

Corporate Greenwashing and Consumer Purchase Frequency in China Across Three Industries

Yufang He

8 Hao Jiantashan Lu Huangpu Qu Guangzhou Shi, Guangdong China; 1853647813@qq.com

Mentor: Zitong Li

ABSTRACT: Corporate greenwashing practices will jeopardize sustainable development efforts and deter consumer trust in the long run. Especially in China, there is a lack of policies regulating the occurrence of greenwashing, which refers to exaggerating, misleading, trimming, or presenting false information on the level of sustainability of a particular product, service, or corporate action. This paper identifies four prevalent forms of greenwashing: Good Cover Bad, Vague Wording, Dishonesty, and Irrelevancy. Researchers collected data from a self-designed survey asking consumers to rank their purchase frequency of a particular product from three industries, beauty products, food and beverage, and clothing, before and after the brand commits greenwashing in a hypothetical situation. A cluster analysis compares and contrasts their responses, clustering all 481 respondents into four groups based on their shared behavioral preferences. By cross-comparing the four groups, we make connections on how individual socio-economic background can influence their sensitivity to corporate greenwashing.

KEYWORDS: Environmental Engineering, Pollution Control, Policy, Corporate Greenwashing, Consumer Response.

■ Introduction

Greenwashing refers to exaggerating, misleading, trimming, or presenting false information on the level of sustainability of a particular product, service, or corporate action. It has become a more pressing and prevalent issue in China as societies grow in environmental awareness. Consumers' expectations for environmentally responsible products incentivized corporations to take the shortcut and greenwash instead of properly investing in sustainable production. Greenwashing undermines environmental actions; in particular, it is incompatible with the UN Sustainable Development Goal 13, "Climate Action," and the High-Level Expert Group's pledge to 'zero tolerance for net-zero greenwashing.'¹ If left unaddressed, greenwashing can impede environmental progress and erode consumer trust.² It poses a significant challenge to the larger economy and individuals living under the system. Companies that benefit from greenwashing tactics are less motivated to invest in truly sustainable practices.³ Consumers who identify instances of greenwashing may overlook the fundamental principles of sustainable development and thus underestimate the need for sustainable goals. In China, no specialized laws have been enacted against corporate greenwashing. The very concept of "greenwashing" is still in its infancy stages, unaware to the greater public. Currently, China regulates greenwashing primarily through advertising and consumer protection laws.⁴ Yet, these laws do not cover all the various forms of greenwashing, leaving many firms with opportunities to get away unpenalized.

Previously identified research gaps include a lack of quantitative analysis of consumer sensitivity to different forms of greenwashing and how individual socioeconomic profiles may influence that sensitivity; a shortage in the examination of other stakeholders' involvement in greenwashing aside from

consumers and corporations; and an absence of a defining taxonomy that explores the difference in perceived severity of the various forms of greenwashing.³ Furthermore, few pieces of literature have addressed consumers' responses to greenwashing, which is a critical force that incentivizes corporate activity. We identified consumer awareness as the most important breakthrough point in designing an effective policy. Corporations will stop greenwashing if their profits are declining as a result. Thus, this paper seeks to align definitions of greenwashing by categorizing four prevalent greenwashing practices and localizing the taxonomy under the Chinese economy. Also, this paper aims to fill research gaps by conducting an in-depth analysis of greenwashing in three industries: beauty products, clothing, food, and beverage, all of which are frequent, daily products, and examines the difference in the impact of four identified forms of greenwashing on consumer purchase frequency. Last, concluding from the survey results, this paper will suggest implications for stakeholders to understand, identify, preempt, and tackle greenwashing across industries.

Literature Review:

As societies become more environmentally aware, more protocols, such as the Corporate Social Responsibility (CSR) and the ESG (environmental, social, governance) criteria, have emerged as new evaluations for business investments. Data show that many consumers expect companies to demonstrate high social involvement, be environmentally active, and operate with high ethical conduct.⁵ To work up to that expectation, many firms, taking advantage of the underdeveloped environmental legal system, adapt to greenwashing practices where they exaggerate the extent of their sustainability level or pres-

ent misinformation to attract green consumers and create a more favorable brand image.⁵

Definition of Greenwashing:

Corporate greenwashing is the act of exaggerating, misleading, trimming, or presenting false information on the level of sustainability of a particular product, service, or corporate action.³ When discovered, greenwashing affects corporations in several ways. It lowers investors' intention to invest and damages consumers' trust, consequently lowering purchase intention. For other competing firms, greenwashing by one corporate can ruin the reputation of the entire industry, which H. Wang *et al.* referred to as the spillover effect.⁶

Four main categories of greenwashing are identified in this paper:

Vague Wording. Vague wording refers to when firms tag their product/service with environmentally friendly labels yet do not provide authorized documentation to back up their claim. For example, in 2022, H&M was sued in New York for featuring an "environmental scoreboard" showing a clothing section produced with sustainable material. However, critics point out that the "scoreboard" characterizes certain items as being more sustainable than they are.⁷

Good covering, bad. Good cover, bad is a form of corporate greenwashing when firms intentionally display an incomplete record of their green credentials, showing only the favorable aspects of a product/service, or divert sustainability claims to cover a questionable environmental record. For example, HSBC, one of the largest consumer banks, had been advertising its self-claimed environmental act of participating in a Net Zero alliance while intentionally avoiding mentioning their finances in a fossil fuel project. For this, HSBC had been officially called out by the Advertising Standards Authority (ASA) for committing greenwashing.⁸

Dishonesty. Dishonesty, as a form of greenwashing, exists when firms provide false or made-up data as any form of qualification for their sustainability or when an inconsistency exists between corporate actions and stated intentions. For example, Coca-Cola once claimed its bottle packaging was 100% recyclable. Still, an environmental organization, the Sierra Club, points out that the sticker on the outside of the bottle is made of polypropylene, a non-recyclable material.⁹

Irrelevance. Companies make technically compelling but environmentally irrelevant claims.

Sectoral Impact of Greenwashing:

This research considers three consumer-related industries: food, clothing, and beauty. These three industries are chosen for their regular association with consumer choice, and they account for a significant proportion of overall consumer spending.^{10,11} These three industries are chosen for reasons as followed.

Greenwashing practiced by corporations in the food industry can be highly implicit. Colors and images are less detectable elements, yet they convey hidden and significant meanings that can influence a consumer's purchase decision.^{12,13} For example, the color green on product packaging is often associated with

concepts of nature and safety. Consumers tend to perceive it as a cue signaling an environmentally friendly product or brand, even when the product itself might not qualify as being sustainable.¹⁴ In particular, research conducted by Boncinelli *et al.*¹⁵ proves that while green packaging, the practice of using visually stimulating elements such as colors and images on food packages, can mislead consumer perception of the level of sustainability of a product, it can potentially increase the market share of a firm, incentivizing greenwashing. The involvement of multiple academic expertise, including psychology, biology, and behavioral economics, poses a noteworthy challenge to policymakers when combating greenwashing in the food industry. For such reason, this research aims to uncover the implicit factors influencing consumers' sensitivity toward greenwashing on food products, and how policymakers could take advantage of this knowledge to better inform the public and discourage consumption.

The second industry examined in this study is the clothing industry, which was chosen for its high susceptibility to greenwashing. According to the EU, textile production doubled from 2000 to 2015, and its consumption is expected to increase by 63% by 2030.¹⁶ This industry, one of the most environmentally unfriendly industries, must adapt to a more sustainable production process.¹⁶ Currently, the EU has proposed several strategies to regulate the sustainability of the textile industry. First, the release of polluted water in manufacturing processes was banned. Then, a reduction in microplastics to alleviate the impact of microfiber shedding was required, and the standardization of green reports further enhanced the validity of sustainable development in the fashion industry.¹⁶

The social and policy expectations put on the fashion industry to be more sustainable can backfire and lead to more greenwashing.¹⁵ Greenwashing actions in this industry include overstating the level of sustainability of a firm or product and invalid eco-labeling, which, when unidentified, can help improve brand image and incentivize guilt-free consumption. Thus, this study sought to investigate more effective policies to hinder greenwashing by understanding the consumer decision-making process in the clothing industry.

Finally, the cosmetics industry was also chosen for its high susceptibility to greenwash. Research done by Rocca *et al.*¹⁷ claims that cosmetics, considering the enormous participation in the global resource and consumer market, have only recently entered the sustainability market. Information-wise, we are witnessing an increase in the number of articles published on sustainability in the cosmetics industry from 2010 onwards. More consumers are aware of the issue and start looking for sustainable products. Corporations adapting to sustainable marketing strategies are guaranteed an advantage over their competitors and obtain benefits in terms of brand reputation and customer satisfaction.¹⁸ However, this lures businesses to promote sustainability without actually investing in sustainable production, leading to greenwashing in the cosmetics industry. Corporations consider sustainability to be a social expectation enforced by stakeholders or the government rather than a corporate initiative.¹⁸

It is important that policymakers have a better understanding of what drives consumers to respond to greenwashing practices in the cosmetics industry in order to more effectively respond to growing malpractices, which are driven by demands for more sustainable products.

Consumer Response to Greenwashing:

In general, corporate greenwashing has the following effects. Since most manifestations of greenwashing appear in product/business advertisements, greenwashing lowers consumers' willingness to purchase the associated product, and they are less likely to trust advertisements accordingly. Greenwashing deters brand credibility; once lost, it becomes challenging to reestablish brand loyalty and consumer brand engagement. An interesting effect of corporate greenwashing regards its spillover effect, referring to when one brand greenwashes, consumers are less likely to buy similar products in the same industry, lowering the overall judgment of the industry.¹⁹

Several methods are proposed, and some have been implemented to cope with greenwashing. First, the emergence of environmental organizations such as Greenpeace's Stop-Greenwash.org serves to regulate the CSR reports. Second, promoting education for sustainable development ensures consumers can detect misleading information. Third, examining CSR reports by a credible third party assists in providing valid documentation for corporations' claimed sustainability.⁵

■ Methods

To meet the stated research objectives, this paper conducts a literature review on existing research on greenwashing. Conclusions drawn from the literature review are used to place the topic of greenwashing in a broader economic background and refine arguments made in this paper. Additionally, this paper will both quantitatively and qualitatively analyze data collected from a self-designed survey conducted in August 2023. We spread the survey on social media, opened it up to all Chinese internet users, and received a total of 481 valid responses (n=481) from these online consumers in China. The survey is structured into three sections: consumer socio-economics profile, including age, gender, income, occupation, status, and awareness of greenwashing prior to completing the survey; consumer purchase frequency by product type, including luxury and necessity products from clothing, beauty products, and food and beverage industry, without corporate greenwashing; and purchase frequency of the same products under a hypothetical situation when brands commit each of the four, identified forms of greenwashing. The response in the third section serves as a measurement of consumer sensitivity toward corporate greenwashing. Considering the difference in socioeconomic background of individual respondents, this survey is designed to answer the research question: Which factors most significantly influence consumer purchase decisions in response to corporate greenwashing? And how that may vary depending on respondents' different socioeconomic backgrounds. This paper is separated into two sections.

This paper will dissect a cluster analysis that categorized the respondents into four groups based on similarities in their

socio-economic profile and their responses to different forms of corporate greenwashing. The analysis was built based on first-hand data collected in the survey. These four groups identify behavioral preferences in consumers with distinct socioeconomic characteristics and provide insights into policy implications. In simple conclusion, three sets of matrixes are being compared in this paper, each contributing to the final cluster analysis: first, consumer purchase frequency of a particular product before and after a corporation commits greenwashing; second, cross-comparison between the four forms of greenwashing, and how consumers sensitivity alters from one to another; and third, cross-comparison of products from three different industries, and how consumers respond differently depending on different product types.

Based on the survey results, a 5-point scale is designed to categorize consumer sensitivity specialized in the scope of this study.

- Not sensitive: 100% of respondents report no impact of greenwashing on consumer decision
- Modestly sensitive: over 75% of respondents report no impact or minor impact of greenwashing on consumer decision-making
- Moderately sensitive: over 50% of respondents report a significant impact of greenwashing on consumer decision-making
- Sensitive: over 75% of respondents report a significant impact of greenwashing on consumer decision-making
- Extremely sensitive: All respondents report a significant impact of greenwashing on consumer decision-making

■ Survey Results and Discussion

Economic analysis of Chinese consumers' perception of greenwashing

The survey has received a total of 481 valid samples (n=481), with the following results:

Behavior: Response to Greenwashing:

Purchase Frequency Without Perceived Greenwashing:

The first section of the survey asks respondents about their regular purchase frequency of beauty products, clothing products, and food & beverage products. Each product is divided into subcategories: necessity products (products consumers purchase regardless of income level) and luxury product (non-life essentials products purchased with excess income). The results are summarized into the following points:

1. Most respondents purchase necessary beauty products on a seasonal and monthly basis.
2. The purchase of luxury beauty products is slightly less frequent than that of necessary beauty products.
3. Most respondents purchase necessary clothing products on a seasonal and monthly basis.
4. The frequency of purchases of luxury clothing products is scattered, with no distinct trend.
5. Most respondents purchase necessary food and beverage products weekly and monthly.
6. The purchase frequency of luxury food and beverage products, such as wine, is evenly distributed and slightly less frequent than other products. More people are in the "no purchase" or "seasonal purchase" group.

■ Cluster Analysis

The following cluster analysis has identified four groups of respondents with shared traits based on their purchase frequency response to corporations committing each of the four types of greenwashing.

(1) Group 1: “Senior Eco-Enthusiasts”:

Group 1 consists of slightly more females than males, with the majority aging from 26 to 40. 70.6% of the respondents currently work full-time, with 16.5% working in administrative positions and 16.2% in purchasing. Most respondents have three or more cohabitants and are modestly familiar with greenwashing, with a quarter of the respondents having already taken action against it. Out of the quarter who have taken action, 52% have taken action involving a cease in purchasing products from the greenwashing brand, and 45.6% have decided to share their environmental knowledge with family and friends. (*Cohabitant: includes family members living in the same household and dependents, aka people financially dependent on the respondent)

(2) Group 2 “Sustainable Professionals”:

Group 2 consists of 20% more females than males, with the majority aging from 18 to 25 and 31 to 50. 61.2% of the group currently works full-time, with 17.3% occupying administrative positions and 15.3% in marketing. 67.3% of the respondents have three or more cohabitants, and slightly over half of the group is unaware of greenwashing, with more than a quarter of the population being entirely unfamiliar with the concept. Out of the aware half, 37.8% have taken action advocating against greenwashing through a cease in purchasing products from the greenwashing brand.

(3) Group 3 “Green Beginners”:

Group 3 consists of an equal percentage of males and females and a considerable 5.3% percentage of non-binary gender. The age group is polarized with the majority aging from 18-25 and 41-50, respectively. More than half of the respondents currently work full-time, and 36.8% are students. 57.9% of the respondents have three or more cohabitants. Slightly over half of the respondents in Group 3 are modestly aware of greenwashing. Compared to the previous two groups, this group has a lower percentage of respondents who had taken action against greenwashing; nevertheless, most action-takers avoided purchasing greenwashing brands.

(4) Group 4 “Selectively Active Elites”:

Respondents in this group are distinctively characterized. Group 4 has more females (66.7%) than males (33.3%). All respondents fall into the 31- to 50-year-old age cohort and work full-time in either a marketing, administrative, or teaching position. This group comprises the well-off, knowledgeable individuals, with the majority having three or more cohabitants. Surprisingly, 66.6% of the group is unfamiliar with greenwashing, yet the remaining 33.3% is highly active against greenwashing practices. Group 4 has taken action, including educating their families and friends about greenwashing and

directly contacting the responsible brand, which speaks to the social influence and resources this group has at hand.

Greenwashing Analysis: consumer responses to different industries:

The survey breaks down group-based consumer responses to the three industries on a 5-point scale.

Insensitive: Less than 25% of respondents report a significant impact of greenwashing on consumer decisions.

Modestly sensitive: Over 25% of respondents report a significant impact of greenwashing on consumer decisions.

Moderately sensitive: Over 50% of respondents report a significant impact of greenwashing on consumer decisions.

Sensitive: over 75% of respondents report a significant impact of greenwashing on consumer decisions.

Extremely sensitive: All respondents report a significant impact of greenwashing on consumer decisions.

Table 1.0.: Group 1’s reaction to Greenwashing in the Beauty Industry. Group 1 respondents are highly sensitive toward all four forms of corporate greenwashing practices in the beauty industry.

(Beauty Product Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	0.9	4.3	21.1	48.9	24.8
Good Cover Bad	0.0	4.3	23.5	38.8	33.3
Dishonesty	0.9	2.4	23.5	38.5	34.6
Irrelevance	0.9	6.1	24.8	43.4	24.8

Table 1.1.: Group 2’s reaction to Greenwashing in the Beauty Industry. Group 2 respondents are less sensitive to corporate greenwashing practices in the beauty industry than Group 1. There are significantly fewer consumers who will respond to greenwashing by immediately switching brands.

(Beauty Product Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	6.1	32.7	48.0	11.2	2.0
Good Cover Bad	1.0	19.4	65.3	14.3	0.0
Dishonesty	1.0	12.2	45.9	29.6	11.2
Irrelevance	7.1	24.5	58.2	8.2	2.0

a. Analysis:

A comparison between Table 3.0 and Table 3.1 shows that Group 1 is more sensitive to all forms of greenwashing in the beauty product industry than Group 2. This trend could be derived from the difference in gender composition in the two groups. Group 2 consists of more females who purchase beauty products more frequently and may continue to purchase favorable and established brands even if they commit greenwashing. Group 2 respondents have a more inelastic demand relative to greenwashing for beauty products.

A pattern exists in both groups where Irrelevance appears to be the most tolerated form of greenwashing. This implies that consumers perceive Irrelevance as a less severe act of greenwashing than the other three forms. Additionally, Dishonesty is the most sensitive form of greenwashing for both groups. Dishonesty is perceived as the most severe and unforgivable act, since it’s a deliberate act of deception by companies. Con-

sumers value integrity when deciding whether they want to purchase from a certain brand.

Table 1.2.: Group 1's Reaction to Greenwashing in the Food and Beverage Industry (FB). Group 1 respondents are highly sensitive toward all four forms of corporate greenwashing practices in the FB industry, similar to their response to beauty products.

(Food and Beverage Industry) Forms of Greenwashing	No effect (%)	Minor effect on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	0.9	5.2	21.4	39.1	33.3
Good Cover Bad	0.0	4.0	21.4	42.2	32.4
Dishonesty	0.0	2.8	20.8	41.3	35.2
Irrelevancy	0.0	4.0	26.6	38.8	30.6

Table 1.3.: Group 2's Reaction to Greenwashing in the Food and Beverage Industry. Group 2 respondents display a lower sensitivity toward corporate greenwashing practices in the FB industry compared to group 1. There are significantly fewer consumers who will respond by immediately switching brands.

(Food and Beverage Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	4.1	27.6	48.0	16.3	4.1
Good Cover Bad	0.0	15.3	55.1	25.5	4.1
Dishonesty	5.1	22.4	52.0	12.2	8.2
Irrelevancy	7.1	20.4	54.1	18.4	0.0

a. Analysis:

In general, Group 2 is more sensitive toward greenwashing behaviors in the Food and Beverage industry than in the Beauty Products industry (Table 3.3). This could be explained by considering the majority female presence in Group 2, of which the majority has a family make-up of three or more cohabitants. The fact that females tend to take responsibility for most housekeeping chores, like food and beverage purchasing, could explain why they are more sensitive toward products they purchase for themselves and their families on a frequent basis. Potentially, people may associate product quality with greenwashing and refuse to buy a greenwashed product, perceiving it as of worse quality, especially when it deals with food and beverages.

Good Cover Bad is an obvious violation of consumer trust. It is also one of the most sensitively responded to forms of greenwashing, demonstrating the significance of consumer trust in purchase decisions, as shown in Tables 3.2 and 3.3.

Table 1.4.: Group 1's Reaction to Greenwashing in the Clothing Industry (CLO). Group 1 respondents are highly sensitive toward all four forms of corporate greenwashing practices in the CLO industry, similar to their response to beauty products and FB products.

(Clothing Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	0.6	6.4	20.8	42.8	29.4
Good Cover Bad	0.0	5.5	17.4	45.3	31.8
Dishonesty	0.0	4.3	26.0	39.1	30.6
Irrelevancy	0.6	4.6	22.9	44.3	27.5

Table 1.5.: Group 2's Reaction to Greenwashing in the Clothing Industry. Group 2 respondents are highly sensitive toward all four forms of corporate greenwashing practices in the CLO industry, different from their response to beauty products and FB products.

(Clothing Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	0.9	4.3	21.1	48.9	24.8
Good Cover Bad	0	4.3	23.5	38.8	33.3
Dishonesty	0.9	2.4	23.5	38.5	34.6
Irrelevancy	0.9	6.1	24.8	43.4	24.8

a. Analysis:

Group 1 is more sensitive to the Good Cover Bad form of greenwashing, as shown in Table 4.4, and Group 2 is more sensitive to the Dishonesty form of greenwashing, as shown in Table 4.5. This appears to be the opposite of the tendency of consumer reaction towards greenwashing in the Food and Beverage industry. This indicates that consumer response to the same form of greenwashing may change depending on the product.

Table 1.6.: Group 3's Reaction to Greenwashing in the Beauty Product Industry. Group 3 respondents are insensitive to the practice of vague wording as a form of corporate greenwashing in the beauty industry and modestly sensitive toward the other three forms.

(Beauty Product Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	36.8	54.4	8.8	0.0	0.0
Good Cover Bad	29.8	31.6	35.1	3.5	0.0
Dishonesty	29.8	35.1	22.8	8.8	3.5
Irrelevancy	26.3	33.3	31.6	3.5	5.3

Table 1.7.: Group 4's Reaction to Greenwashing in the Beauty Product Industry. Group 4 consumers are completely insensitive to all four forms of corporate greenwashing in the beauty industry.

(Beauty Product Industry) Forms of Greenwashing	No effect (%)	Minor effect on brand perception but will continue purchase (%)	Significant effect: seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	The significant impact will switch brands immediately (%)
Vague Wording	100.0	0.0	0.0	0.0	0.0
Good Cover Bad	100.0	0.0	0.0	0.0	0.0
Dishonesty	100.0	0.0	0.0	0.0	0.0
Irrelevancy	100.0	0.0	0.0	0.0	0.0

a. Analysis:

Due to their limited awareness of sustainability and green consumption, Group 3 individuals are reluctant to act against any form of greenwashing in the beauty product industry (Table 3.6). They simply cannot distinguish greenwashed products from truly sustainable products and are unaware of the consequences of such malpractice.

Group 4's distinct behaviors are characterized by their complete negligence of greenwashing in the beauty industry, demonstrating their perfectly inelastic demand for such products (Table 4.7). Considering the female-dominating composition of Group 4, many of whom also work as corporate administrators, it becomes clear that these respondents have a strong preference for their chosen brands of beauty products

and that environmental concerns are neither compelling nor important enough to alter their purchasing behavior.

Table 1.8.: Group 3's Reaction to Greenwashing in the Food and Beverage Industry. Group 3 respondents are insensitive to the practice of vague wording and irrelevance as a form of corporate greenwashing in the FB industry and modestly sensitive toward the other three forms.

(Food and Beverage Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	35.1	47.4	15.8	1.8	0.0
Good Cover Bad	26.3	42.1	15.8	14.0	1.8
Dishonesty	29.8	36.8	26.3	3.5	3.5
Irrelevancy	28.1	50.9	14.0	7.0	0.0

Table 1.9.: Group 4's Reaction to Greenwashing in the Food and Beverage Industry. Group 3 respondents are insensitive to the practice of good cover bad as a form of corporate greenwashing in the FB industry, and modestly sensitive toward the other three forms.

(Food and Beverage Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	33.3	0.0	0.0	0.0	66.7
Good Cover Bad	33.3	66.7	0.0	0.0	0.0
Dishonesty	33.3	0.0	0.0	33.3	33.3
Irrelevancy	33.3	0.0	33.3	0.0	33.3

c. Analysis:

Group 4 is significantly more sensitive and active against corporate greenwashing in the Food and Beverage industry, as shown in Table 3.9, than in the Beauty Product Industry. This could be explained considering the Group 4 respondents' pursuit of a healthy lifestyle and highly disciplined diet. (Assumption made based on their economic make-up) Their demand for distinctly high-quality food and beverages accounts for their rejection of any form of greenwashing in food and beverages. (In other words, they are financially capable and mentally aware of their diet.) This also hints at how consumers may associate greenwashing with product quality.

There is no notable tendency regarding Group 3's reaction to greenwashing in the Food and Beverage industry (Table 4.8). They are neither particularly active nor responsive, though their actions match the previously made assumption that they are "green beginners" who have just been introduced to the concept of greenwashing.

Table 1.10.: Group 3's Reaction to Greenwashing in the Clothing Industry. Group 3 respondents are insensitive to vague wording and irrelevance as a form of corporate greenwashing in the clothing industry, and modestly sensitive toward the other three forms.

(Clothing Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brand immediately (%)
Vague Wording	42.1	49.1	8.8	0.0	0.0
Good Cover Bad	31.6	38.6	21.1	8.8	0.0
Dishonesty	35.1	36.8	28.1	0.0	0.0
Irrelevancy	35.1	45.6	15.8	3.5	0.0

Table 1.11.: Group 4's Reaction to Greenwashing in the Clothing Industry. Group 4 consumers are completely insensitive to all four forms of corporate greenwashing in the clothing industry.

(Clothing Industry) Forms of Greenwashing	No effect (%)	Minor impact on brand perception but will continue purchase (%)	Significant effect, seeking for substitutes (%)	Significant effect: avoid purchasing from this brand (%)	Significant effect will switch brands immediately (%)
Vague Wording	0.0	0.0	33.3	0.0	66.7
Good Cover Bad	0.0	0.0	0.0	33.3	66.7
Dishonesty	0.0	0.0	0.0	0.0	100.0
Irrelevancy	0.0	0.0	0.0	66.7	33.3

c. Analysis:

Group 4 is significantly more sensitive towards greenwashing in the Clothing Industry than Group 3, as shown in Table 3.10 and Table 3.11. It can thus be inferred that Group 4 respondents have a more elastic demand for clothing products. Building off that conclusion, it can be assumed that Group 4, with a major percentage of respondents in positions of power, has other priorities, such as monetary benefit, that shape their evaluation of greenwashing severity in different products. A notable tendency shows that Group 4 respondents are particularly sensitive to greenwashing when corporations manifest brand dishonesty, compared to the other three groups.

■ Conclusion

This research reveals the complex relationship between consumer purchase behaviors and corporate greenwashing across three industries in China. Our findings show that consumers can be clustered into four groups based on their sustainability awareness, socioeconomic status, and attitude toward greenwashing. Different forms of greenwashing can also be categorized into four groups: Dishonesty, Good Cover Bad, Irrelevancy, and Vague Wording. Dishonesty and Good Cover Bad elicit the strongest consumer repulsion during purchase for Group 1, Group 2, and Group 4 consumers, while Vague Wording and Irrelevancy are more tolerated, especially among consumers with inelastic demand or limited awareness. Additionally, consumers from Group 4 appear to be completely insensitive toward all four forms of greenwashing in the beauty industry, possibly due to high adherence to established brand values. This study underscores the importance of targeted policy measures. One-size-fits-all regulations are unlikely to hinder greenwashing effectively. Instead, policies should incorporate educational outreach, third-party certification, and stronger legal qualifications tailored to consumer group dynamics and industry characteristics.

Limitations:

Several limitations exist in the research methods. First, the survey collected 481 valid responses, which may not fully represent China's diverse consumer population. Survey responses were based on hypothetical scenarios, which may not accurately capture consumers' real-life purchase behaviors. For a better understanding of consumer behaviors, future researchers could conduct offline, real-time experiments given the proper resources and financial support. Additionally, this study only examined three industries (beauty, food and beverage, and

clothing). While these sectors are consumption-heavy, other industries like electronics or automobiles may exhibit different greenwashing dynamics.

Nonetheless, results from this study suggest that policymakers to combat greenwashing by raising consumer awareness on the deceptive nature of greenwashing practices. When consumers realize and stop the purchase of greenwashed products, it will discourage companies from greenwashing more immediately than what many current policies are doing. Future research should focus on evaluating country and industry-specific policies and examining the role of different stakeholders in preventing and addressing corporate greenwashing. Additionally, further research into how distinct socioeconomic factors—such as income level, social status, and family composition—influence each consumer cluster could help policymakers design more targeted and effective regulations.

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■ Authors

Yufang He is a sophomore at BASIS International School of Guangzhou. She is intrigued by studies that approach environmental issues and policies from an interdisciplinary perspective, just like the topic explored in this paper.

Ms. Zitong Li graduated from the University of Toronto with a dual degree, Master of Public Policy and Asia Pacific Studies. She has 10 years of research experience at the United Nations Development Programme, think tanks, NGOs, and sustainability consultancies, focusing on ESG, sustainable development, and corporate social responsibility.