The spillover effect of greenwashing behaviours: an experimental approach

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Abstract
Purpose – The purpose of this paper is to examine the impact of greenwashing behaviour of one brand on purchase intention of green products from other brands. Further, this study tests the mediating role of greenwashing perception of the entire industry and the moderating role of brand attitudes towards other brands in the industry for the above-mentioned relationship.
Design/methodology/approach – A sample of 377 participants was utilised in three studies. The study analysed the data using SPSS 18.0 to test the research hypotheses.
Findings – The study suggests that greenwashing behaviour of one brand negatively affects consumers’ purchase intention of the green products from other brands in the industry. It is also indicated that the greenwashing perception of the entire industry partially mediates the relationship between greenwashing behaviour of a brand and purchase intention of green products from other brands. In addition, the study shows that the relationship between greenwashing perception of the entire industry and purchase intention of the green products from other brands is negatively moderated by brand attitudes towards other brands in the industry.
Practical implications – This study provides useful insights for the managers that firms can learn the way to alleviate greenwashing spillover effect through the brand attitudes to enhance green purchasing behaviour.
Originality/value – The study is perhaps the first one to study the existence of the spillover effect of brands’ greenwashing behaviour. The study also reveals the influencing mechanism of greenwashing spillover effect of a brand.
Keywords Spillover effect, Green purchase intention, Brand attitude, Greenwashing perception

1. Introduction
During recent decades, consumers have become increasingly aware of the potential energy-related and environmental impacts of their purchases and are willing to pay more for green products labelled as “eco-friendly”, “organic” or “sustainable” (Chen et al., 2015; Goh and Balaji, 2016; Hower, 2013). Therefore, more and more brands have shifted their marketing focus to creating and underlining their energy-related or environmental sustainability attributes, developing energy-saving augmented products, making unique green marketing commitments and establishing eco-friendly brand images. Nevertheless, some environmental claims can be misleading, claiming that they contribute more than they actually do for the benefit of energy or environment to convince the consumer to buy them (Delmas and Burbano, 2011). Some brands even intentionally misguide or deceive consumers by conducting false propaganda on brands’ environmental behaviour in order to restore their public reputation or to shape a more responsible image (Delmas and Burbano, 2011). These phenomena are regarded as greenwashing (Parguel et al., 2015).

As a consequence of some brands’ greenwashing behaviour, a great distrust of both green products and the whole industry has been reported by consumers. For instance, the
A report by GFK (2013) reveals that 39 per cent of consumers are mistrustful of environmental claims to be accurate. In another study, 48 per cent of respondents indicate that they do not believe in the environmental claims of green products (Eurobarometer, 2009). Focussing on the impact of a brand's greenwashing behaviours on its brand image and its consumer behaviour, existing studies have shown that greenwashing behaviours lead to consumer distrust and low purchase intention (Guo et al., 2017; Nyilasy et al., 2014; Chen et al., 2018), negatively affecting green brand associations and brand credibility (Akturan, 2018). Governmental operations such as law enactment can help to restrict greenwashing (Lyon and Montgomery, 2015). However, the great distrust of the whole industry reported by consumers in Eurobarometer and in GFK has not been explained clearly: are there so many greenwashing brands that consumers find themselves deceived by those brands? Or is there a possibility that a brand's greenwashing behaviour can lead to a decrease in purchase intention of other green brands? If so, what is the mechanism by which this occurs? And what actions, besides waiting for governmental legislative measures, can be taken to deal with the negative effects brought about by greenwashing?

More specifically, three concerns are addressed in our research:

(1) Can a brand's greenwashing behaviour influence consumers' purchase intention towards the green products of other brands in the industry (does the spillover effect of greenwashing exist or not)?

(2) If so, how does the mechanism work?

(3) If a negative consumer perception brought by some brands' greenwashing behaviours has been noted, what can other brands do to resist the negative effect?

To discover the answers to these questions, the remainder of this paper is structured as follows. The next section presents our conceptual framework and the research hypotheses. Sections 3–5 present three studies as well as their findings. Lastly, the research is concluded in Section 6 with a discussion of the implications of our study.

2. Literature review

The "spillover effect" refers to the phenomenon that features or behaviours of a subject will affect other subjects who have a certain relationship (or share some common attributes) with the subject, but do not necessarily have to have the same features or behaviour (Wang and Zhao, 2009). Similarly, the spillover effect of greenwashing can be defined as the negative effect (e.g. low purchase intention) brought about by a brand's greenwashing behaviours on other brands who are providing green products or services (referred to as "green brands" for brevity) in the industry. "Environmental and energy-related claim" is the common attribute of a greenwashing brand and other green brands in the industry. Furthermore, all the brands with environmental and energy-related features are associated with each other in the perception of consumers. Consumers may take a greenwashing brand as a reference to evaluate other brands in the industry, which leads to an influence on consumers' purchasing intention for the rest of the industry, both greenwashing and non-greenwashing brands alike. Therefore, greenwashing behaviour may cause a spillover effect. In other words, other green brands may be negatively affected by a brand's greenwashing behaviour in the industry.

To better understand the mechanism of the greenwashing spillover effect, the attitude-behaviour-context (ABC) theory is employed. The ABC theory is a useful framework for investigating how attitudes result in certain behaviours. "Attitude" here means a subjective evaluation of an object (e.g. perception of a certain product or a brand) that explains or even predicts people’s behaviour (Ajzen, 2005).
2.1 Hypothesis development

In China, there is a saying – “ill news runs apace” – which indicates that people are often willing to expose and spread bad news widely and rapidly, causing public awareness and concern. Analogously, greenwashing is a negative message. In an era of information explosion, negative greenwashing information of a brand spread easily in a wide range, bringing the issue of greenwashing to the forefront of public discourse and causing consumers to pay attention to and be alert to greenwashing. People pay more attention to negative information (Fiske, 1980; Klein, 1996; Maheswaran and Meyers-Levy, 1990), and negative information is more diagnostic than positive information (Klein, 1996; Fiske, 1980). Therefore, consumers are more likely to take it for granted that the negative information about one brand is also true for the entire industry, and less likely to infer an industry is helpful from the positive information about one brand. Once consumers are sceptical about the brand’s credibility because the brand fails to live up to its energy-related or environmental commitments, they tend to refuse to buy its products (Goh and Balaji, 2016).

When consumers perceive that a brand conveys significant environmental commitment with misleading information or without immediate action, a greenwashing perception is shaped, which will prevent consumers from purchasing the brand’s products (Nyilasy et al., 2014). Meanwhile, it is easier for a consumer who learns negative information of a brand to infer the common existence of a brand’s greenwashing behaviour in other brands in the industry as well. Furthermore, if the brand’s environmental credibility is damaged, customers tend to believe that the brand holds a profit-oriented motivation and a poor level of social responsibility (Parguel et al., 2011). Once a greenwashing perception is formed, consumers are often willing to share the perceived negative information with friends, colleagues, relatives, etc. At the same time, their purchase intention is reduced, showing that they no longer want to build trust with the brand (Leonidou et al., 2013; Chen and Deng, 2016). During their next exposure to green products, these consumers are likely to be more cautious, or even prevent others from buying the products of the same brand (Chen et al., 2014). Thus, consumers’ negative perceptions, as well as distrust of non-greenwashing brands, will also arise, which negatively affects consumers’ purchasing intention.

More formally, the following hypotheses are proposed:

**H1.** Brands’ greenwashing behaviour negatively affects purchasing intention of the green products from other brands in the industry.

**H2.** The effect of a brand’s greenwashing behaviour in the industry on purchasing intention of the green products from other brands is mediated by the greenwashing perception of the entire industry.

On the basis of the ABC theory, attitude does not always sufficiently translate into expected behaviours, and behaviours are also dependent on a series of contextual factors (Ajzen, 2005). The ABC theory suggests that contextual factors (or situational factors) can limit people’s ability to act on their own intentions. This implies that context serves to facilitate and constrain individual behavioural factors, possibly being a moderator variable between people’s attitude and behaviour (Sirieix et al., 2013). Accordingly, it is necessary to take into consideration contextual factors (or situational factors) that may foster or impede customers’ green consumption behaviours. Barr (2007) defined a situational variable as a given personal situation with regard to behavioural context (e.g. service provision), individual characteristics (e.g. socio-demographics), individual knowledge and experience of the behaviour. Accumulating brand knowledge and experiencing the products and services provided by a brand can help to build a consumer’s brand attitude. Moreover, brand attitudes lead to selective attention and biased information processing. It has been shown that once consumers have a positive impression of a brand, they tend to ignore negative information that is contrary to the positive impression (Balzer and Sulsky, 1992). As for a
brand, good brand reputations can help to achieve a range of benefits, such as improving customer loyalty, enhancing product effectiveness and weakening negative word-of-mouth, among others (Druckenmiller, 1993; Gaines-Ross, 1997). This rule is also consistent with an idea, which is popular in the field of psychology, called the halo effect. The halo effect refers to the tendency that a person subjectively assumes that other aspects of a person’s characteristics are good (or bad) after forming a good (or bad) impression of one aspect. A simplified example of the halo effect is that when an individual notices that a person is attractive and properly attired, they are likely to assume, using a mental heuristic, that the person is a good person (Thorndike, 1920). Similarly, it is possible for consumers to make positive judgements, show high-brand attitude and choose to trust the brand’s environmental claims if they perceive the brand’s satisfactory performance in other aspects. Furthermore, high-brand attitude consumers show greater resistance to negative brand information than those with low-brand attitudes. Therefore, consumers who have a positive attitude towards the brand are likely to conduct-biased assimilation and be more resistant to inverse information that may lead to an opposing attitude (Ditto and Lopez, 1992; Edwards and Smith, 1996). As for the green industry, consumers with different brand attitudes have different degrees of resistance to the greenwashing perception in the industry. Compared with consumers with low-brand attitudes, consumers with high-brand attitudes are more likely to resist the negative influence of greenwashing perception on purchase behaviour. On this basis, the following hypothesis is proposed:

\[ H3. \text{ The effect of greenwashing perception of the entire industry on purchasing intention of the green products from other brands is negatively moderated by consumers’ brand attitudes towards them.} \]

To better demonstrate the spillover effect of greenwashing and its working mechanism, a conceptual framework is developed, as shown in Figure 1. In our study, three studies are conducted. The main purpose of study 1 is to verify the existence of the greenwashing spillover effect (\(H1\)), while study 2 is designed to examine the formation mechanism and the mediating effect of industry greenwashing perception (\(H2\)) as well as the moderating effect of consumers’ brand attitudes (\(H3\)). Study 3 is designed to improve the external validity and test the robustness of the findings.

3. Study 1
Study 1 aims to verify the existence of greenwashing spillover effect, adopting a single-factor between-subjects design.

3.1 Materials
Since we employ a laboratory experiment to test \(H1\), the experimental material must be logical to ensure a high-level external validity. To be more specific, experimental material
must be familiar not only to our subjects, but also to the public. Therefore, a common daily
necessity, liquid detergent, is chosen, in line with the work of Lin and Huang (2012). In order
to prevent subjects from being influenced by their existing attitude towards a certain brand,
the liquid detergent brands involved in this study are fabricated as Brand A (a conventional
brand), Brand B (a green brand) and Brand C (a greenwashing brand).

3.2 Design and procedure
The experiments were conducted in a university classroom in Beijing during the meetings of two
classes. In sum, 86 participants were compensated for completing a single-factor (information
stimulation: with greenwashing vs without greenwashing) between-subjects design.

For the control group (without greenwashing information stimulation), the experimental
content and process were introduced in detail, but this was done so secretly only to the
teacher in charge before the class meeting. At the class meeting, students were told to feel
free to chat for about 5 min. Subsequently, the experimenters entered the classroom and the
teacher informed the students about participating in a green consumption behaviour
survey. After a brief introduction, we asked the respondents to read the experimental
materials and to fill in a preference questionnaire about liquid detergent from both Brand A
and Brand B.

For the experimental group (with greenwashing information stimulation), before the
meeting, the experimental content and process were introduced in detail, but secretly, to the
teacher in charge as well as two students randomly chosen from the class. The two students
were asked to cooperate to create a greenwashing stimulating situation for the whole class.
During the formal class meeting, the teacher asked the students to feel free to share
something interesting. Then, two students (arranged in advance) talked about a new liquid
detergent introduced by Brand C, stating that the environmental function was reported to
fail to meet its claim and showing detailed evidence. The entire discussion process
(including other students’ sharing) lasted about 5 min. Lastly, experimenters entered the
classroom and expressed the hope that students could participate in a green consumption
behaviour survey. Participants were asked to read the experimental materials and fill in the
preference questionnaire of liquid detergent of both Brand A and Brand B.

3.3 Results and discussion
Study 1 examined the greenwashing spillover effect by analysing consumer preferences
for liquid detergent to see whether there is a significant difference between those who
are stimulated by greenwashing information of Brand C and those who are not. Before
processing the data, the two students arranged to impose experimental stimulation in the
experimental group are excluded. We compared the percentage of the numbers of
participants’ different choices of the liquid detergent by different groups using the
chi-square statistical test. It is found that 59.1 per cent (26/44) subjects in the control group
chose Brand B. As for the respondents in experimental group who received the
greenwashing stimulation of Brand C, the ratio dropped to 21.4 per cent (9/42), with a
decrease of 37.7 per cent (as shown in Figure 2). Therefore, the greenwashing information
stimulation of green products from Brand C significantly reduced the proportion of
consumers choosing Brand B (21.4 per cent (9/42) < 59.1 per cent (26/44), \( \chi^2 (1) = 8.26, p = 0.004 \)).

This study took the purchasing intention as a dependent variable. We measured
purchasing intention according to the research of Yadav and Swaroop Pathak (2016). After
a series of strict back translations, the validity as well as the reliability of the scale content
was ensured (Cronbach’s \( \alpha = 0.82 \)). One-way analysis of variance was used and results show
that in the control group, the mean of the purchasing intention of Brand A and that of Brand
B was 2.83 and 4.65, while in the experimental group, the mean of the Brand A purchasing
intention and that of Brand B was 5.41 and 3.36. Compared to the control group, purchasing intention of Brand A was significantly improved ($F (1,84) = 55.98, p < 0.001$), while subjects’ intention to purchase liquid detergent from Brand B significantly dropped ($F (1,84) = 16.67, p < 0.001$) in experimental group. That is to say, compared with the group without the greenwashing information stimulation, the greenwashing-stimulated respondents prefer the conventional brand more than the green brand, indicating that one brand’s greenwashing behaviour has a negative influence on the purchase intention of green products from other brands in the industry. $H1$ is supported.

Study 1 shows that greenwashing spillover effect exists. In Study 2, we examined the influence mechanism of greenwashing spillover effect.

4. Study 2
In this study, we tested the underlying mechanism for greenwashing spillover effect. This study employed a two-factor between-subjects design.

4.1 Material
In order to control the brand attitude of the subjects and to make them truly form a brand attitude towards the experimental material, two real brands were employed. Meanwhile, the stimulation from the greenwashing brand comes from a fictional brand to ensure participants’ previous purchase experience or existing brand attitude will not make interference. Moreover, experimental material should be familiar not only to our subjects, but also to the public. Batteries are low-cost products, and ordinary families have bought batteries. Therefore, we adopt environmentally friendly (mercury-free and lead-free) batteries as experimental products, in line with the work of Zhang et al. (2018).

4.2 Design and procedure
To ensure the reliability and validity of the measurement, we used scales from prior research and adapted them to fit the context of this research (the actual measurement in virtue of a seven-class Likert scale, shown in Table I). The industry greenwashing perception scale was developed based on study of Zhang et al. (2018), the brand attitude scale was adapted from Kokkinaki and Lunt (1999) and the purchase intention scale was adapted from Yadav and Pathak (2016). After a series of translation, back-translation and optimisation, the final version scale is formed. In order to further ensure the validity of the questionnaire, we asked some unprofessional students to fill in the questionnaire, and the final questionnaire was determined accordingly.
In sum, 34 interviewees were randomly interviewed to help us determine battery brands of high- and low-brand attitude. Interviewees were asked to choose their preferred battery brand according to its reliability, likeability, attractiveness and other factors. Results show that Nanfu battery is top-ranking, as it is most trustworthy with a high-brand attitude. The Changhong battery, on the other hand, is at the bottom of the list. Therefore, we choose Nanfu battery to represent a brand with high-brand attitude and Changhong battery to represent a brand with low-brand attitude as experimental materials. We emphasised, during the experiment, that both brands’ products are mercury-free, lead-free and environmentally friendly. In order to test whether brand attitude control of the experimental brand is sufficiently strong, we distributed online questionnaires, collecting 61 and 63 valid questionnaires for the Nanfu battery and the Changhong battery, respectively. Results indicated that the brand attitude scale has a good internal consistency (Cronbach’s $\alpha = 0.95$), and the average value of brand attitude towards the Nanfu and the Changhong batteries are 5.77 and 3.44, respectively, showing a significant difference ($F(1,122) = 76.14, p < 0.001$). Therefore, the brand attitude towards the Nanfu battery is significantly higher than that of the Changhong battery. The two brands chosen to use in the study are successful in brand attitude controlling.

The study was conducted in a university classroom in Beijing. In sum, 147 participants were compensated for completing a 2 (information stimulation: with greenwashing vs without greenwashing) $\times$ 2 (brand attitude towards battery brand: high vs low) between-subjects design.

For the two groups with the greenwashing information stimulation, the experimenters discussed secretly with the teacher in charge in advance before the break. The teacher shared the battery greenwashing news about Lvyuan Technology Co. Ltd (a fictitious company) during the class, and the other two groups did not receive the greenwashing information stimulation. For all four groups, researchers distributed questionnaires during the class break and asked students to fill in the questionnaires.

4.3 Results and discussion
Factor loadings of the constructs were greater than 0.60 in Table I, average variances extracted (AVE) of the constructs were more than 0.50, and Cronbach’s alpha ($\alpha$) and

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<th>Table I. Construct scales and standard factor loadings</th>
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### Constructs

| Brand attitude (Kokkinaki and Lunt, 1999) |
|XX battery brand is reliable |
|I really like the XX battery brand |
|XX battery is a reassuring brand |
|XX battery is an attractive brand |

| Industry greenwashing perception (Zhang et al., 2018) |
|Battery industry products mislead with information expressions regarding their environmental features |
|Battery industry products are associated with green claims that are vague or untrue |
|Battery industry products exaggerate their environmental functions |
|Battery industry products mask important information, making the green claim sound better than they are |

| Purchase intention (Yadav and Pathak, 2016) |
|I will buy XX battery |
|In the future I plan to buy XX battery |
|I am willing to buy XX battery |
composite reliability surpassed 0.70, which established an adequate convergent validity of the constructs (Hair et al., 2006). See Table II for details. In addition, the inter-factor correlation coefficient is 0.28. The square root of the AVE of the construct is greater than the correlation coefficient between the respective constructs, indicating that each construct has good discriminant validity (Fornell and Larker, 1981).

Study 2 tests the external validity of the results of Study 1 as well. The green purchase intention of non-greenwashing enterprises was taken as the target variable, and there were two groups of variance analysis, one including greenwashing information stimulation and the other not. The results of one-way ANOVA analysis showed that the purchase intention of non-greenwashing brands in greenwashing information stimulation groups is significantly lower than that of groups without greenwashing stimulation ($M_{\text{non-greenwashing stimulation}} = 5.19$, $M_{\text{greenwashing stimulation}} = 4.4$, $F(1,145) = 16.51$, $p = 0.000$). This adds to the evidence for the existence of the greenwashing spillover effect. Therefore, we verified $H1$ again. In addition, according to the suggestion of Hayes (2013), this study uses the bootstrap analysis method to test the mediating effect of industry greenwashing perception. Setting the bootstrap sample size as 5,000, the results show that the 95% confidence interval for the total effect of greenwashing behaviour on green purchasing intention of non-greenwashing enterprises does not include 0, indicating that the total effect exists ($\beta = -0.80$, $p < 0.001$). The direct effect of greenwashing behaviour on green purchasing intention of non-greenwashing enterprises is significant ($\beta = -0.73$, $p < 0.001$). The indirect effect of greenwashing behaviour on purchasing intention of non-greenwashing enterprises is significant ($\beta = -0.08$), and the estimated interval does not include 0 (LLCI = -0.23, ULCI = -0.01). It can be seen that the greenwashing perception of the entire industry has played a partial mediation role. Thus, $H2$ is supported.

Lastly, we tested the moderating effect of brand attitude of non-greenwashing enterprises, taking the green purchase intention of non-greenwashing enterprises as the dependent variable, and the industry greenwashing perception and brand attitude as independent variables. Linear regression analysis was conducted. The result showed that there is a significant interaction between the industry greenwashing perception and the brand attitude of non-greenwashing enterprises ($\beta = 0.74$, $t (71) = 2.51$, and $p < 0.05$). Furthermore, the results of the linear regression analysis of two groups further showed that: in the low-brand attitude group, the industry greenwashing perception has a significant negative impact on the green purchasing intention of non-greenwashing enterprises ($\beta = -0.52$, $t (35) = -2.27$, $p = 0.03$); and, in the high-brand attitude group, the industry greenwashing perception has no significant impact on the green purchasing intention of non-greenwashing enterprises ($\beta = 0.19$, $t (35) = 0.88$, $p = 0.39$). That is to say, when consumers have high (low) brand attitudes towards a green brand, the industry greenwashing perception cannot significantly affect consumers’ purchasing intentions towards the brand. Therefore, $H3$ is supported.

5. Study 3
In order to enhance the external validity and test the robustness of the findings, we adopted high-cost product as experimental materials to test the research hypothesis in Study 3.

<table>
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<tr>
<th>Construct</th>
<th>AVE</th>
<th>CR</th>
<th>Cronbach’s $\alpha$</th>
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<tr>
<td>Industry greenwashing perception</td>
<td>0.54</td>
<td>0.83</td>
<td>0.82</td>
</tr>
<tr>
<td>Green purchase intention</td>
<td>0.68</td>
<td>0.87</td>
<td>0.86</td>
</tr>
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Notes: AVE, average variance extracted; CR, composite reliability
5.1 Material
In Study 3, the same rules apply to the selection of experimental materials as in Study 2, adopting two real brands. Since air conditioner, is a high-cost product, is also a familiar product to families, we adopt environmentally friendly (freon-free and energy saving) air conditioner as experimental product, in line with the work of Lin and Huang (2012).

5.2 Design and procedure
In order to help us determine air conditioner brands of high- and low-brand attitude, we interviewed 20 respondents randomly. The interview process was the same as Study 2. According to the results of the interview, we choose Midea to represent a brand with high-brand attitude and Skyworth to represent a brand with low-brand attitude as experimental materials. Besides, to further support the interview results, online questionnaires are distributed to test consumer attitude of two brands. We collected 75 valid questionnaires for Skyworth air conditioner and 69 valid questionnaires for Media air conditioner. One-way ANOVA was conducted. The results show significant difference between the two brand attitudes ($M_{\text{Skyworth}} = 4.54$, $M_{\text{Midea}} = 5.03$, $F(1,142) = 13.27$, $p < 0.001$). It can be seen that the brand attitude of Midea air conditioner is higher than that of Skyworth air conditioner. Therefore, these two brands are chosen as experimental brands.

The study was conducted in a university classroom in Beijing during the meetings of four classes. In sum, 144 participants were compensated for completing a 2 (information stimulation: with greenwashing vs without greenwashing) × 2 (brand attitude towards air conditioner brand: high vs low) between-subjects design. This experiment process is the same as Study 1. For the two groups with the greenwashing information stimulation, we, respectively, arrange for two students to share the air conditioner greenwashing news about Lyuyuan Technology Co. Ltd (a fictitious company) during the meetings of the class, while the other two groups held a free discussion. Participants then read the experimental materials and filled in the questionnaires.

5.3 Results and discussion
Study 3 examines the external validity of the results of Study 1. Taking the green purchase intention of non-greenwashing enterprises as the target variable, one-way ANOVA was conducted in two groups. One group includes the greenwashing information stimulation, and the other group does not include the greenwashing information stimulation. According to the results of variance analysis, the purchase intention of non-greenwashing brands in greenwashing information stimulation groups is significantly lower than that of groups without greenwashing stimulation ($M_{\text{non-greenwashing stimulation}} = 5.13$, $M_{\text{greenwashing stimulation}} = 4.44$, $F(1,142) = 14.68$, $p = 0.000$). This study further confirms the existence of the greenwashing spillover effect.

This study employed bootstrap method to examine the mediating effect of industry greenwashing perception. Bootstrap samples were set at 5,000. The confidence level for confidence intervals was set at 95%. The results show that the 95% confidence interval for the total effect does not include 0, indicating that the total effect exists ($\beta = -0.69$, $p < 0.001$). The direct effect of greenwashing behaviour on green purchase intention of non-greenwashing enterprises is significant ($\beta = -0.54$, $p < 0.01$). The indirect effect of greenwashing behaviour on green purchase intention of non-greenwashing enterprises is significant ($\beta = -0.15$), and the estimated interval does not include 0 (LLCI = −0.30, ULCI = −0.05). According to the results of mediation test, the greenwashing perception of the entire industry plays a partial mediation role.

This study examines the moderating effect of brand attitude by linear regression analysis. The results of the linear regression analysis showed that there were significant differences between the two groups. In the low-brand attitude group, the industry
greenwashing perception has a significant negative impact on the green purchase intention of non-greenwashing enterprises ($\beta = -0.49$, $t(37) = -2.2$, $p = 0.035$). However, in the high-brand attitude group, the industry greenwashing perception has no significant impact on the green purchase intention of non-greenwashing enterprises ($\beta = -0.17$, $t(33) = -0.77$, $p = 0.446$). Based on the above analysis results, three hypotheses are all verified again.

6. Conclusion and implications

6.1 Conclusion and discussion

In this study, we have found that the spillover effect of greenwashing does exist: a single brand’s greenwashing behaviour is strong enough to negatively affect purchase intention of other green brands. Furthermore, this process works through the mediating effect of greenwashing perception of the entire industry and brand attitudes towards other brands moderates the process whereby the greenwashing perception of the entire industry influences purchase intention of other green brands. Compared with a brand with low-brand attitudes, a brand with high-brand attitudes is more powerful in resisting the negative effect that the greenwashing phenomenon brings about in consumers’ purchase intention.

Green products have a common green attribute. The spillover effect of greenwashing behaviour exists no matter the product cost is high or not, and the spillover mechanism of greenwashing is the same. There are many explanations for this result. People tend to associate green attributes of green products with health and high quality. Even some people equate green with health. In addition, once a brand of green products has greenwashing behaviour in an industry, people may be very cautious in choosing green products.

6.2 Theoretical contributions

This research contributes to the existing literature in two ways. First, the existence of the spillover effect of brands’ greenwashing behaviour is revealed. As a lack of social responsibility and honesty, a brand’s greenwashing deceives consumers and is bound to have a negative impact on its consumers’ behaviour. Consumers’ trust in the brand is damaged (Chen and Chang, 2013), and their purchase intention declines significantly (Chen et al., 2018). Furthermore, the reputation of the brand involved in greenwashing is harmed (Leonidou et al., 2013), and its financial performance worsens (Walker and Wan, 2012).

Previous studies have focussed on exploring what negative influence a brand’s greenwashing behaviour can bring to the brand itself; however, adopting the greenwashing perception of the entire industry is proposed as a mediator, we propose and verify that a brand’s greenwashing behaviour negatively affects consumers’ purchasing intention of green products from other brands in the industry. This finding, which emphasises the importance of taking the industry as a whole, supplements and improves the exploration of the negative effects of greenwashing behaviour.

Third, this paper provides theoretical guidance for non-greenwashing brands to stem the torrent of negative effects of greenwashing information from other brands and expands the related research on the resistance to greenwashing effects. Lyon and Montgomery (2015) pointed out that greenwashing brands can be monitored through the pressure of social forces and social media. The formation of relevant laws and policies is helpful for regulating and intervening in greenwashing behaviour, ranging from government supervision and green certification to social supervision, among other actions (Parguel et al., 2011). Previous studies have paid attention to restricting greenwashing at the government’s operational level (e.g. enacting laws), while ignoring the contribution that green brands themselves can make in confronting the spillover effect of greenwashing information in the industry. Our research points out that, to a large extent, green brands can resist the adverse effects of greenwashing information in the industry by improving consumers’ brand attitudes,
providing theoretical guidance for those green brands who want to exert their own efforts to combat greenwashing rather than merely wait for governmental actions.

6.3 Managerial implications
The research states that the brand is not only affected by its own consumers, but also by its competitors. According to the customer-based brand equity theory, a brand is actually controlled by its consumers. Our research has revealed that a brand’s greenwashing behaviour can affect other green brands in the industry. That is to say, for a non-greenwashing brand, ensuring its environmental claims are responsible is not sufficient to maintain or expand its existing customer base because their purchase intention is very likely to be influenced by other brands in the industry. Therefore, for the brand that conducts itself honestly and with a strong sense of responsibility, it is of vital importance to resist the negative effects of greenwashing by building up a good brand attitude. A high-brand attitude will always help the brand to be in a vantage position. Brand managers should pay attention to the construction and promotion of brand attitude in daily marketing campaigns. In order to cope with the negative impact of greenwashing, companies must try to improve the brand attitude of consumers gradually, establishing a reliable and memorable brand image.

In addition, it should be realized by all enterprises that brand building is not a stable process, for its image can be influenced by the information that consumers receive and the attitudes they hold, which can change at any moment. Brand managers must continue to manage their brand dynamically to deal with these changes. More specifically, when greenwashing behaviour in the industry is exposed or widely discussed, an urgent need develops for brand managers to respond accordingly and quickly because this exposure and discussion can affect consumer perception. In reality, consumers are often faced with intensive exposure to many negative reports of the greenwashing phenomenon. Therefore, the spillover effect of greenwashing may be severe for industries and brands (greenwashing and non-greenwashing brands alike). Especially for non-greenwashing brands, keeping a low profile (or even withdrawing ads claiming their environmental contribution) may be a wise immediate response, as consumer perceptions of environmental claims may have already changed, and the original marketing communications may lose effectiveness.

6.4 Limitations and future research directions
This study has several limitations associated with the interpretation of the research results. First, experimental method is primarily employed to reveal the relationship between variables. Future research can adopt longitudinal research methods and use enterprise or industry data to delve into the relationship between these constructs in order to improve the external validity of the research results. Second, all data were collected in the Chinese context. Culture is an important factor influencing consumer behaviour. Hence, data from other regions can be used to discuss whether this study can be extended to other countries. Third, within the same industry, the products from different enterprises have different degrees of greenwashing. Furthermore, due to the difference of consumers’ knowledge level and cognitive ability, consumers may have different level of greenwashing impact. It may be interesting to further analyse the impact of consumers’ different perceptions of greenwashing on green purchasing behaviour.

References


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