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The Effect of Greenwashing on Switching Intention: The Mediating Roles of Green Consumer Confusion and Perceived Consumer Skepticism, and the Moderating Role of Green Perceived Risk (A Case Study on PlantBottle Coca-Cola Consumers among Indonesian Citizens)

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Abstract: This study investigates the influence of greenwashing on switching intention by examining the roles of green perceived risk, green consumer confusion, and perceived consumer skepticism. A quantitative approach was employed, using surveys distributed to Indonesian consumers who had purchased PlantBottle Coca-Cola products in eight different countries. A total of 120 valid responses were collected and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS software. The results indicate that greenwashing does not have a direct effect on switching intention. Furthermore, green consumer confusion does not mediate this relationship. However, perceived consumer skepticism significantly mediates the relationship between greenwashing and switching intention. Additionally, green perceived risk does not moderate the effect of greenwashing on switching intention. These findings underscore the importance for companies to communicate environmental claims transparently and credibly. Misleading sustainability messages may foster consumer skepticism, which can ultimately undermine brand loyalty and increase switching behavior. In the context of eco-friendly branding, this study contributes to a deeper understanding of the psychological mechanisms that drive negative consumer reactions to greenwashing.

Keywords: greenwashing, green consumer confusion, perceived consumer skepticism, green perceived risk, switching intention.

INTRODUCTION

Environmental issues have become a growing concern for consumers globally and have increasingly influenced business and research agendas across various industries. The rising awareness of environmental degradation and global warming has encouraged consumers to

favor eco-friendly products (Chen & Chang, 2013). This trend has prompted companies to implement green marketing strategies, which refer to business practices aimed at fulfilling consumer needs while minimizing negative environmental impacts (Arseculeratne & Yazdanifard, 2013). As a result, environmental responsibility has evolved from a compliance obligation into a key component of corporate strategy.

Coca-Cola is one such company that has adopted green marketing by launching PlantBottle, an environmentally friendly packaging made from renewable plant-based materials such as corn, sugar beet, and rice. The bottle is marketed as 100% recyclable. However, PlantBottle has faced criticism and was labeled as greenwashing by a Danish environmental group, Forest of the World, which formally accused the company of misleading claims. This controversy may influence consumer perceptions, especially among those who are environmentally conscious, and potentially affect their behavioral responses—including in countries where the product is not available, such as Indonesia.

Previous studies offer mixed findings regarding the impact of greenwashing on consumer switching intention. While Peiris and Gampathirana (2019) found no direct relationship, other studies indicate that greenwashing can increase consumer confusion and skepticism, as well as perceived risks associated with green products (Chen & Chang, 2013; Mustiko Aji & Sutikno, 2015). Many consumers lack the technical knowledge to assess environmental claims, which may lead to misunderstandings and erosion of trust. While the influence of greenwashing on switching behavior remains unclear, it has been shown to affect green consumer confusion and perceived consumer skepticism.

Another important factor is green perceived risk, which refers to consumer apprehension resulting from misleading environmental information. When greenwashing increases, consumers may become hesitant to trust or purchase green products (Chen & Chang, 2013). However, the moderating role of green perceived risk in this context has received limited attention, and findings remain inconsistent across studies (Susiari, 2016).

To address these gaps in the literature, this study proposes a model that examines the relationship between greenwashing and switching intention, with green perceived risk as a moderating variable and green consumer confusion and perceived consumer skepticism as mediating factors. This framework aims to provide companies with deeper insight into how unclear sustainability claims, skepticism, and risk perception interact to shape consumer behavior (Kristia, 2023).

A preliminary study conducted in March 2024 involving 20 Indonesian students in Purwokerto showed that 80% of respondents were aware of the PlantBottle product, even though it is not available in Indonesia (Ramadhani et al., 2022). Notably, 80% had heard of greenwashing allegations against it, 75% believed it to be an environmentally friendly product, and 70% perceived potential risk if the allegations were true.

These findings underscore the need for further empirical investigation into the psychological mechanisms that drive consumer responses to greenwashing in the Indonesian context, particularly in relation to Coca-Cola's PlantBottle. Building upon previous studies (Chen & Chang, 2013; Mustiko Aji & Sutikno, 2015; Peiris & Gampathirana, 2019; Tarabieh, 2021), this research seeks to examine a more integrated model of greenwashing effects using a mediating-moderating approach.

METHOD

This study used a quantitative research design using a cross-sectional survey approach to investigate the impact of greenwashing on switching intention, with green consumer confusion and perceived consumer skepticism serving as mediating factors and green perceived risk as a moderating variable. No manipulation of variables was applied, allowing for the observation of respondents' natural behavioral responses. The study focused on five main constructs:

greenwashing (independent variable), green consumer confusion and perceived consumer skepticism (mediating variables), green perceived risk (moderating variable), and switching intention (dependent variable).

The target population comprised Indonesian citizens who had consumed Coca-Cola PlantBottle products at least twice in countries where the product is marketed, such as Australia, Hong Kong, the United States, South Korea, Canada, Japan, China, and Taiwan. Data were gathered by an online questionnaire disseminated via purposive sampling, aimed at individuals with relevant consuming experience. A five-point Likert scale was used, spanning from 1 (strongly disagree) to 5 (strongly agree). Based on the Lemeshow sampling formula and accounting for potential dropouts, a total sample of 120 respondents was obtained (Sugiyono, 2013).

Primary data were obtained directly from respondents' responses, whilst secondary data were derived from peer-reviewed journals, academic texts, and reputable literature pertinent to the study's topics (Suliyanto, 2017). The measurement items for each variable were derived from previously validated instruments, including those created by Lyon & Montgomery (2015), Avcilar & Demirgünes (2017), and Chen & Chang (2013), among others.

Data analysis was conducted using Partial Least Squares - Structural Equation Modeling (PLS-SEM) with the aid of SmartPLS software. Model validity and reliability were assessed through several procedures. Convergent validity was assessed through the analysis of factor loadings (threshold > 0.50), whereas discriminant validity was evaluated using the Average Variance Extracted (AVE), Fornell-Larcker criterion, and the Heterotrait-Monotrait Ratio (HTMT), with HTMT values anticipated to remain below 0.90 (Kock & Lynn, 2012). Reliability was assessed using Cronbach's Alpha and Composite Reliability, both of which needed to above 0.70 (Hair et al., 2014). Hypotheses were evaluated via the bootstrapping technique, with significance assessed according to p-values (<0.05).

RESULTS AND DISCUSSION

Respondent Profile

The participants in this study consisted of 120 Indonesian citizens who had consumed Coca-Cola PlantBottle at least twice during their visits to eight different countries. Based on gender, the majority of respondents were female (n = 80), while male respondents totaled 40 individuals. This conclusion may indicate women's more prominent participation in family spending choices, especially with food and beverage goods. Women are more inclined to consider environmental assertions, such as those presented by Coca-Cola's PlantBottle.

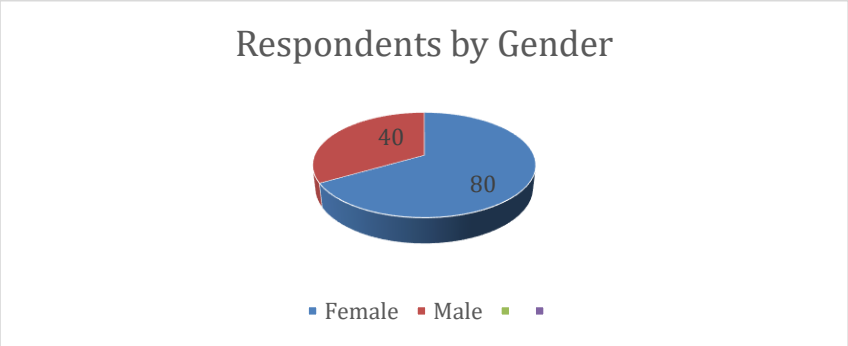

Figure 1. Research Subject Data Chart Based on Gender

In terms of age, the dominant age group was 17–25 years (n = 80), consisting primarily of university students studying abroad or young professionals. This age group is often characterized by greater awareness of environmental issues, having grown up in a global context increasingly shaped by discussions of climate change and sustainability. Their

heightened awareness may also be linked to a greater willingness to support environmentally friendly products.

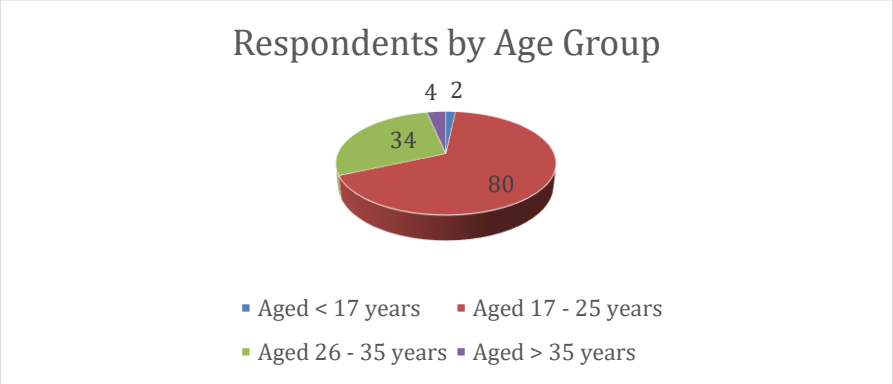

Figure 2. Research Subject Data Chart Based on Age

Regarding countries visited, Japan was the most frequently visited destination (n = 38), likely due to its geographical proximity to Indonesia and the widespread availability of Coca-Cola products in various retail outlets. Other countries reported include the United States, South Korea, China, Canada, Australia, Hong Kong, and Taiwan.

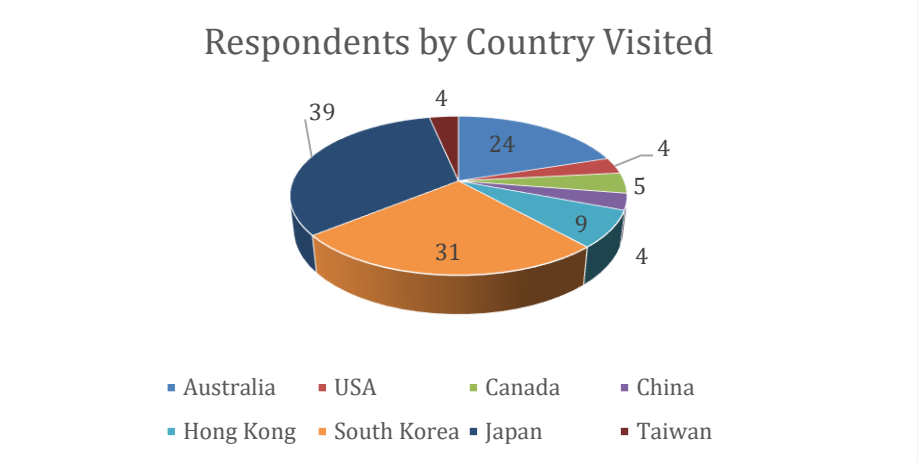

Figure 3. Research Subject Data Chart Based on Countries Visited

SmartPLS Analysis Results

1. Outer Loading Analysis

   PLS-SEM was conducted with SmartPLS 3. Indicators with loading factors below the 0.5 threshold were excluded to ensure model validity. The removed items included X2.1, X2.2, X2.3 (related to Green Consumer Confusion), and X3.2 (related to Perceived Consumer Skepticism). After the exclusion of these items, all remaining indicators achieved loading factors above 0.5, confirming construct validity.

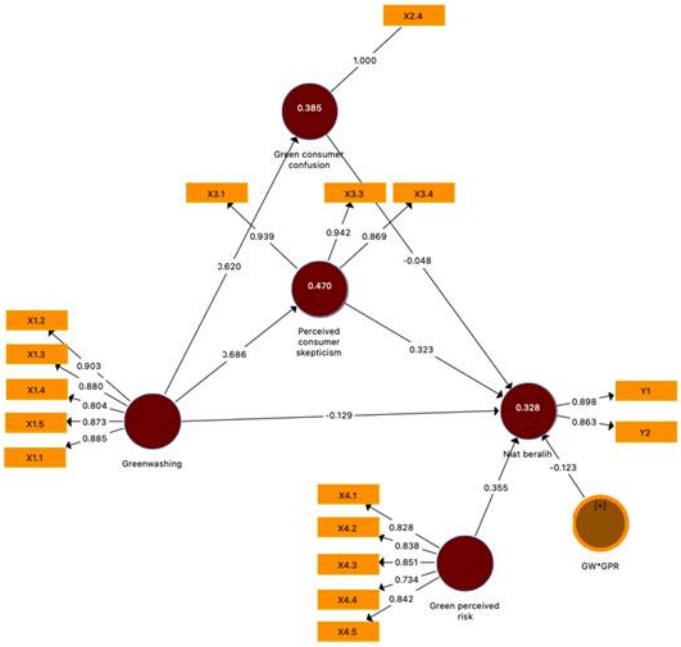

Figure 4. PLS Algorithm Assessment Results (loading factor > 0.5)

2. Average Variance Extracted (AVE)

As shown in Table 1, all constructs recorded AVE values above 0.5, which indicates satisfactory convergent validity. The lowest AVE value was 0.672 for the construct Green Perceived Risk.

Table 1. Average Variance Extracted (AVE)

Variable	AVE	Status
Greenwashing * Green Perceived Risk	1.000	Valid
Green Consumer Confusion	1.000	Valid
Green Perceived Risk	0.672	Valid
Greenwashing	0.756	Valid
Switching Intention	0.776	Valid
Perceived Consumer Skepticism	0.841	Valid

3. Reliability Test (Cronbach's Alpha and Composite Reliability)

The reliability test results in Table 2 indicate that all constructions satisfy the criteria for internal consistency. Cronbach's Alpha levels above 0.6, while Composite Reliability (CR) values surpassed 0.7.

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	Composite Reliability	Status
Greenwashing * Green Perceived Risk	1.000	1.000	Reliable
Green Consumer Confusion	1.000	1.000	Reliable
Green Perceived Risk	0.877	0.911	Reliable
Greenwashing	0.919	0.939	Reliable
Switching Intention	0.712	0.874	Reliable
Perceived Consumer Skepticism	0.905	0.941	Reliable

4. Discriminant Validity: Fornell-Larcker Criterion

The Fornell-Larcker Criterion was used to evaluate discriminant validity. The data in Table 3 demonstrate that the square root of the AVE for each construct exceeds its correlations with other constructs, hence affirming discriminant validity.

Table 3. Fornell-Larcker Criterion Results

Variable	GW*GPR	GCC	GPR	GW	PCS	SI
Greenwashing * Green Perceived Risk	1.000					
Green Consumer Confusion	-0.220	1.000				
Green Perceived Risk	-0.236	0.536	0.820			
Greenwashing	-0.281	0.620	0.563	0.869		
Perceived Consumer Skepticism	-0.184	0.666	0.703	0.686	0.881	
Switching Intention	-0.259	0.313	0.522	0.308	0.482	0.917

5. Discriminant Validity: Heterotrait-Monotrait Ratio (HTMT)

HTMT values for all constructs were within the suggested threshold of 0.90, therefore affirming the validity of the measuring methodology.

Table 4. HTMT Results

Variable	GW*GPR	GCC	GPR	GW	SI	PCS
Greenwashing * Green Perceived Risk						
Green Consumer Confusion	0.220					
Green Perceived Risk	0.254	0.565				
Greenwashing	0.295	0.644	0.622			
Switching Intention	0.313	0.376	0.658	0.386		
Perceived Consumer Skepticism	0.193	0.698	0.779	0.745	0.591	

6. Hypothesis Testing

Hypothesis testing was conducted with bootstrapping with 5000 samples. Hypotheses were deemed supported if the t-statistic exceeded 1.96 or the p-value was less than 0.05. Table 5 indicates that the correlation between Greenwashing and Switching Intention was not statistically significant. The mediating impact of Perceived customer Skepticism was confirmed, demonstrating an indirect influence of Greenwashing via skepticism on customer behavior.

Table 5. Hypothesis Testing Results

Hypothesis	T-Statistic	P-Value	Result
Greenwashing → Switching Intention	1.098	0.273	Not Supported
Greenwashing → GCC → Switching Intention	0.402	0.688	Not Supported
Greenwashing → PCS → Switching Intention	2.405	0.017	**Supported**
Greenwashing * Green Perceived Risk → Switching Intention	1.506	0.133	Not Supported

Hypothesis Discussion

1. Hypothesis 1: The Effect of Greenwashing on Switching Intention

The results indicate that greenwashing does not significantly influence switching intention. This suggests that consumers may not always perceive or respond to greenwashing with brand-switching behavior. One possible reason is limited public awareness or understanding of what constitutes greenwashing. When consumers fail to recognize misleading environmental claims, they are less likely to feel deceived or compelled to switch.

Moreover, brand loyalty may buffer the effect of greenwashing. Consumers loyal to a product may prioritize functional benefits such as taste, price, or convenience over ethical

concerns. This aligns with studies by Maesya (2021) and Peiris & Gampathirana (2019), which found no direct relationship between greenwashing and switching behavior.

Quantitative findings support this conclusion, with respondents noting that the PlantBottle only contains about 30% plant-based materials, raising doubts about its eco-friendliness. The absence of third-party certifications exacerbates this skepticism but is not strong enough to trigger switching intention.

2. Hypothesis 2: The Mediating Effect of Green Consumer Confusion

The research indicated that green consumer confusion did not substantially moderate the connection between greenwashing and switching intention. While confusion typically results from ambiguous or misleading environmental information (Chen & Chang, 2013), many respondents in this study reported a pre-existing skepticism rather than confusion. They distrusted green claims outright, bypassing the confusion phase.

Furthermore, practical considerations such as product quality, price, and availability appear to outweigh ambiguous marketing claims in determining switching behavior. These findings are consistent with prior research (Chen & Chang, 2012; Mustiko Aji & Sutikno, 2015; Tarabieh, 2021), which found that consumer confusion did not act as a significant mediator.

Open-ended responses reinforced this outcome. Participants cited visual similarities between PlantBottle and conventional plastic bottles, unclear labeling, and lack of public campaigns—factors that foster doubt, not confusion.

3. Hypothesis 3: The Mediating Effect of Perceived Consumer Skepticism

The results indicate that perceived consumer skepticism substantially influences the connection between greenwashing and switching intention. When consumers suspect exaggerated or unverified environmental claims, their trust diminishes, increasing their tendency to seek alternatives perceived as more credible (Leonidou & Skarmeas, 2017).

This skepticism is often fueled by the lack of transparent evidence. For instance, Coca-Cola's PlantBottle lacks detailed labeling or external certifications, prompting consumer doubt about its environmental integrity. This is in line with As-Shiddiqie (2023) and Mustiko Aji & Sutikno (2015), who identified skepticism as a critical driver of green behavior change.

Open responses revealed that many consumers were unconvinced about the biodegradability and ecological benefits of the PlantBottle, citing potential greenwashing tactics. This erosion of trust encourages consideration of more transparently sustainable products.

4. Hypothesis 4: The Moderating Effect of Green Perceived Risk

Unexpectedly, perceived green risk did not influence the connection between greenwashing and switching intention. Although perceived risk involves concerns about potential negative environmental outcomes (Chen & Chang, 2013), it appears insufficient to alter behavior in this context.

One interpretation is that consumers who are already skeptical may be predisposed to switching, regardless of risk perception. Conversely, consumers less concerned about environmental issues may remain unaffected by perceived risks. This limited moderating role is supported by findings from Chen & Chang (2012) and Tarabieh (2021).

Quantitative insights suggest that while participants acknowledged risks such as improper disposal or health hazards, these concerns did not consistently translate into switching behavior. Factors like habit, convenience, and product familiarity may override environmental risk considerations in purchase decisions.

CONCLUSION

This research investigated the impact of greenwashing on switching intention by using green consumer confusion and perceived consumer skepticism as mediating factors, with green perceived risk serving as a moderator. The findings show that greenwashing does not directly influence consumers' switching intentions. Green consumer confusion also fails to mediate this relationship, indicating that confusion is insufficient to trigger behavioral change. Conversely, perceived consumer skepticism substantially buffers the impact of greenwashing, underscoring the pivotal role of consumer suspicion in influencing switching behavior. Furthermore, green perceived risk does not moderate the relationship, suggesting that perceived environmental risk does not amplify the influence of greenwashing on consumer decisions.

Theoretically, these findings contribute to green marketing literature by underscoring the stronger role of skepticism compared to confusion and risk in consumer responses to greenwashing. Practically, companies are urged to enhance transparency and credibility in their sustainability communications, supported by verifiable claims and third-party endorsements. Future research should involve more diverse samples across cultural and generational contexts, investigate deeper psychological mechanisms, and adopt cross-national comparisons. Such directions will improve the robustness and global relevance of green consumer behavior insights.

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