

THE IMPACT OF GREEN PACKAGING ON CUSTOMER TRUST AND SATISFACTION IN THE FAST FOOD INDUSTRY: A CASE STUDY ON THE SHOPEE E-COMMERCE PLATFORM

O IMPACTO DAS EMBALAGENS ECOLÓGICAS NA CONFIANÇA E SATISFAÇÃO DO CLIENTE NA INDÚSTRIA DE FAST FOOD: UM ESTUDO DE CASO NA PLATAFORMA DE E-COMMERCE SHOPEE

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Abstract

Sustainability concerns have increased the importance of green packaging in the fast-food industry, particularly in the context of e-commerce. This study examines the impact of green packaging on customer trust and customer satisfaction, as well as the mediating role of trust. Data were collected from 170 consumers and analyzed using structural equation modeling (SEM). The results show that green packaging has a positive effect on both customer trust and customer satisfaction. In addition, customer trust significantly influences satisfaction and partially mediates the relationship between green packaging and satisfaction. These findings indicate that green packaging not only enhances customer experience but also strengthens trust, thereby contributing to higher satisfaction. The study provides practical implications for businesses in developing sustainable packaging strategies to improve long-term performance.

Keywords: Customer Satisfaction. Customer Trust. Eco-Friendly Packaging. Fast Food. Sustainable Consumption.

Resumo

As preocupações com a sustentabilidade têm aumentado a importância das embalagens ecológicas na indústria de fast-food, especialmente no contexto do comércio eletrônico. Este estudo examina o impacto das embalagens ecológicas na confiança e na satisfação do cliente, bem como o papel mediador da confiança. Os dados foram recolhidos de 170 consumidores e analisados por meio de modelagem de equações estruturais (SEM). Os resultados mostram que as embalagens ecológicas têm um efeito positivo tanto na confiança quanto na satisfação do cliente. Além disso, a confiança influencia significativamente a satisfação e medeia parcialmente a relação entre embalagens ecológicas e satisfação. Estes resultados indicam que as embalagens ecológicas não apenas melhoram a experiência do cliente, mas também fortalecem a confiança, contribuindo assim para níveis mais elevados de satisfação. O estudo oferece implicações práticas para empresas no desenvolvimento de estratégias de embalagens sustentáveis com foco no desempenho a longo prazo.

Palavras-chave: Confiança do Cliente. Consumo Sustentável. Embalagem Ecológica. Fast-Food. Satisfação do Cliente.



1 INTRODUCTION

In recent years, environmental protection and sustainable development have become among society's top priorities, particularly in consumer industries with high levels of packaging use, such as the fast-food sector. The rapid growth of this industry has met the demand for convenience among urban consumers; however, it has also led to a significant increase in single-use packaging waste, placing substantial pressure on the environment and waste management systems. Additionally, the rapid growth of e-commerce, exemplified by platforms like Shopee, has driven the demand for food delivery and convenient consumption, resulting in a significant increase in the amount of packaging used during packaging and transportation. Against the backdrop of Vietnam's push to develop a digital economy aligned with sustainable consumption – in line with the government's guidelines on a circular economy – the trend toward green consumption is gaining increasing attention as consumers increasingly prioritize environmentally friendly products and services.

In this context, packaging not only serves the function of protecting products but has also become a crucial tool for conveying information and building brand image. In particular, eco-friendly packaging is considered a key solution for minimizing environmental impact and promoting sustainable consumption. It can enhance customers' perceptions of product safety and quality, while also contributing to the development of trust in brands. In addition, green packaging may evoke positive emotions during the consumption process, thereby improving overall customer satisfaction.

In Vietnam, green packaging and sustainable consumption have attracted increasing attention in recent years. Green packaging is often associated with more favorable consumer responses, including a greater tendency to support environmentally friendly products, while factors such as environmental awareness and willingness to pay are also considered important in promoting sustainable consumption. However, existing discussions tend to focus primarily on purchase intentions or general attitudes, whereas key psychological outcomes such as customer trust and customer satisfaction remain underexplored, particularly in the fast-food industry. Hanoi is one of the major cities with a high population density, where the young consumer group demonstrates frequent fast-food consumption alongside a growing concern for environmental issues. Nevertheless,

empirical evidence on the relationship between green packaging, customer trust, and satisfaction in this specific context remains limited. Therefore, examining these relationships is of significant importance both academically and practically.

Based on the aforementioned research gaps and practical needs, this study was conducted to analyze the impact of green packaging on customer trust and satisfaction in the food industry, a case study on the Shopee platform. From a theoretical perspective, this study helps fill a knowledge gap by clarifying the mechanisms through which green packaging influences consumer trust – an aspect that has been under-explored in previous research. From a practical perspective, the study's findings serve as a scientific foundation to support fast-food businesses in developing a roadmap for sustainable packaging transition. The study's findings will provide empirical evidence on the role of green packaging in consumer behavior, while offering managerial implications to help businesses improve packaging design in the fast-food industry, thereby optimizing the customer experience and enhancing customer loyalty in the era of the green economy.

2 LITERATURE REVIEWS AND HYPOTHESIS

2.1 Related theories

2.1.1 Stimulus–organism–response model (SOR)

The SOR theory is a classical framework used to explain consumer behavior by examining individuals' responses to external stimuli (MEHRABIAN; RUSSELL, 1974; REHMAN; ELAHI, 2024). According to this model, environmental factors (Stimulus) do not directly determine human behavior; instead, they operate through an internal cognitive processing mechanism (Organism), which ultimately leads to behavioral responses (Response) (MEHRABIAN; RUSSELL, 1974). Consumer behavior is influenced by external stimuli that shape perceptions and generate specific motivations and attitudes (BITNER, 1992). The S–O–R model enables researchers to understand how consumers process information and make decisions, as observable external factors (e.g., product attributes, price, and packaging) are translated into unobservable internal states (e.g., perceptions, emotions, and beliefs). When evaluating product attributes, consumers

are exposed to various types of stimuli: search attributes include color, shape, labeling, and price; experience attributes encompass tactile and gustatory qualities; and credence attributes involve safety and other concerns (GIRARD; DION, 2010). Furthermore, packaging is considered a critical stimulus within the SOR framework (REHMAN; ELAHI, 2024). Consumers' cognitive and emotional states are activated when evaluating these stimuli, which ultimately influence their purchase intentions (ZAHID *et al.*, 2024), closely associated with behavioral attitudes.

2.1.2 Signaling theory

Signaling theory explains information asymmetry between market participants. It posits that, in many cases, one party (typically the firm) possesses more information than the other (consumers), making it difficult for consumers to accurately assess corporate social responsibility or the quality of products and services prior to purchase. To mitigate this asymmetry, firms send signals to the market to convey information regarding product quality, value, or attributes (SPENCE, 1973). In the fast-food industry, where consumers often lack information about product origins and production processes, green packaging can serve as a tangible signal of a firm's environmental commitment. This helps reduce information asymmetry and enhance customer trust (CONNELLY *et al.*, 2011; ERDEM; SWAIT, 1998). When consumers observe features such as packaging made from recycled materials, paper substitutes for plastic or nylon, or labels indicating environmental friendliness, they are more likely to infer that the firm is environmentally responsible and offers eco-friendly products, thereby increasing trust in green products (RAHBAR; WAHID, 2011; DELMAS; BURBANO, 2011). Previous studies have demonstrated that environmental signals positively influence trust, which in turn affects consumer attitudes and behaviors (CHEN, 2010; NG *et al.*, 2013).

2.2 Constructs

2.2.1 Green packaging

Packaging is commonly defined as the materials and containers used to enclose, protect, transport, and present products to consumers (TJIPTONO; CHANDRA, 2016). Beyond its traditional protective and logistical functions, packaging increasingly serves as a strategic marketing tool that influences consumer perceptions and purchase decisions. In this context, green packaging refers to packaging that has minimal or no negative environmental impact, achieved through the use of recyclable, reusable, biodegradable materials, or those derived from renewable resources (SHABBIR *et al.*, 2020). In the food sector, packaging holds substantial potential for supporting sustainable development. Importantly, green packaging not only protects products but also serves as a vehicle for communicating a firm's environmental responsibility. Empirical studies indicate that environmental factors can enhance perceived value and consumption experiences; consumers tend to develop more favorable perceptions of products and firms, leading to positive evaluations and increased satisfaction (NGUYEN; VU, 2025; CHEN; CHANG, 2012). From a signaling perspective, environmentally friendly packaging conveys credible information about a firm's environmental commitment and product quality, thereby shaping consumer perceptions and reducing information asymmetry (SPENCE, 1973). Empirical evidence supports this view, indicating that environmental attributes embedded in packaging can enhance perceived value and generate more positive consumption experiences (CHEN; CHANG, 2012). As a result, consumers tend to develop more favorable attitudes toward both the product and the firm, leading to more positive evaluations and higher levels of satisfaction.

2.2.2 Customer trust

Customer trust is defined as the confidence and willingness to rely on a brand based on expectations of its reliability and integrity (MOORMAN *et al.*, 1992). In the fast-food industry, the proactive adoption of green packaging sends a strong signal of

ethical business practices. Through the Halo effect mechanism, this positive environmental perception extends to enhance overall trust in the brand's reputation, as well as perceptions of the hygiene and safety of its food products.

2.2.3 Customer satisfaction

Customer satisfaction is conceptualized as an attitude formed after purchase or service usage, based on prior consumption experiences (FORNELL, 1992). In general, satisfaction is understood as a cognitive and affective evaluation reflecting the consumer's sense of pleasure or disappointment resulting from a comparison between expectations and actual performance. Customer satisfaction or dissatisfaction represents the consumer's post-evaluation response to the discrepancy between pre-purchase expectations and actual product performance after consumption (OLIVER, 1999). In the context of green food consumption, satisfaction is influenced not only by product quality but also by the firm's environmental responsibility.

2.3 Hypothesis development

Packaging not only protects products but also influences consumers' evaluations and consumption experience. In the context of green consumption, environmentally friendly packaging – characterized by recyclability, biodegradability, or reduced material usage – acts as a salient environmental signal that enhances consumers' perceived value by aligning product attributes with pro-environmental values and expectations (CHEN; CHANG, 2012). Drawing on the Stimulus Organism Response (SOR) framework, green packaging can be conceptualized as an external stimulus that triggers favorable cognitive and affective responses, such as perceived quality, environmental value, and positive emotions, which subsequently influence evaluative outcomes like customer satisfaction (MEHRABIAN; RUSSELL, 1974). Empirical research supports this mechanism, indicating that green packaging design can evoke positive emotions and improve overall product evaluation (MAGNIER *et al.*, 2016). Furthermore, environmental attributes of products have been found to positively affect customer satisfaction through increased

perceived quality and value (OTTMAN, 2017; DANGELICO; VOCALELLI, 2017). Within the fast-food industry, where consumption decisions are often rapid and experience-based, packaging plays an even more prominent role in shaping customer perceptions. Green packaging can differentiate brands, reinforce environmental responsibility, and enhance the overall consumption experience, thereby contributing to higher levels of customer satisfaction. Accordingly, the hypothesis H1 is proposed:

H1: Green packaging positively influences customer satisfaction in the fast-food industry.

Furthermore, prior research has identified a relationship between green packaging and customer trust. Green branding has been found to positively affect customer trust. The use of green packaging significantly improves brand attitude and perceived value. These factors act as mediating variables, fostering customer trust and establishing a strong emotional connection between consumers and the brand (ZHAO *et al.*, 2021). This suggests that green packaging – an integral component of brand identity – can enhance trust by reinforcing an image of environmental responsibility. Additionally, green packaging can evoke initial consumer trust in eco-friendly products (PHAM *et al.*, 2018). Thus, green packaging functions as a credible signal of a firm's environmental responsibility, particularly in online shopping contexts characterized by high information asymmetry. Therefore, the hypothesis H2 is proposed:

H2: Green packaging positively influences customer trust in the fast-food industry.

A growing body of research highlights the important role of green packaging in shaping customer trust. From a signaling theory perspective, firms use observable product attributes – such as environmentally friendly packaging – to convey unobservable qualities, including environmental responsibility and product credibility, particularly in contexts characterized by information asymmetry (VU *et al.*, 2024). In this regard, green packaging functions as a credible signal that reduces consumers' uncertainty regarding a firm's environmental claims and enhances perceived trustworthiness. Empirical studies provide support for this relationship. For instance, prior research demonstrates that green branding initiatives positively influence customer trust by strengthening perceptions of corporate environmental responsibility and ethical commitment (GARBARINO; JOHNSON, 1999). As an integral component of brand identity, green packaging

reinforces these perceptions by offering tangible evidence of a firm's sustainability orientation. Similarly, studies in emerging markets suggest that environmentally friendly packaging can evoke initial consumer trust, particularly when consumers rely on observable cues to evaluate product credibility (SIRDESHMUKH *et al.*, 2002). In this context, when consumers trust a firm's environmental commitments as signaled by green packaging, they are more likely to evaluate their consumption experiences positively and report higher satisfaction. Based on these arguments, the hypothesis H3 is proposed:

H3: Customer trust positively influences customer satisfaction in the fast-food industry.

Drawing on the Stimulus-Organism-Response framework, external environmental cues – such as green packaging – are conceptualized as stimuli that shape consumers' internal cognitive and affective states, which subsequently influence their behavioral responses (MEHRABIAN; RUSSELL, 1974). Within this framework, green packaging serves as an environmentally relevant signal that can enhance consumers' perceptions of a firm's environmental responsibility and credibility. These perceptions, in turn, foster trust by reducing uncertainty and perceived risk associated with product quality and corporate claims (CHEN, 2010; CHEN; CHANG, 2012). Trust, as a key psychological state within the "organism" component, has been widely recognized as a central mechanism linking product attributes to consumer responses. Prior research demonstrates that environmentally friendly practices, including sustainable packaging, can strengthen customer trust by signaling transparency, ethical commitment, and product reliability (NGUYEN *et al.*, 2018). Once established, trust plays a critical role in shaping favorable consumer outcomes, particularly customer satisfaction, by enhancing perceived value and reinforcing positive consumption experiences (GARBARINO; JOHNSON, 1999; SIRDESHMUKH *et al.*, 2002). Accordingly, trust is not merely an outcome of green packaging but a pivotal mediating mechanism through which environmental product attributes are translated into customer satisfaction. By fostering trust, green packaging can indirectly influence consumers' evaluative judgments and overall satisfaction with the product or brand. Based on the above arguments, the following hypothesis is proposed:

H4: Customer trust mediates the relationship between green packaging and customer satisfaction in the fast-food industry.

3 RESEARCH METHODOLOGY

3.1 Measurement scale

Based on a comprehensive review of prior studies in the field, the authors adopted and refined measurement scales from previous research to construct the research model. Specifically, (1) Green packaging was measured using five observed variables adopted from previous studies (MAZIRIRI, 2020); (2) Customer trust was measured using four observed variables from prior research (BALL *et al.*, 2004; COELHO *et al.*, 2006; LENINKUMAR, 2017; KAMAL *et al.*, 2022); and (3) Customer satisfaction was measured using five observed variables from earlier studies (CHANG; FONG, 2010).

3.2 Research sample

Quantitative data for this study were collected through an online survey administered via Google Forms, combined with direct distribution of questionnaires through email to experts in the fast-food industry in Hanoi. The use of online surveys facilitated convenient distribution, broadened the reach to potential respondents, and reduced the incidence of unanswered questions, thereby minimizing the number of invalid responses excluded from analysis.

Prior to the official survey, the questionnaire was developed in two stages. In the first stage, a preliminary version was sent to ten industry experts to assess its relevance and reliability. Their feedback was used to refine the language and structure of the questionnaire to better align with the research context of the fast-food sector in Hanoi. In the second stage, a pilot survey was conducted with ten customers to ensure appropriateness before launching the official survey. The official questionnaire was distributed between February and April 2026. A total of 217 responses were collected, of which 170 valid responses were retained for analysis. Invalid responses were excluded due to indications of random answering. The collected data were processed using SPSS 21 and AMOS 22 to conduct reliability testing of the measurement scales, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and hypothesis testing.

4 RESULTS

4.1 Descriptive statistics

Table 1: Descriptive Statistics of the Sample

Category	Item	Frequency	Percentage
Gender	Male	71	41.8%
	Female	99	58.2%
Age	18–20	170	100%
Usage	Yes	156	91.8%
	No	14	8.2%
Fast Food Consumption Frequency	Rarely	25	14.7%
	1–2 times/week	53	31.2%
	More than 3 times/week	25	14.7%
	1–2 times/month	67	39.4%
Attention to Packaging When Buying Fast Food	Yes	131	77.1%
	No	39	22.9%
Willingness to Pay Extra for Green Packaging	Not willing	9	5.3%
	Slightly willing	29	17.1%
	Neutral	74	43.5%
	Willing	41	24.1%
	Very willing	17	10%

Source: Research data

In terms of demographic characteristics, female respondents accounted for a higher proportion (58.2%), while male respondents represented 41.8%. Regarding age, the sample was entirely composed of individuals aged 18–22 years (100%).

With respect to consumption behavior, the majority of respondents reported using fast-food products (91.8%), whereas only 8.2% did not. In terms of usage frequency, the largest proportion of respondents consumed fast food 1–2 times per month (39.4%), followed by 1–2 times per week (31.2%), rarely (14.7%), and more than three times per week (14.7%). These results indicate that moderate consumption frequency is most prevalent.

Concerning perceptions of green packaging, most consumers reported paying attention to packaging when using fast-food products (77.1%), while 22.9% did not. Regarding willingness to pay a premium for products with green packaging, the largest proportion of respondents indicated a “neutral” level of willingness (43.5%), followed by “willing” (24.1%), “slightly willing” (17.1%), “very willing” (10%), and “unwilling” (5.3%). This suggests that while consumers generally accept green packaging, their

willingness to incur additional costs remains cautious or moderate.

4.2 Reliability assessment and exploratory factor analysis (EFA)

The results of the reliability test using Cronbach’s Alpha indicate that all measurement scales achieved values greater than 0.7. Specifically, the Green Packaging scale had a Cronbach’s Alpha of 0.855; Customer Trust reached 0.881; and Customer Satisfaction achieved 0.864.

In addition, the Corrected Item–Total Correlation coefficients for all observed variables were greater than 0.3. This demonstrates that the constructs developed from the observed variables are reliable and suitable for subsequent factor analysis.

Table 2 – KMO and Bartlett’s Test Result

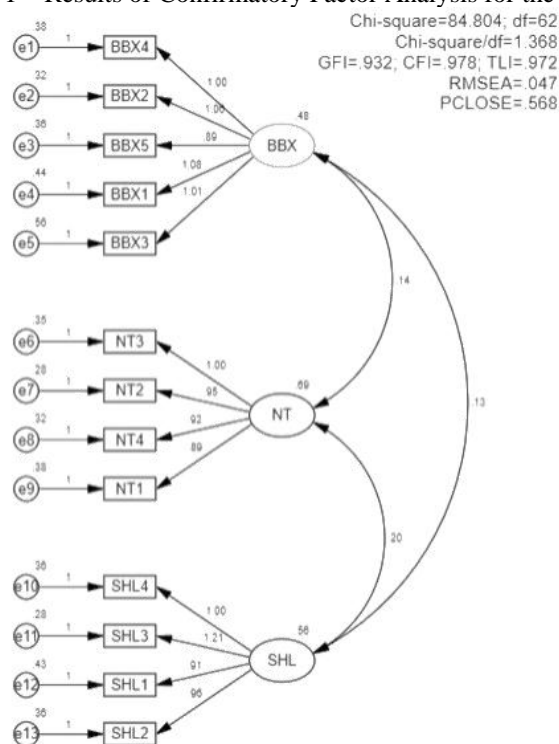
KMO and Bartlett’s Test		
Kaiser–Meyer–Olkin Measure of Sampling Adequacy.		.841
Bartlett’s Test of Sphericity	Approx. Chi–Square	1083.507
	df	78
	Sig.	.000

Source: Research data

The Kaiser–Meyer–Olkin (KMO) coefficient was 0.841 (> 0.5), indicating that the data were appropriate for factor analysis. In addition, Bartlett’s Test of Sphericity yielded a significance value of Sig. = 0.000 (< 0.05), confirming statistical significance and demonstrating that the observed variables are correlated. Therefore, exploratory factor analysis (EFA) was deemed appropriate.

4.3 Confirmatory factor analysis

Figure 1 – Results of Confirmatory Factor Analysis for the Measurement Scales



Source: Research data

The results of Confirmatory factor analysis (CFA) demonstrated that the measurement model exhibited good fit with the research data. The model fit indices satisfied the recommended thresholds: Chi-square/df = 1.368 (< 3), TLI = 0.972 (> 0.8), CFI = 0.978 (> 0.9), GFI = 0.932 (> 0.8), and RMSEA = 0.047 (< 0.08). These findings confirm that the measurement model is statistically valid and that the scales employed in the study are reliable.

4.4 Structural equation modeling

Table 3 – Hypothesis Testing Results

			Estimate	S.E.	C.R.	P	Decision
NT	<—	BBX (H2)	0.287	0.106	2.711	0.007	Accepted
SHL	<—	NT (H3)	0.250	0.080	3.127	0.002	Accepted
SHL	<—	BBX (H1)	0.204	0.095	2.142	0.032	Accepted

Source: Research data

The results of hypothesis testing presented in the table indicate that all proposed hypotheses are supported with strong statistical significance. Specifically, Hypothesis H1 shows that green packaging has a positive effect on customer satisfaction in the fast-food industry (Estimate = 0.204; C.R. = 2.142; $p = 0.032 < 0.05$); therefore, H1 is accepted. This result demonstrates that the use of environmentally friendly materials directly enhances consumers' experience and satisfaction during product consumption.

Similarly, Hypothesis H2 is supported, as green packaging positively influences customer trust (Estimate = 0.287; C.R. = 2.711; $p = 0.007 < 0.05$). This finding indicates that when firms invest in green packaging, customers are more likely to increase their level of trust in the brand's values and commitments. For Hypothesis H3, the analysis reveals that trust has a positive and statistically significant impact on satisfaction (Estimate = 0.250; C.R. = 3.127; $p = 0.002$). This result confirms the crucial role of trust as a psychological foundation that enhances overall satisfaction.

To examine the mediating role of Trust (NT) in the relationship between Green Packaging (BBX) and Satisfaction (SHL), as proposed in Hypothesis H4, the study employed a bootstrapping approach to assess indirect effects. The results are presented in the table 4:

Table 4 – Mediation Analysis Results of Customer Trust

Relationship	Direct Effect		Indirect Effect		Type of Mediation
	S.ES	Sig.	S.ES	Sig.	
SHL ← NT ← BBX	0.190	0.032	0.067	0.015	Partial mediation

Source: Research data

The table shows that the indirect effect of green packaging on satisfaction through the mediator Trust is 0.067. With a significance level of $p = 0.015$ ($p < 0.05$), this indirect effect is statistically significant at the 95% confidence level. This finding provides important empirical evidence that part of customer satisfaction in the fast-food sector is formed through the enhancement of trust driven by green packaging attributes. Therefore, Hypothesis H4 is accepted.

Furthermore, when examining the direct relationship between green packaging and satisfaction in the presence of the mediating variable, the results indicate that the direct effect is S.ES = 0.190 with a significance level of $p = 0.032$ ($p < 0.05$). According to mediation analysis theory, since both direct and indirect effects are statistically

significant ($p < 0.05$), Trust is identified as a partial mediator in the research model.

These findings suggest that green packaging plays a dual role in the fast-food industry in Hanoi: it not only directly enhances customer satisfaction through functionality and safety but also acts as a strategic signal that builds sustainable trust. This trust serves as a key catalyst, facilitating and amplifying overall customer satisfaction.

Table 1 – Results of Hypothesis Testing

Hypothesis	Content	Result
H1	Green packaging positively influences customer satisfaction in the fast-food industry	Accepted
H2	Green packaging positively influences customer trust in the fast-food industry	Accepted
H3	Customer trust positively influences customer satisfaction in the fast-food industry	Accepted
H4	Customer trust mediates the relationship between green packaging and customer satisfaction in the fast-food industry	Accepted

5 CONCLUSION

5.1 Discussion of research results

The research results show that green packaging has a positive impact on the trust and satisfaction of customers in the fast-food segment on the Shopee e-commerce platform. This finding is consistent with the S-O-R model (MEHRABIAN; RUSSELL, 1974) and signaling theory (SPENCE, 1973), in which green packaging is considered a signal that helps reduce information asymmetry and increase trust (CONNELLY *et al.*, 2011; CHEN, 2010).

In addition, trust has a positive effect on satisfaction, reinforcing the central role of trust in customer behavior (GARBARINO; JOHNSON, 1999). Notably, trust plays a mediating role in the relationship between green packaging and satisfaction. This result is consistent with the logic of the S-O-R model, in which green packaging acts as a stimulus, influencing the internal cognitive and psychological state, namely trust, which in turn leads to the response of satisfaction. This finding indicates that customer satisfaction not only stems from the physical attributes of packaging but is also reinforced through a psychological transformation process, where trust serves as a mediating variable.

5.2 Theoretical and empirical contributions

The study contributes to systematizing and expanding the theoretical framework of green consumer behavior in the context of the digital economy in Vietnam. While previous studies have mainly focused on purchase intention or attitudes toward green products without clarifying experiential outcomes such as satisfaction, as well as lacking in-depth analysis of the mediating mechanism of trust, this study contributes by developing and testing an integrated model linking green packaging, trust, and satisfaction. The research findings confirm that green packaging is a component of perceived value, contributing to reducing cognitive dissonance between the demand for convenience consumption and the environmental awareness of the Gen Z generation.

The findings also imply that fast-food businesses in particular and food businesses in general operating on e-commerce platforms need to consider investment in sustainable packaging as a strategy to build long-term competitive advantage. The transition from single-use plastic packaging to environmentally friendly materials is an optimal solution to enhance brand value and customer trust.

5.3 Limitations and future research directions

Although the study has provided valuable insights into the role of green packaging in shaping customer trust and satisfaction in the fast-food industry, several limitations remain. First, the sample size and research scope are limited, which may restrict the generalizability of the findings to the broader market. Second, the current model does not account for potential confounding factors such as green skepticism or promotional programs on e-commerce platforms. Third, the study is limited to the fast-food industry; therefore, the findings may not be widely applicable to other industries with different consumption characteristics. Fourth, the data were collected at a single point in time and are based on consumers' subjective evaluations, thus failing to capture changes over time and potentially containing perceptual bias.

Accordingly, the study proposes several directions for future research. Future studies should expand the sample size and scope to enhance representativeness. At the

same time, research should be extended to other industries to test the robustness of the model. In addition, applying longitudinal research designs would help better capture changes in customer behavior and perceptions over time. Furthermore, future studies may incorporate additional variables such as perceived risk, brand image, or green skepticism to further refine the model. Finally, future research should extend the outcomes to include factors such as customer loyalty or brand performance, thereby providing a more comprehensive understanding of the value of green packaging for businesses. By addressing these limitations and advancing the proposed research directions, future studies can contribute more deeply to understanding green consumer behavior and support fast-food businesses in developing more effective and sustainable packaging strategies.

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