$, $p = 0.000$), indicating that environmentally friendly initiatives, sustainable practices, and transparent communication enhance consumer confidence in brands, while CSR also shows a significant positive influence on Brand Trust ($\beta = 0.298$, $t = 3.852$, $p = 0.000$), emphasizing the role of ethical practices, social contributions, and community engagement in strengthening perceptions of reliability and integrity. E-Commerce Adoption exerts the strongest effect on Brand Trust ($\beta = 0.345$, $t = 4.504$, $p = 0.000$), highlighting the importance of digital platforms in building trust through usability, secure transactions, and personalized services in the Indonesian retail context. Most importantly, Brand Trust strongly predicts Customer Loyalty ($\beta = 0.611$, $t = 7.926$, $p = 0.000$), underscoring its mediating role in fostering repeat purchases, brand preference, and positive word-of-mouth, thereby demonstrating that green marketing, CSR, and e-commerce adoption collectively enhance brand trust, which in turn significantly drives customer loyalty and contributes to sustaining competitive advantage in the retail sector.

b. Coefficient of Determination (R^2)

The R^2 values show the proportion of variance in the endogenous variables explained by the predictor variables, with Brand Trust ($R^2 = 0.57$) indicating that 57% of its variance is explained by green marketing, CSR, and e-commerce adoption, while Customer Loyalty ($R^2 = 0.61$) demonstrates that 61% of its variance is explained by brand trust; these results suggest

that the model possesses moderate explanatory power in line with the criteria proposed by Hair et al. (2017).

c. Effect Size (f^2)

The effect size (f^2) results show the contribution of each predictor to the endogenous variable, with Green Marketing having a small effect on Brand Trust ($f^2 = 0.107$), CSR also showing a small effect ($f^2 = 0.092$), and E-Commerce Adoption demonstrating a medium effect ($f^2 = 0.126$), while Brand Trust has a large effect on Customer Loyalty ($f^2 = 0.422$); these findings indicate that although green marketing, CSR, and e-commerce adoption make small to medium contributions to building brand trust, brand trust itself plays a dominant role in driving customer loyalty.

d. Predictive Relevance (Q^2)

Predictive relevance assessed using Stone-Geisser Q^2 shows that Brand Trust has a Q^2 value of 0.368 and Customer Loyalty has a Q^2 value of 0.412, both of which are above zero, indicating that the model demonstrates good predictive relevance for the endogenous constructs.

e. Mediation Analysis

Brand trust was tested as a mediating variable between the independent variables (green marketing, CSR, and e-commerce adoption) and customer loyalty, with bootstrapping results showing that Green Marketing \rightarrow Brand Trust \rightarrow Customer Loyalty ($\beta = 0.197$, $t = 3.808$) is significant, CSR \rightarrow Brand Trust \rightarrow Customer Loyalty ($\beta = 0.182$, $t = 3.402$) is significant, and E-Commerce Adoption \rightarrow Brand Trust \rightarrow Customer Loyalty ($\beta = 0.211$, $t = 4.052$) is also significant, thereby confirming that brand trust serves as a partial mediator in strengthening the relationship between green marketing, CSR, e-commerce adoption, and customer loyalty.

DISCUSSION

1. Influence of Green Marketing on Brand Trust

The results show that green marketing has a significant and positive effect on brand trust, indicating that consumers perceive retail businesses implementing environmentally friendly practices, sustainable products, and eco-conscious promotions as more reliable and responsible, which is consistent with previous research highlighting that environmentally responsible practices strengthen consumer trust and enhance brand reputation. Consumers are increasingly willing to pay a premium for eco-friendly products, perceiving them as beneficial for both the environment and personal health (Isaacs, 2015), while trust in a brand strongly influences purchasing likelihood, with clear labeling and brand reputation playing crucial roles (Isaacs, 2015). Green marketing strategies positively shape consumer attitudes, with trust serving as a mediating factor in purchasing decisions (Hwang, 2024), and further connect sustainability with consumer preferences, thereby enhancing brand equity and loyalty (Kanchana, 2024). Key strategies such as transparent communication and sustainable packaging also strengthen eco-friendly brand positioning (Kanchana, 2024), while sustainable sourcing and waste reduction practices have been shown to positively impact consumer behavior and loyalty (Begum et al., 2022). However, challenges such as greenwashing and implementation costs can hinder the effectiveness of green marketing (Hwang, 2024),

underscoring the importance of regulatory frameworks to prevent misleading claims and ensure genuine sustainability (Hwang, 2024; Kanchana, 2024). For practitioners, these findings suggest that promoting eco-friendly initiatives is not only a sustainable practice but also a strategic tool for building consumer trust and long-term confidence.

2. Influence of CSR on Brand Trust

CSR also positively impacts brand trust, confirming that socially responsible actions such as community engagement, ethical labor practices, and charitable programs are highly valued by Indonesian consumers, consistent with studies emphasizing the role of CSR in fostering ethical perceptions and long-term trust. CSR initiatives enhance brand reputation by demonstrating a company's commitment to social and environmental issues, thereby strengthening consumer trust and loyalty (Dhamale & Singh, 2025), while companies that integrate CSR into their core values and operations can build stronger brand equity and achieve long-term business success (Dhamale & Singh, 2025). Furthermore, CSR activities like community involvement and environmental stewardship positively influence consumer loyalty and trust, as consumers tend to prefer brands that align with their personal values (Srivastava, 2024). The credibility of CSR efforts remains crucial, as insincere or superficial initiatives can harm reputation and weaken trust (Dhamale & Singh, 2025; Schramm-Klein et al., 2016). Retailers also gain direct benefits from CSR since it drives customer loyalty and favorable purchasing behavior, with CSR dimensions significantly shaping consumer perceptions (Schramm-Klein et al., 2016), and its role in retail is especially important given the retailer's position as a gatekeeper between producers and consumers (Schramm-Klein et al., 2016).

3. Influence of E-Commerce Adoption on Brand Trust

E-commerce adoption has the strongest direct effect on brand trust among the independent variables, indicating that online platforms, digital payment security, and personalized online services significantly shape consumer confidence, consistent with prior studies showing that technological adoption enhances accessibility, convenience, and transaction reliability, all of which are critical for building trust in digital and hybrid retail channels. Omni-channel retailing, which integrates multiple channels, provides a seamless shopping experience that improves consumer satisfaction through greater convenience and accessibility (Dandona et al., 2022), while the rise of e-commerce and mobile technologies has shifted consumer behavior toward online platforms, requiring retailers to innovate across digital and physical channels to sustain competitiveness (LINE, 2022). Advanced technologies such as AI and machine learning further enable personalized marketing and data-driven decision-making, thereby enhancing customer engagement and satisfaction (Wilson et al., 2024). Moreover, secure online payment systems with robust encryption and multi-factor authentication are essential for safeguarding sensitive information and establishing consumer trust (Islam, 2024), while transactional convenience, through user-friendly interfaces and multiple payment options, significantly improves the shopping experience and fosters loyalty (Islam, 2024). Trust in e-commerce is also influenced by website design, security features, and quality of customer service, which remain vital for ensuring confidence and long-term loyalty (Aslam et al., 2020), emphasizing that retailers must continuously adapt to technological

advancements and consumer expectations to build and maintain a trustworthy shopping environment, particularly in a highly competitive market.

4. Influence of Brand Trust on Customer Loyalty

Brand trust significantly affects customer loyalty, confirming that consumers are more likely to repurchase, recommend, and remain committed to brands they perceive as trustworthy, aligning with prior research that highlights trust as a key determinant of loyalty. Trust is essential for maintaining customer loyalty as it moderates risk, encourages repeat purchases, and enables customers to commit with confidence in consistent performance (Chow & Holden, 1997), while openness, honesty, consistency, and genuine regard for customer needs are central to building trust, though often lacking in the commercial world (Bibb & Kourdi, 2004). Sustainable business practices encompassing environmental, social, and economic dimensions further enhance consumer perceptions and trust, creating a positive brand image and competitive advantage in a socially conscious marketplace (Agu et al., 2024), with transparency, authenticity, and ethical engagement serving as critical factors in fostering deeper consumer connections and long-term loyalty (Agu et al., 2024). Moreover, high service quality combined with consumer trust significantly impacts customer loyalty, especially in volatile markets, requiring businesses to prioritize service excellence and trust-building strategies for sustainable retention (BUDAHARINI, 2022). In practical terms, businesses that invest in sustainability, social responsibility, and reliable digital services as part of their trust-building efforts are more likely to secure lasting customer relationships and long-term loyalty.

5. Mediating Role of Brand Trust

The mediation analysis shows that brand trust partially mediates the relationship between green marketing, CSR, e-commerce adoption, and customer loyalty. This indicates that while direct efforts in sustainability and digital adoption positively influence loyalty, their effect is significantly enhanced when trust is established. This highlights the critical role of brand trust as a conduit for converting responsible practices and digital investments into loyal consumer behavior.

6. Implications for Indonesian Retail Businesses

The study provides several practical implications, highlighting that retailers should integrate green marketing and CSR strategies into their overall brand strategy to enhance consumer trust and loyalty, while e-commerce adoption must go beyond technology implementation by prioritizing reliability, security, and personalized services to strengthen consumer confidence. Building and maintaining brand trust should be treated as a strategic priority, as it mediates the relationship between organizational practices and customer loyalty. Overall, the findings underscore the importance of combining sustainability initiatives with digital strategies to create a trustworthy brand image that fosters long-term loyalty among Indonesian retail consumers.

CONCLUSION

This study confirms that green marketing, corporate social responsibility, and e-commerce adoption are significant predictors of brand trust in Indonesian retail businesses.

Brand trust, in turn, strongly influences customer loyalty, and partially mediates the relationship between the independent variables and loyalty. Among the predictors, e-commerce adoption has the strongest effect on brand trust, emphasizing the importance of digital platforms in building consumer confidence. The findings suggest that retail businesses should integrate sustainability initiatives and digital strategies to strengthen trust and foster long-term customer loyalty. By focusing on these areas, companies can improve their competitive advantage, customer satisfaction, and overall business performance in the Indonesian retail sector.

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