

Uncovering consumer loyalty in quick service restaurants in Batam City



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ABSTRACT

This study examines the effects of eco-advertising, eco-labeling, eco-packaging, and social media marketing on brand loyalty, with brand image serving as a mediating variable among QSR consumers in Batam City, Indonesia. A causal explanatory research design was employed using a quantitative survey of 486 consumers. Data were collected through a five-point Likert-scale questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings indicate that the proposed green marketing dimensions and social media marketing contribute to the formation of brand image and brand loyalty, with brand image functioning as a significant partial mediator in the relationship between the marketing practices and brand loyalty. These findings suggest that consumers' loyalty toward QSR brands is shaped not only by direct marketing stimuli but also by the brand perceptions developed through environmentally oriented communication and digital engagement. The study contributes to the sustainable marketing and consumer behavior literature by integrating eco-marketing and social media marketing within a unified framework for explaining brand loyalty in the QSR sector. The findings also provide practical implications for QSR managers by emphasizing the importance of credible eco-advertising, meaningful environmental labeling and packaging, and relevant social media strategies to strengthen brand image and foster loyalty across Generation X, Millennials, and Generation Z consumers.

Keywords: Eco Marketing; Social Media Marketing; Brand Image; Brand Loyalty; Quick Service Restaurant; PLS-SEM



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INTRODUCTION

Quick Service Restaurants (QSR) represent one of the food industry sectors that have grown rapidly in line with changes in the lifestyle of modern society, which prioritizes speed, convenience, and efficiency in meeting daily consumption needs (Jaggi et al., 2025). However, amid this high level of industry growth, QSRs also face challenges related to the environmental impact generated by the use of single-use packaging and the increasing volume of food waste. This condition has encouraged QSR companies to begin adopting the principle of sustainability through various environmentally friendly initiatives, one of which is the implementation of green packaging, eco labelling, and eco advertising. This effort is in line with the Sustainable Development Goals (SDGs), specifically SDG number 3, namely Good Health and Well-being, which emphasizes the importance of creating a healthier environment for society through responsible business practices (Purwianti et al., 2025).

The implementation of green packaging in the QSR industry is not only aimed at reducing negative environmental impact but also at supporting public health and well-being by reducing the use of packaging materials that are difficult to decompose and have the potential to pollute the environment. Consumers today are increasingly aware that quality of life is determined not only by the products they consume but also by how those products are produced and packaged (Purwianti et al., 2025). Therefore, QSR companies that demonstrate a commitment to sustainability have the potential to gain a more positive perception from consumers, which can ultimately strengthen brand image and encourage the formation of brand loyalty.

On the other hand, the development of digital technology has changed the way companies interact with consumers. Modern society, especially the Millennial and Generation Z cohorts, spends most of its time on various social media platforms, so that information about brands is increasingly obtained through digital channels rather than conventional media (Waworuntu et al., 2022). This condition makes social media marketing one of the effective strategies for conveying sustainability messages, educating consumers about the use of green packaging, and building closer relationships with customers (Purwianti et al., 2025). Through informative and interactive content, companies can strengthen their brand image while also increasing consumer awareness of business practices oriented toward sustainability.

Although research on eco marketing has been widely conducted, most studies still focus on the influence of eco packaging, eco labelling, or eco advertising separately on consumer behavior. In addition, research integrating these sustainability variables with social media marketing within the context of the QSR industry remains relatively limited. In fact, in today's digital era, social media has become the primary means for companies to communicate sustainability values to consumers quickly and broadly. Therefore, it is important to examine how a combination of eco marketing and social media marketing strategies can shape brand image and increase consumer brand loyalty.

Based on this condition, this study integrates social media marketing, eco advertising, eco labelling, and eco packaging into a single research model to analyze their influence on brand image and brand loyalty among QSR consumers in Batam City. In addition, this study also examines the mediating role of brand image in the relationship between these variables and brand loyalty. Thus, this study is expected to contribute to the development of sustainable marketing strategies in the QSR industry while supporting the achievement of SDG 3 through business practices that are more responsible toward public health and well-being.

LITERATURE REVIEW AND HYPOTHESES

H1: Social Media Marketing has a positive effect on Brand Image among QSR consumers in Batam City.

Social media marketing (SMM) is one of the digital marketing models that uses social media as a means of communication between companies and consumers (Kaur & Kathuria, 2025). Through content such as photos, videos, and direct interaction, companies can convey the value, character, and identity of the brand to the audience (Jaggi et al., 2025). This activity is not only used for promotion but also helps build a closer relationship with consumers.

The active and consistent use of social media can influence how consumers evaluate a brand. Relevant and engaging content tends to make consumers more familiar with and better able to recall the brand, making perceptions of the brand more positive (Le, 2024). In addition, interactions that occur on social media can also increase consumer trust and closeness toward the brand (Yee, 2022). Based on this, SMM is presumed to have a positive effect on brand image (BI).

H2: Eco Advertising has a positive effect on Brand Image among QSR consumers in Batam City.

Eco advertising (EA) is a form of marketing communication that emphasizes environmental concern in its message delivery (Nguyen-Viet, 2022a). This type of advertisement typically presents information related to the use of environmentally friendly materials, sustainable production processes, or company efforts to reduce negative environmental impact (Nguyen, 2025a). Through this approach, companies attempt to demonstrate their values and commitment to environmental issues to consumers.

Exposure to eco advertising can influence consumer perceptions of a brand. When consumers see consistent messages related to environmental concern, they tend to view the brand as more responsible and as having positive values (Jaggi, 2025). This can strengthen the BI in the minds of consumers, so EA is expected to have a positive effect on BI.

H3: Eco Label has a positive effect on Brand Image among QSR consumers in Batam City.

Eco label (EL) is a label or mark on a product that provides information related to environmental aspects, such as the materials used, the production process, and the level of sustainability of the product (Quoc, 2025). The presence of an EL helps consumers identify more environmentally friendly products and represents a form of information transparency from the company (Nguyen-Viet, 2022a). With this label, consumers can more easily understand the environmental value offered by a brand.

The presence of an EL can influence the way consumers evaluate a brand. Clear and easily recognizable information makes consumers feel more confident about the environmentally friendly claims made by the company (Nguyen-Viet, 2022a). This can increase trust while also forming a positive perception of the brand (Nguyen-Viet, 2022b). The stronger this trust, the better the resulting BI tends to be, so EL is expected to have a positive effect on BI.

H4: Eco Packaging has a positive effect on Brand Image among QSR consumers in Batam City.

Eco packaging (EP) is product packaging designed with consideration for environmental sustainability aspects, such as the use of recyclable or biodegradable materials, or materials capable of reducing waste. This concept does not only focus on the basic function of packaging as a product protector but also on efforts to minimize negative environmental impact (Quoc, 2025). In addition, the use of environmentally friendly packaging is also often associated with increasing company attention to sustainability issues, which has become one of the important considerations for modern consumers (Seifollahi, 2023).

The use of EP can influence consumer perceptions of a brand. Consumers tend to give a more positive evaluation to brands that demonstrate environmental concern through their product packaging. This is also reinforced by previous research findings showing that environmentally friendly packaging can improve BI and strengthen consumer perceptions of the sustainability values upheld by the company (Jaggi, 2025). Thus, EP is expected to have a positive effect on BI.

H5: Social Media Marketing has a positive effect on Brand Loyalty among QSR consumers in Batam City.

Social Media Marketing is a marketing communication tool that enables direct interaction between companies and consumers through digital platforms. Through informative and engaging content as well as two-way communication, companies can build a closer relationship with consumers (Ibrahim & Aljarah, 2023). This activity not only serves to increase awareness but also strengthens consumer engagement with the brand.

Consistent interaction on social media can increase consumers' emotional attachment to a brand. When consumers feel connected and repeatedly receive positive experiences, they tend to show loyalty toward that brand. This is consistent with previous research findings showing that SMM can encourage the formation of brand loyalty (BL) through the reinforcement of brand value (Ibrahim, 2025).

H6: Eco Advertising has a positive effect on Brand Loyalty among QSR consumers in Batam City.

Eco Advertising is a form of marketing communication that emphasizes messages of environmental concern. Through the delivery of information related to the environmental benefits of a product, companies attempt to build an image as a brand that is socially and environmentally responsible (Cao & Nguyen, 2025). This approach has become increasingly relevant as consumer awareness of sustainability issues increases.

Consistent exposure to EA can form a positive perception that leads to increased consumer loyalty. Consumers who feel that a brand's values align with their environmental concerns tend to have a stronger attachment. This leads them to choose to use and support that brand over the long term (Nguyen-Viet, 2022).

H7: Eco Label has a positive effect on Brand Loyalty among QSR consumers in Batam City.

Eco Label is information or a mark on a product indicating that the product meets certain standards related to environmental sustainability. This label helps consumers identify more environmentally friendly products and increases the transparency of information provided by the company (Nguyen-Viet, 2022).

The presence of an EL can increase consumer trust toward a brand. When consumers feel confident about the claims made, they tend to be more loyal and engage in Repurchase. This trust becomes important in the long-term relationship between consumers and the brand (Quoc, 2025).

H8: Eco Packaging has a positive effect on Brand Loyalty among QSR consumers in Batam City.

Eco Packaging is product packaging designed with attention to environmental impact, such as the use of recyclable or easily decomposed materials (Quoc, 2025). In addition to functioning as a product protector, packaging is also one of the elements directly seen and experienced by consumers.

The use of EP can provide a positive experience that strengthens consumer perceptions of a brand. Consumers who value environmentally friendly practices tend to be more loyal to brands that demonstrate this commitment in tangible ways. Previous findings also show that environmentally friendly packaging can strengthen the relationship between consumers and a brand, thereby encouraging the formation of loyalty (Seifollahi, 2023).

H9: Brand Image has a positive effect on Brand Loyalty among QSR consumers in Batam City.

Brand Image is the perception, belief, and association held by consumers toward a brand (Watson et al., 2024a). BI is formed from various experiences and information received by consumers, either directly or through marketing communication. The more positive the perception formed, the greater the likelihood that consumers will have a favorable evaluation of that brand.

A strong BI can encourage the formation of consumer loyalty. Consumers who hold a positive perception tend to trust more, feel more comfortable, and choose to continue using the same brand. This is supported by various studies showing that BI has a significant effect on BL (Nguyen, 2025; Tasci & Back, 2025). In addition, BI can also strengthen consumers' emotional attachment, which ultimately increases loyalty toward the brand (Wu, 2025).

H10: Brand Image mediates the effect of Social Media Marketing on Brand Loyalty among QSR consumers in Batam City.

Social Media Marketing plays a role in shaping consumers' thinking about a brand through content and interactions carried out on digital platforms. Consistent and relevant activities can help consumers become familiar with the brand's values and character, so that BI is formed gradually (Ibrahim & Aljarah, 2023).

The BI formed through this activity then influences the level of consumer loyalty. When consumers hold a positive perception of a brand, they tend to trust it more and continue using it. Thus, the effect of SMM on BL does not occur directly but rather through the prior formation of BI (Cao & Nguyen, 2025; Li, 2025).

H11: Brand Image mediates the effect of Eco Advertising on Brand Loyalty among QSR consumers in Batam City.

Eco Advertising conveys messages related to environmental concern that can shape consumer perceptions of a brand. Information about the environmental benefits of a product helps consumers see the brand as a responsible entity with positive values (Cao & Nguyen, 2025).

This perception then plays a role in increasing consumer loyalty. When consumers perceive that a brand has a commitment to the environment, they tend to feel more attached and to maintain their relationship with that brand. This shows that EA can influence BL through the formation of BI (Chang, 2020).

H12: Brand Image mediates the effect of Eco Label on Brand Loyalty among QSR consumers in Batam City.

Eco Label provides clear information about the environmental aspects of a product, thereby helping consumers understand the value offered by the brand. This clarity of information can increase consumer confidence in the environmentally friendly claims made (Nguyen-Viet, 2022).

The trust that is formed will influence how consumers view the brand as a whole. When BI becomes more positive, consumers tend to show higher loyalty. Thus, EL can influence BL through the mediating role of BI (Jaggi, 2025).

H13: Brand Image mediates the effect of Eco Packaging on Brand Loyalty among QSR consumers in Batam City.

Eco Packaging is a tangible form of a company's commitment to environmental sustainability that can be directly experienced by consumers. The use of environmentally friendly packaging creates an impression that the brand is responsible regarding environmental issues (Quoc, 2025).

This impression forms a positive BI in the minds of consumers, which can subsequently increase loyalty. Consumers who value sustainability tend to be more faithful to brands that consistently demonstrate such practices. Therefore, EP can influence BL through BI (Seifollahi, 2023).

METHOD

This research uses a causal explanatory research design with a quantitative approach through the survey method. This design aims to analyze the causal relationships among the independent variables (SMM, EA, EL, and EP), the mediating variable (BI), and the dependent variable (BL) simultaneously (Jaggi et al., 2025).

The population of this study consists of Quick Service Restaurant consumers in Batam City. The sample size was determined using the rule of ten respondents per indicator (Hair et al., 2023), so that with 41 indicators a minimum sample of 486 respondents was obtained. Primary data were collected through an online questionnaire using Google Form with a Likert scale of 1 to 5 (1 = strongly disagree; 5 = strongly agree). Secondary data were obtained from scientific articles, reports, and other reliable sources.

Operationalization and Indicators of Research Variables

This study measures each construct using multiple indicators adapted from previously validated instruments. Table 1 presents the operationalization of the research variables, including the constructs, their measurement items, and the sources from which the indicators were adapted, to ensure that each variable is measured in a valid and contextually relevant manner for QSR consumers in Batam City.

Table 1
Operationalization and Indicators of Research Variables

Variable	Item	Item Statement	Source
Social Media Marketing	SMM1	"The brand's social media content is enjoyable and entertaining to me"	(Ibrahim & Aljarah, 2023) "The era of Instagram expansion: matching social media marketing activities and brand loyalty through customer relationship quality (2023)"
	SMM2	"I feel emotionally engaged when viewing the brand's social media posts."	
	SMM3	"The brand's social media provides personalized content that fits my interests."	
	SMM4	"The brand's social media content feels tailored to my preferences and lifestyle."	
	SMM5	"I feel comfortable interacting with the brand through its social media platforms."	
	SMM6	"The brand responds quickly and effectively to comments or messages on social media."	
	SMM7	"I often find useful reviews or recommendations about the brand from other users on social media."	
	SMM8	"I am influenced by other consumers' posts or feedback about the brand on social media."	
	SMM9	"The brand's social media keeps me updated with the latest fashion trends."	
	SMM10	"The brand's social media makes the brand appear modern and up to date."	
Eco Labels	EL1	"Eco-labels are eye-catching on green food products"	(Quoc et al., 2025) Examining green packaging, branding, and eco-labeling strategies: The case of young consumers' perceptions and responses in F&B industry (2025)
	EL2	"Sufficient information is provided on eco-labels"	
	EL3	"I believe that eco-labels are easy to read."	
	EL4	"Green-packaged food products are marketed to me in a way which I find engaging and relevant to my lifestyle."	
	EL5	"Information on eco-labels is accurate for green product."	
Eco Packaging	EP1	"I acknowledge that the information on packaging is an important criterion"	(Quoc et al., 2025) Examining green packaging, branding, and eco-labeling strategies: The case of young consumers' perceptions and responses in F&B industry
	EP2	"It is important to reuse or recycle packaging after use"	
	EP3	"Biodegradable packaging is an important consideration for green consumers"	
	EP4	"I feel good about buying brands that are less damaging to the environment"	
	EP5	"I trust well-known green-branded products in the food industry"	
Eco Advertising	EA1	"Eco-advertising can enhance the knowledge about green products."	(Majeed et al., 2022) "Eco-advertising and Ban-on-Plastic: the Influence of CSR Green Practices on Green Impulse Behavior"
	EA2	"I think watching eco-broadcast advertisements is the source of enjoyment and awareness for a clean environment."	
	EA3	"Eco-advertisement guides customers to make an informed purchasing decision."	

Variable	Item	Item Statement	Source
Brand Image	EA4	"I like eco-advertisement."	(Watson et al., 2024a) "The effects of green brand image on brand loyalty: The case of mainstream fast food brands"
	BI1	"Brand X is a socially responsible company."	
	BI2	"Brand X is concerned to improve the well-being of society."	
	BI3	"Brand X behaves responsibly regarding the environment."	
	BI4	"Brand X brand is regarded as the best benchmark of environmental commitments."	
	BI5	"Brand X brand succeeds with regards to environmental performance."	
	BI6	"Brand X brand is well established in the environmental field."	
	BI7	"Brand X brand is trustworthy when it comes to environmental promises."	
	BI8	"I think XXX brand's environmental performance is generally dependable."	
	BI9	"I think XXX brand's environmental argument is generally trustworthy"	
	BI10	"I think XXX brand's environmental concern meets my expectations"	
	BI11	"I think XXX brand keeps its promises and commitments in terms of environmental protection"	
	BI12	"XXX brand is professional about its environmental reputation"	
Brand Loyalty	BL1	"I think I am loyal to brand x."	(Watson et al., 2024a) The effects of green brand image on brand loyalty: The case of mainstream fast food brands
	BL2	"I often recommend brand X to my friends and relatives"	
	BL3	"I like brand X more than other fast food restaurants."	
	BL4	"I will give priority to brand X if I dine out in a fast food restaurant."	
	BL5	"I will continue to recommend brand x."	

Source: Compiled by the author, 2025

This research uses PLS-SEM with SmartPLS 4 software. PLS-SEM was chosen because it is able to test the causal relationships among variables simultaneously, including direct and indirect effects through mediation, and does not require a normal data distribution (Nurwulandari & Darwin, 2020). The analysis stages include: (1) the outer model test (outer loading, AVE, Composite Reliability, Cronbach's Alpha); (2) the discriminant validity test (Fornell-Larcker Criterion); and (3) the inner model test (path coefficient, bootstrapping with 5,000 subsamples for T-statistics and P-values).

RESULTS AND DISCUSSION

Demographic Factors

In this study, all variables use a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). From the demographic data for 486 respondents, the gender composition consisted of 50% male and 50% female. The most common age group was 17 to 22 years,

at a rate of 35.8%, while the smallest was 53 to 60 years, at a rate of 0.6%. The majority of respondents had senior high school as their highest level of education, at 47.9%, followed by a bachelor's degree (S1) at 42%. In terms of occupation, respondents showed considerable diversity, with private employees accounting for 39.7% and students for 26.1%. The most common monthly income range was IDR 4,989,600 to 7,999,999, accounting for 41.6%.

The characteristics of the 486 respondents who participated in this study are summarized in Table 2, covering their distribution by gender, age group (generational cohort), highest level of education, occupation, and monthly income.

Table 2
Respondent Demographic Data

	Demographic Data	Frequency	%
Gender	Male	243	50.0%
	Female	243	50.0%
Age	Gen Z (17 to 22 years)	174	35.8%
	Gen Z (23 to 28 years)	154	31.7%
	Gen M (29 to 36 years)	93	19.1%
	Gen M (37 to 44 years)	48	9.9%
	Gen X (45 to 52 years)	14	2.9%
	Gen X (53 to 60 years)	3	0.6%
Highest Education	Elementary school or below	0	0%
	Junior high school	9	1.9%
	Senior high school or vocational school	233	47.9%
	University or college (Bachelor's degree/S1)	204	42.0%
	Master's and Doctoral degree (S2 & S3)	40	8.2%
Occupation	Student	127	26.1%
	Private employee	193	39.7%
	Civil servant	79	16.3%
	Entrepreneur	80	16.5%
	Other	7	1.4%
Monthly Income	< IDR 4,989,600	152	31.3%
	IDR 4,990,000 to 8,000,000	202	41.6%
	IDR 8,001,000 to 12,000,000	96	19.8%
	> IDR 16,000,000	29	6%
	Other	6	1.4%

Source: Primary data processed, 2025

Outer Model Test: Validity and Reliability

Of the 41 existing indicators, 23 indicators were deleted because they did not meet the outer loading criteria, which is a minimum of 0.7, including SMM1, SMM2, SMM4, SMM5, SMM6, SMM8, SMM10, EL2, EL5, EP1, EP4, EA3, BI1, BI2, BI4, BI5, BI6, BI7, BI8, BI9, BI10, BL3, BL5.

The outer loading test shows that 18 indicators across six research constructs had loading factor values ranging from 0.657 to 0.738, all of which met the minimum

requirement of ≥ 0.60 . Table 3 presents the complete results of the construct validity and reliability test (Hair et al., 2023).

Table 3
Validity and Reliability Test, Outer Loading Test

Variable	Indicator	Outer Loadings	AVE	CR	CA	VIF
Social Media Marketing	SMM3	0.840	0.657	0.852	0.739	1.560
	SMM7	0.779				1.407
	SMM9	0.811				1.466
Eco Label	EL1	0.861	0.693	0.871	0.778	1.784
	EL3	0.812				1.509
	EL4	0.823				1.620
Eco Packaging	EP2	0.833	0.681	0.865	0.766	1.621
	EP3	0.818				1.512
	EP5	0.825				1.551
Eco Advertising	EA1	0.838	0.703	0.877	0.789	1.679
	EA2	0.840				1.616
	EA4	0.848				1.678
Brand Image	BI3	0.862	0.738	0.894	0.822	1.909
	BI11	0.865				1.855
	BI12	0.850				1.789
Brand Loyalty	BL1	0.822	0.668	0.858	0.752	1.560
	BL2	0.793				1.401
	BL4	0.836				1.627

Source: Primary data processed, 2025

Table 3 shows all constructs met the reliability criteria (Cronbach's Alpha 0.739 to 0.822 and Composite Reliability 0.852 to 0.894, both ≥ 0.70) as well as convergent validity (AVE 0.657 to 0.738, all ≥ 0.60). These results confirm that all measurement instruments are reliable and valid.

Discriminant Validity Test, Fornell-Larcker, R-Square, SRMR

Discriminant validity was tested using the Fornell-Larcker Criterion, by comparing the square root of the AVE (the diagonal of the matrix) with the inter-construct correlations. Fornell-Larcker is satisfied if the AVE value is greater than the inter-factor correlation value (Hair et al., 2023).

The results of the discriminant validity assessment using the Fornell-Larcker Criterion are presented in Table 4, which compares the square root of the AVE for each construct (shown on the diagonal) with the inter-construct correlations.

Table 4
Discriminant Validity, Fornell-Larcker Criterion

Factor	Brand Image	Brand Loyalty	Eco Advertising	Eco Label	Eco Packaging	Social Media Marketing
Brand Image	0.859					
Brand Loyalty	0.805	0.818				
Eco Advertising	0.828	0.793	0.839			
Eco Label	0.796	0.770	0.814	0.832		
Eco Packaging	0.813	0.750	0.783	0.773	0.825	
Social Media Marketing	0.798	0.793	0.801	0.779	0.772	0.811

BI=Brand Image, BL=Brand Loyalty, EA=Eco Advertising, EL=Eco Label, EP=Eco Packaging, SMM=Social Media Marketing

Source: SmartPLS 4 data processing results, 2025

The diagonal values (square root of AVE) for each construct were greater than the inter-construct correlations in the corresponding rows and columns, so discriminant validity was satisfied for all constructs in this research.

R-Square

The R-Square (R^2) value represents the proportion of variance in the endogenous constructs that is explained by the exogenous constructs, and thus reflects the explanatory power of the model. Following (Hair et al., 2023), R^2 values of 0.75, 0.50, and 0.25 are respectively interpreted as substantial, moderate, and weak, so that a higher R^2 indicates stronger explanatory capability of the model.

The R-Square values for the two endogenous constructs, namely BI and BL, together with their T-statistics and P-values, are presented in Table 5.

Table 5
R-Square

Construct	Sample Mean	T Statistics	P Values
BI	0.775	36.303	0.000
BL	0.740	30.236	0.000

Source: SmartPLS 4 data processing results, 2025

The BI construct successfully exceeded the R-square threshold by surpassing 0.75 and is categorized as substantial, while BL did not reach the substantial threshold and is therefore categorized as moderate (> 0.50) (Hair et al., 2023).

SRMR

The Standardized Root Mean Square Residual (SRMR) is a goodness-of-fit measure that reflects the difference between the observed correlations and the correlations implied by the estimated model. According to (Hair et al., 2023), an SRMR value below 0.10 indicates an acceptable model fit, so that the smaller the SRMR value, the closer the model is to the observed data.

The SRMR values for the saturated and estimated models, together with their bootstrapped confidence levels, are presented in Table 6.

Table 6
SRMR

	Original Sample (O)	Sample Mean (M)	95%	99%
Saturated model	0.056	0.040	0.044	0.045
Estimated model	0.057	0.041	0.044	0.046

Source: SmartPLS 4 data processing results, 2025

This study shows that the SRMR value in this research is 0.040. This figure is below the threshold of 0.10, so the model fit shows good suitability, and the residual between the observed matrix correlations and those predicted by the model is relatively small (Hair et al., 2023).

GOF

The Goodness of Fit (GOF) index is used to assess the overall fit of the model and is calculated as the geometric mean of the average AVE and the average R-Square. Based on the AVE values reported in Table 3 and the R-Square values reported in Table 5, the GOF value in this study is 0.723, which exceeds the 0.36 threshold for a large fit. This indicates that the model has a very good overall fit, so that the data are suitable for use in hypothesis testing (Hair et al., 2023).

Hypothesis Testing

Hypothesis testing was carried out through a bootstrapping procedure (5,000 subsamples). A hypothesis is accepted if the T-statistics value is ≥ 1.96 or the P-value is < 0.05 (Hair et al., 2023).

The results of the hypothesis testing, including the path coefficients, T-statistics, and P-values for both the direct effects and the indirect (mediating) effects, are presented in Table 7.

Table 7
Hypothesis Testing Results (Path Coefficient, T-Statistics, P-Value)

Relationship Path	Sample Mean	T-Statistics	P-Value	Result	Note
SMM → BI	0.200	5.092	0.000	Sig. Positive	Accepted
EA → BI	0.303	5.796	0.000	Sig. Positive	Accepted
EL → BI	0.169	4.076	0.000	Sig. Positive	Accepted
EP → BI	0.291	6.972	0.000	Sig. Positive	Accepted
SMM → BL	0.259	4.930	0.000	Sig. Positive	Accepted
EA → BL	0.189	3.397	0.001	Sig. Positive	Accepted
EL → BL	0.148	2.950	0.003	Sig. Positive	Accepted
EP → BL	0.073	1.603	0.109	Rejected	Rejected
BI → BL	0.264	4.788	0.000	Sig. Positive	Accepted
SMM → BI → BL	0.053	3.497	0.000	Sig. Positive	Accepted
EA → BI → BL	0.080	3.599	0.002	Sig. Positive	Accepted

Relationship Path	Sample Mean	T-Statistics	P-Value	Result	Note
EL → BI → BL	0.045	3.064	0.000	Sig. Positive	Accepted
EP → BI → BL	0.077	3.945	0.000	Sig. Positive	Accepted

Source: SmartPLS 4 data processing results, 2025

Discussion

H1: The Effect of Social Media Marketing on Brand Image

From the research using SmartPLS, the T-statistic value of 5.092 and the p-value value of 0.000 show that SMM has a positive and significant effect on BI, so H1 is accepted. This means that the better the marketing strategy carried out through social media, the more the BI in the eyes of consumers will also improve. Engaging and relevant content that is able to invite audience interaction has been shown to form a more positive perception of the brand. Marketing activities on social media play an important role in strengthening BI (Ibrahim & Aljarah, 2023; Waworuntu et al., 2022), confirming that SMM plays an important role in building BI, particularly among the digital generation.

H2: The Effect of Eco Advertising on Brand Image

The test results, with a T-statistic value of 5.796 and a p-value value of 0.000, show that EA has a positive and significant effect on BI, so H2 is accepted. This means that the stronger the implementation of advertising that highlights environmentally friendly aspects, the better the BI tends to be in the eyes of consumers. The magnitude of the coefficient also indicates that EA plays a fairly dominant role in shaping BI. In other words, marketing messages that emphasize environmental concern are able to build a more positive perception of the brand. This finding is consistent with (Jaggi et al., 2025; Majeed et al., 2022), which state that environmentally friendly messages in advertising have a strong influence on the formation of BI.

H3: The Effect of Eco Label on Brand Image

From the research results, the T-statistic value of 4.076 and the p-value value of 0.000 show that EL has a significant effect on BI, so H3 is accepted. However, the resulting relationship is in fact negative. This means that the presence of EL actually tends to lower the perception of BI in the eyes of consumers. This can occur because of lingering doubt or a lack of trust in the environmentally friendly claims made by the company. Consumers become more critical and question the authenticity of the label, which ultimately has a less favorable impact on BI. This finding differs from (Nguyen, 2025b), which found a positive effect, thereby indicating differences in the level of trust and environmental literacy across contexts.

H4: The Effect of Eco Packaging on Brand Image among

Based on the research results, the T-statistic value of 6.972 and the p-value value of 0.000 show that EP has a positive and significant effect on BI, so H4 is accepted. This means that environmentally friendly packaging is beginning to become one of the factors considered by consumers in evaluating a brand. In the context of the QSR industry, which is fast paced and practical, even though consumers still pay attention to aspects such as taste, price, and service speed, the presence of EP still provides added value. The use of environmentally friendly packaging can help build a better BI in the eyes of consumers (Quoc et al., 2025).

H5: The Effect of Social Media Marketing on Brand Loyalty

Based on the research results, the T-statistic value of 4.930 and the p-value value of 0.000 show that SMM has a positive and significant effect on BL, so H5 is accepted. This means that marketing activities on social media not only shape perception but also help drive consumer loyalty. Routine interaction and ongoing communication through digital platforms can help build emotional closeness between consumers and the brand, making them more likely to remain loyal (Kaur & Kathuria, 2025).

H6: The Effect of Eco Advertising on Brand Loyalty

Based on the research results, the T-statistic value of 3.397, the p-value value of 0.001 show that EA has a positive and significant effect on BL, so H6 is accepted. This means that consumers who frequently see sustainability related messages tend to find it easier to become loyal to a brand. The value of environmental concern conveyed through advertising can build a sense of closeness and increase consumer trust, making them more likely to continue choosing that brand (Cao & Nguyen, 2025a; Nguyen-Viet, 2022a).

H7: The Effect of Eco Label on Brand Loyalty

Based on the research results, the T-statistic value of 2.950 and the p-value value of 0.003 show that EL has a positive and significant effect on BL, so H7 is accepted. This indicates that some consumers still value the presence of an environmentally friendly label as a form of corporate responsibility, making them tend to remain loyal to the brand (Nguyen-Viet, 2022a; Quoc et al., 2025).

H8: The Effect of Eco Packaging has a positive effect on Brand Loyalty

Based on the test results, the T-statistic value of 1.603 and the p-value value of 0.109 show that EP does not have a significant effect on BL, so H8 is rejected. This means that environmentally friendly packaging is not yet strong enough to directly make consumers loyal. Most consumers also do not consider this factor to be the main reason for repurchasing or remaining loyal to a brand (Seifollahi, 2023).

H9: The Effect of Brand Image has a positive effect on Brand Loyalty

Based on the research results, the T-statistic value of 4.788 and the p-value value of 0.000 show that BI has a positive and significant effect on BL, so H9 is accepted. This means that a good BI plays an important role in building consumer loyalty. The more positive consumers' views of a brand, the greater the likelihood that they will remain loyal and make repeat purchases. This result is also consistent with various previous studies showing that BI is one of the factors in forming loyalty (Nguyen, 2025b; Watson et al., 2024a).

H10: The Role of Brand Image mediates the effect of Social Media Marketing on Brand Loyalty

From the research results, the T-statistic value of 3.497 and the p-value value of 0.000 show that BI is able to act as a significant mediating variable in the relationship between SMM and BL, so H10 is accepted. This means that the effect of SMM on loyalty does not only occur directly but also through the prior formation of BI. Engaging content and the right strategy on social media can build a positive perception, which then encourages consumers to remain loyal to that brand (Ali et al., 2025; Jaggi et al., 2025).

H11: The Role of Brand Image mediates the effect of Eco Advertising on Brand Loyalty

The test results, with a T-statistic value of 3.599 and a p-value value of 0.002, show that BI acts as a significant mediator between EA and BL, so H11 is accepted. This means that the effect of EA on loyalty does not only occur directly but also through the prior formation of BI. Sustainability related messages conveyed through advertising can form a positive perception, from which emotional closeness with consumers emerges, ultimately increasing their loyalty (Cao & Nguyen, 2025b; Nguyen-Viet, 2022a).

H12: The Role of Brand Image mediates the effect of Eco Label on Brand Loyalty

The test results, with a T-statistic value of 3.064 and a p-value value of 0.000, show that BI is able to mediate the effect of EL on BL significantly, so H12 is accepted. Although EL previously had a negative effect on BI, it turns out that there is still an indirect effect on loyalty through this mediating role. This shows that consumer perceptions are quite diverse, with some consumers still considering sustainability aspects in their decisions, even though there is still doubt about trust in the label (Li et al., 2025; Watson et al., 2024b).

H13: The Role of BI in Mediating the Effect of EP on BL

The test results, with a T-statistic value of 3.945 and a p-value value of 0.000, show that BI is able to mediate the relationship between EP and BL significantly, so H13 is accepted. Interestingly, although directly EP does not have a significant effect on loyalty, through BI its effect actually becomes meaningful. This indicates the presence of full mediation, in which EP can only influence consumer loyalty if it first forms a positive BI (Jaggi et al., 2025; Watson et al., 2024a).

CONCLUSION AND SUGGESTION

From the overall research that has been conducted, it can be said that SMM, EL, EP, have a positive and significant effect on the BI variable in quick service restaurant (QSR) in Batam City. This indicates that marketing activities through social media combined with the implementation of environmentally based marketing can form a better perception of the brand. Among the variables tested, EA serves as the reference that provides the largest contribution to increasing BI among consumers. The research model demonstrated good performance in explaining the relationships among the variables examined.

This research provides evidence that SMM, EA, and EL are positively correlated with BL. However, EP does not provide a strong, significant direct effect on consumer loyalty. It can be said that the use of environmentally friendly packaging alone is not yet sufficient to make consumers loyal to a brand. QSR customers still take other factors into account, namely product quality, price, and the experience they receive when using the product or service provided, which can be referred to as satisfaction. BI plays a very important role in increasing consumer loyalty, because a positive BI can strengthen consumer trust and satisfaction toward the brand itself.

The results of this study provide practical implications for Quick Service Restaurant (QSR) business operators in Batam City to pay greater attention to digital marketing strategies and environmental sustainability as an effort to build a strong BI. The research findings show that SMM and EA have a fairly substantial effect on BI. Therefore, companies need to be more active in utilizing social media through content that is engaging, interactive, and relevant to consumer needs. In addition, messages about

environmental concern should be communicated clearly and consistently so that consumers can see the company's commitment to sustainable business practices.

From a brand management perspective, the research results show that BI is one of the important factors capable of increasing BL. This condition indicates that it is not sufficient for companies to merely offer quality products; they also need to build a positive reputation in the minds of consumers. This can be done by improving service quality, maintaining the consistency of brand identity, and demonstrating tangible social and environmental responsibility. With a good BI, consumers will have a higher level of trust, thereby increasing the likelihood of repeat purchases and brand recommendations to others.

In addition, the finding that EP does not have a direct effect on BL, but is able to exert an effect through BI, provides an important insight for companies. This shows that the use of environmentally friendly packaging should not be treated merely as a product attribute but needs to be communicated and integrated into the BI strategy. In this way, consumers will see packaging not only as a product protection function but also as tangible evidence of the company's commitment to environmental sustainability. This strategy can help companies create added value that ultimately supports the formation of long-term consumer loyalty.

Future research could extend this model by incorporating additional explanatory and boundary variables that are directly relevant to the findings of this study. In particular, because EP showed no significant direct effect on BL while EL exhibited a negative association with BI, variables such as brand trust, green skepticism, greenwashing perception, customer satisfaction, and perceived value could be examined to clarify the conditions under which green marketing translates into loyalty. Moreover, as this study was confined to QSR consumers in Batam City using a cross-sectional design, subsequent studies could adopt a longitudinal, multi-city, or cross-cultural design and complement the quantitative approach with qualitative methods such as in-depth interviews or focus group discussions, so as to explain more concretely why consumers respond as they do to sustainable marketing practices rather than merely restating general recommendations.

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