Sustainable trick or tactic? The influence of greenwashing on green reputation, green satisfaction and green perceived value
永續是戰術還是伎倆？漂綠對綠色信譽、綠色滿意度和綠色認知價值的影響

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Abstract: This research investigates the impact of greenwashing on green reputation, green satisfaction, and green perceived value and further explores the mediation effects of green satisfaction and green perceived value. The hypotheses are tested through structural equation modeling from a sample of 480 valid questionnaires with respondents having purchasing experience of green products in Taiwan. The results demonstrate that firms' greenwashing negatively relates to consumers' green satisfaction and green perceived value. This paper also presents that both green satisfaction and green perceived value positively relate to green reputation and fully mediate the greenwashing and green reputation nexus. When companies target to raise their green reputation, they should avoid greenwashing behaviors and increase their green satisfaction and green perceived value.

Keywords: Greenwashing, green reputation, green satisfaction, green perceived

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value, sustainable marketing.

摘要：本研究探討了漂綠對綠色信譽、綠色滿意度和綠色認知價值的影響，並進一步探討了綠色滿意度和綠色認知價值的中介效果。本研究針對臺灣有綠色產品購買經驗消費者進行問卷調查，總共回收 480 份有效樣本，藉由結構方程模式驗證假說。
研究結果發現，企業漂綠與消費者的綠色滿意度和綠色認知價值呈負相關。綠色滿意度和綠色認知價值都與綠色信譽具有正面影響效果，且綠色滿意度和綠色認知價值對漂綠和綠色聲譽之間具有完全中介效果。當企業以提升綠色信譽為目標時，應避免漂綠行為，並提高綠色滿意度和綠色認知價值。

關鍵詞：漂綠、綠色信譽、綠色滿意度、綠色認知價值、永續行銷

1. Introduction

Due to the growth of consumers' environmental awareness, sustainable consumption denotes a way to minimize environmental impacts and to meet consumers' demands from generation to generation (Chang *et al.*, 2019; Chen *et al.*, 2014). Sustainable consumption improves enterprises' sustainable performance and resource utilization, increases the usage of renewable energy, and reduces waste (Chang, 2020; Chen *et al.*, 2015). Hence, customers, business partners, and interesting groups are more and more focusing on relevant environmental issues concerning sustainable consumption (Malovics *et al.*, 2007).

With the increase in environmental issues, firms are expected to take on behaviors for environmental maintenance (Chang, 2020). Chuang and Huang (2018) indicated enterprises are under multi-dimensional pressures to follow relevant treaties and regulations, because environmental awareness has accelerated (Chen, Chang, Li *et al.*, 2020). Companies need to enhance their production and marketing strategies to be much more environmentally friendly in order to maintain competitiveness and sustainable development (Ferguson *et al.*, 2019). Thus, enterprises place concern on the following: (1) eliminate pressure from various organizations on environmental protection, (2) gain a competitive

advantage, (3) improve their corporate image, (4) find new markets or opportunities, and (5) enhance product value (Chen, 2008). Enterprises implementing green marketing do so by being no longer based on expenditure, but on long-term development, innovation, and catalyst for new market opportunities (Chen, 2008).

With the increasing emphases on environmental impacts, companies are improving their eco-efficiency and sustainable development of corporate management (Bansal and Song, 2017; Carter, 2019; Chang *et al.*, 2021; Chong and Chi, 2019). Enterprises exploit initiatives of sustainable management to overcome environmental changes, to assist in achieving sustainable development, and to strengthen their corporate image and competitive advantage (Chang, 2020; Starik *et al.*, 2010). Fraj-Andrés *et al.* (2009) argued that green marketing enhances consumers' knowledge for product quality, delivers sustainable concepts, and raises the satisfaction and loyalty of customers. Yazdanifard and Mercy (2011) asserted that the packaging, advertising, or process of green products help obtain customers' satisfaction. Hogan *et al.* (2004) pointed out that consumers with higher satisfaction are more willing to communicate with others through word-of-mouth marketing.

More and more consumers are thus choosing products that are "green" to reduce pollution and destruction of the environment (Hao *et al.*, 2019; Huang *et al.*, 2018; Joshi and Rahman, 2019). Consumers consider "green" as an important evaluating criterion more than price (Hao *et al.*, 2019; Joshi and Rahman, 2019). Numerous studies have mentioned consumers are willing to spend a premium price for green products (Chen and Chang, 2013), thus encouraging firms to focus on green products, green innovations, and green production processes (Bansal and Song, 2017; Starik *et al.*, 2010).

Many companies are also actively engaged in environmental protection through the promotion of green products to convey and educate consumers about green concepts and to establish a good image with consumers (Eastwood *et al.*, 2017; He *et al.*, 2019). The sales of green products have dramatically increased due to greater environmentalism around the world (Chen, 2008). While the term

"green" is currently in fashion around the world, it lacks a rigorous scientific definition (Chang and Chen, 2013) and has led to several new concepts, such as green production, green marketing, and green innovation, which have formed to assist enterprises at seizing marketplace opportunities (Chang and Chen, 2013). Companies take the opportunity of using green performance to enhance their position and strengthen their reputation in the marketplace, which further spurs investors and customers to take into consideration the green reputation of companies (Chen, 2010).

Not all enterprises have sufficient capabilities to produce or promote their green products to the market (Chen, 2010). Greenwashing has become a popular trick for some companies to compete in the marketplace (Nguyen *et al.*, 2019). Parguel *et al.* (2011) defined greenwashing as a tactic used by a firm to intentionally exaggerate the environmental benefits of a product or service, thus misleading and deceiving consumers regarding the firm's environmental performance. It results in a dilemma whereby strategies imply long-term commitments (Nguyen *et al.*, 2019; Parguel *et al.*, 2011) and a conflict between the erosion of enterprise profits and competitive advantages (Lin and Huang, 2012). It has become a complex topic to review, as enterprises inherently strive to accelerate their environmental positions to the public, while applying green marketing to obtain competitive advantages and to attract consumers (Szabo and Webster, 2021).

Not all green marketing assertions reflect a product being actual "green" and could be viewed as greenwashing. In this situation, greenwashing not only affects corporates' benefits, but results in ethical issues (Han *et al.*, 2017). In 2015, the famous German motor company, Volkswagen, was accused of using advertising and fake environmental data to expand its market share. As a result, its reputation was seriously damaged and suffered great financial losses. Therefore, exaggeration, false advertising, and false assertion, such as greenwashing, could seriously endanger a company's green reputation.

Consumers' assessment of products' effectiveness is based on their perceived value (Nguyen *et al.*, 2019). Perceived value is the discrepancy i benefits that

consumers receive from products (Qasim *et al.*, 2019). Consumers might believe that purchasing green products will benefit the environment and health (Nguyen, 2019). As corporates' green claims have spread rapidly, consumers have grown increasingly suspicious about the authenticity their assertions.

In 2022 the green procurement performance appraisal measures and procurement practice instructions of government agencies remind all units to pay attention to avoiding the procurement of green products, indicating that laws and regulations still cannot eliminate the situation of greenwashing. In 2022, the Green Procurement Performance Appraisal Measures and Procurement Practice Guidelines of the Executive Yuan of the Environmental Protection Agency and the Government Agencies of the Republic of China (Taiwan) still remind public servants to pay attention to avoiding the procurement of green products, indicating that laws and regulations still cannot eliminate the situation of green washing. People in their daily life inevitably use chemical products, such as detergents. With the environmental movement getting more and more attention around the world, the requirements for these chemical products depend not only on their environmental protection standards, but also on their cleaning effects. Consumers are also willing to spend more money to buy eco-friendly chemicals from the environmental aspect. Therefore, many companies claim their manufactured products are eco-friendly, but sell them cheaper than other green products in order to attract more consumers. When consumers understand these companies are exaggerating the eco-friendly claim of products, their green reputation, green satisfaction, and green perceived value are destroyed. This causes consumers to question the relevant environmental certification process and the entire system.

Previous literature has explored relevant topics about sustainable consumption, but such research of sustainable consumption scantly has discussed it from the angle of greenwashing (De Vries *et al.*, 2015; Nyilasy *et al.*, 2014; Szabo and Webster, 2021). Hence, this research aims to identify and fill the gaps in the literature. The focus is on consumers having experiences in purchasing green chemical products such as detergents and exploring the issues of greenwashing and its influence on green reputation, green satisfaction, and green perceived value

in the field of sustainable consumption.

2. Literature review and hypotheses' development

2.1 The negative influence of greenwashing on green satisfaction

More consumers are considering buying products that are "green" due to their greater environmental awareness (Cheah and Phau, 2011; Punyatoya, 2015). Therefore, companies are striving to engage in these opportunities and are adopting steps to describe their production as green, which in turn could help attract consumers (Chen *et al.*, 2019; Punyatoya, 2015). To disseminate environmental efforts of companies, corporates apply various green marketing strategies to expand their market share (Parguel *et al.*, 2011), but their strategies may not meet relevant regulations, as some companies may exaggerate their results. The end result is greenwashing (Szabo and Webster, 2021). Many firms do this to be more environmentally friendly and thus obtain a competitive advantage (Chen *et al.*, 2019; Parguel *et al.*, 2011).

Greenwashing is defined as "cheating or misleading consumers about the practices of corporates or the environmental benefits of a product or service, and to obtain a green image of environmental responsibility" (Parguel *et al.*, 2011). Greenwashing is conceptualized as a kind of selective disclosure or false manipulation that may influence consumers' purchasing behaviors and satisfaction (Nguyen *et al.*, 2019). Green marketing denotes advertisements that disclose or allude to an environmental benefit from buying something (Polonsky *et al.*, 2010). However, greenwashing is a company intentionally misleading or cheating customers with fake assertions about its environmental efforts to gain a certain public reputation or public image (Lyon and Montgomery, 2015; Seele and Gatti, 2017; Zhang *et al.*, 2018). Greenwashing widely depicts the untruth and misinformation of a firm about its products being sustainable or environment-friendly (Parguel *et al.*, 2011). Therefore, consumers facing greenwashing will distrust and be dissatisfied with the quality of the product (Zaidi *et al.*, 2019). If there is a suspicion of greenwashing when consumers are making decisions in light

of companies' advertising, then it may decrease their trust in these companies and their products (Chen *et al.*, 2019).

In terms of the findings in the literature, consumers' satisfaction is the degree of post-consumption's overall assessment or the degree of consumption-related results (Chen, 2010). Green satisfaction refers to "expecting environmental effectiveness from a product or service with environmental benefits" (Chen, 2010; Chen *et al.*, 2015). Green satisfaction could also be defined by consumers feeling a pleasurable level of fulfillment to meet their sustainable expectations, needs, desires, and pleasantness (Chen, 2010). Consumers with an environmental ideology are willing to spend a premium price to buy eco-friendly chemicals from the environmental aspect. Greenwashing results in consumers' perceived risk, because of information asymmetry, causing consumer dissatisfaction (Chen *et al.*, 2014). When consumers perceive greenwashing by a company and its products, they will no longer trust products of that company (Chen and Chang, 2013). Therefore, consumers who perceive greenwashing about a product will not be satisfied with its value. Chen *et al.* (2014) indicated greenwashing negatively relates to green satisfaction. As a result, we suggest the following hypothesis.

Hypothesis 1 (H1):   Greenwashing is negatively associated with green satisfaction.

2.2 The negative influence of greenwashing on green reputation

Corporate reputation can help promote a competitive advantage in markets (Dowling, 2004; Sheu, 2014). A strongly established reputation allows companies to raise prices of their products and recover from a crisis (Basdeo *et al.*, 2006). Fombrun and Shanley (1990) argued that reputation is the result of a competitive process to improve a firm's social status.

Consumers have realized the challenge of the environment and are conscious of the existence of environmental problems (Do Paco and Raposo, 2010). Some consumers prefer to purchase products that do not jeopardize the environment (Punyatoya, 2015). Enterprises employ various patterns of communications to publicize their products or services as being green in order to attract more

consumers (Bhattacharya *et al.*, 2020; Punyatoya, 2015). However, some firms have revised their green strategies and exploited the trick of greenwashing (Nguyen *et al.*, 2019). These enterprises provide equivocal environmental propositions and mislead consumers about their environmental practices, because of potential positive benefits and reputation enhancement, all the while under lower expenditures (Jonsen *et al.*, 2015; Nguyen *et al.*, 2019).

Greenwashing is exploited to depict corporates' green marketing or advertisements that cheat or mislead consumers (Chen, Huang, Wang *et al.*, 2020). Polonsky *et al.* (2010) showed that greenwashing is making false green assertions to the market and decreases the prestige of real green products. When greenwashing is perceived, customers no longer trust green products, and consequently sustainable issues no longer have the support of stakeholders, enterprises, customers, and society (Gillespie, 2008). Ramus and Montiel (2005) and Chen *et al.* (2014) indicated that greenwashing fabricates a negative impact on word-of-mouth, green perceived quality, and green satisfaction and decreases consumers' sense of trust. Nyilasy *et al.* (2014) emphasized that enterprises' greenwashing behaviors are not only ethical issues, but have a negative influence on consumers' perception (Guo *et al.*, 2017; Nguyen *et al.*, 2019; Zhang *et al.*, 2018).

Greenwashing impedes green marketing and makes consumers distrustful over the reliability of eco-friendly assertions and environmental promises. The perception of greenwashing among consumers affects their opinion of the company doing it and further impacts its green reputation. Consumers who cannot discriminate green initiatives may trigger negative word-of-mouth and influence a firm's green reputation (Ramus and Montiel, 2005). Zhang *et al.* (2018) also demonstrated that consumers' perceptions of greenwashing negatively influence their green purchasing intentions and word-of-mouth. Hence, this study proposes the following hypothesis.

Hypothesis 2 (H2):   Greenwashing is negatively associated with green reputation.

2.3 The positive influence of green satisfaction on green reputation

The satisfaction of consumers toward a product or service is an indispensable determinant in the field of consumer relationship (Sheu, 2014). When consumers are satisfied with the results of their purchase, they will trust and be willing to believe in those corporates' commitments (Chen *et al.*, 2015). Chen (2010) proposed the definition of green satisfaction as the real pleasure at meeting customers' needs, expectations of sustainability, and green environmental protection requirements.

The literature has indicated that the degree of consumers' satisfaction impacts their behavior, attitude, and opinion toward the enterprise (Chen, Huang, Wang *et al.*, 2020). Consumers who are satisfied with a firm's product are more willing to establish and sustain a long-term relationship with the firm (Chen and Chang, 2013). Consumers' satisfactory experience about environmental consideration positively affects the word-of-mouth to an enterprise's environmental concern (Chen, 2010). As a result, consumers' satisfaction is positively associated with their attitude, opinion, and reputation to the firm. Therefore, the higher degree of green satisfaction a firm has, the higher is the degree of the firm's reputation in the market. Hence, this study proposes the following hypothesis.

Hypothesis 3 (H3):   Green satisfaction is positively associated with green reputation.

2.4 The negative influence of greenwashing on green perceived value

Perceived value refers to consumers' perception of integrated assessment (Punyatoya, 2015). Green perceived value can be illustrated as an integrated assessment of consumers from the benefit of a product or service based on sustainable expectations and needs (Chen and Chang, 2012; Punyatoya, 2015). When consumers are conscious of a brand as being green, they are confident of its commitments and comprise faith towards it (Zhang *et al.*, 2018). Consumers believe that they can acquire a benefit out of the green brand and thus initiate green value (Punyatoya, 2015). Enterprises therefore apply green marketing strategies to

raise the perceived value of their products and services with respect to environmental consideration and to enhance their competitive advantage. Corporates hence have to manufacture green products that meet the requirements of green attributes against traditional products in order to attract consumers.

Perception of greenwashing indicates that consumers recognize that companies have increased their communication with the environment while lacking any action, which may prevent them from buying these companies' products (Nyilasy *et al.*, 2014; Zhang *et al.*, 2018). Greenwashing reduces the perceived value of being green (Szabo and Webster, 2021). Chen and Chang (2013) indicated that greenwashing influences consumers' confusion and perceptions of risk, reducing their green trust of the environmental claims. Thus, greenwashing jeopardizes consumers' attitudes towards corporates' initiatives of green marketing (Chen and Chang, 2013; Parguel *et al.*, 2011). Greenwashing also leads to negative word-of-mouth about green product, green brand, or service (Chen, Huang, Wang *et al.*, 2020). Therefore, when consumers perceive an environmental assertion to be a kind of greenwashing, their perception of green value decreases. Hence, this study proposes the following hypothesis.

Hypothesis 4 (H4):   Greenwashing is negatively associated with green perceived value.

2.5 The positive influence of green perceived value on green reputation

Hosmer (1994) argued that corporates' ethical implications in their decision-making process will allow them to gain more trust and commitment from consumers. Chen and Chang (2013) indicated that consumers may decrease their trust of green assertions and shape a more negative assessment when they perceive that a company is exaggerating its efforts of a "green claim." If enterprises undertake green initiatives actively and convey their environmental efforts to consumers successfully, then consumers might believe in their green advertisements (Chen and Chang, 2013). Green perceived value could be defined as an overall assessment of a consumer from the profit of a product or service that meets the expectation of the environmental needs (Chen and Chang, 2012).

Perceived value not only is a critical determinant in maintaining long-term consumer relationships, but also performs a crucial role in influencing customer trust (Chen and Chang, 2012). According to Chang and Chen (2013), consumers' opinion and attitude to a product or brand are expected to sustain their belief in that product or brand. Chang and Chen (2013) showed that green perceived value and green trust have a significant relationship in the context of Taiwan. Hence, a higher level of perceived value increases post-consumption confidence of the product (Eid, 2011). However, some enterprises have overstated the green value of their products such that their customers do not trust their products anymore (Chen and Chang, 2012). Perceived value is a set of attributes related to products' value, so as to establish a positive word-of-mouth effect and increase purchase intention (Chen and Chang, 2012). Hence, this study proposes the following hypothesis.

Hypothesis 5 (H5): Green perceived value is positively associated with green reputation.

3. Methodology and measurement

3.1 Data collection and sample

Drawing on the research model and the noted gap in the literature, this study applies a quantitative approach by using a survey to reveal participants' perceptions of their experience in purchasing green chemical products, such as detergents, in Taiwan. The questionnaires distributed to the respondents are in Chinese, due to the fact that many of them do not have a sufficient understanding of English. We first translate the questionnaire from English to Chinese and then ask several experts – professors and graduate students who do research in this area – to provide feedback about our translation. After incorporating the feedback into the Chinese version, we translate it back into English to validate consistency between the Chinese and the English versions.

We asked two scholars to correct the questionnaire before sending it to respondents. Next, we sent the questionnaire to 20 undergraduate students

randomly at a large university in north Taiwan for a second pre-test. The questionnaire items are measured using a 7-point Likert scale, with choices from "1 strongly disagree" to "7 strongly agree." This study focuses on the phonebooks of Taiwan's north, central, and southern regions for random sampling, Send the questionnaire by e-mail after agreeing to the telephone visit. Among the total of 1500 copies distributed via e-mail over two weeks, we received 505 questionnaires back. Only 480 valid surveys were collected, resulting in a response rate of 32%. Slightly more than half of the respondents are female. The majority of respondents is 21 to 30 years old (72.1%), the annual purchasing frequency is 1~3 times (69.4%), and the annual purchasing amount is under NT$5,000 (77.7%). More details of the respondents are provided in Table 1. We then use statistical software SPSS 22 and AMOS 21 for data analysis.

3.2 Measurement

This research measures the questionnaire items by means of the 7-point Likert scale, with choices from "1 strongly disagree" to "7 strongly agree." The definitions and measurements of the constructs in this study are described in the following.

Greenwashing. This research refers to Horiuchi and Schuchard (2009) and Laufer (2003) to define "greenwashing" as misleading or hiding any deviance and nature of the problem and revises a 5-item scale validated by Chen *et al.* (2014) to measure greenwashing. A sample item is: "The product deceives me by means of words in its environmental features." The scale's reliability Cronbach's alpha is .928 in this research.

Green satisfaction. This research refers to Chen (2010) to define "green satisfaction" as "the level of the related fulfillment to a customer's sustainable expectations and green needs". We revise a 6-item scale developed and validated by Chen *et al.* (2014). A sample item is: "Overall, I am happy to purchase this product, because it is environmentally friendly." The scale's reliability Cronbach's alpha is .946 in this research.

Table 1
Summary of participants' profiles

Variable	Category	Samples	Percentage (%)
gender	male	204	42.4
	female	276	57.6
age	under 20	94	19.6
	21-30	346	72.1
	31-40	24	5.0
	41-50	15	3.2
	above 61	1	0.2
occupation	manufacturing	64	13.3
	service industry	152	31.7
	agriculture	56	11.7
	civil servants	142	29.6
	others	66	13.8
education	senior high school (or under)	29	6.0
	university/college	351	73.1
	graduated school (or above)	100	20.8
annual purchasing frequency	1~3 times	333	69.4
	4~6 times	101	21.0
	7~9 times	22	4.6
	10 times above	24	5
annual purchasing amount (NT$)	under 5,000	373	77.7
	5,000~15,000	78	16.2
	10,000~15,000	14	2.9
	15,000~20,000	6	1.3
	20,000 above	9	1.9

N=480.

Green perceived value. This research refers to Chen (2010) to define green perceived value as "the consumer's appraisal of the value of a product or service based on the consumer's sustainable expectations and green needs". We adopt a 6-item scale developed and validated by Chen (2010). A sample item is: "This product's environmental functions provide very good value for me." The scale's reliability Cronbach's alpha is .893 in this research.

Green reputation. A corporate's reputation could be defined as "the corporate fulfills its commitments and meets to expectations of stakeholders"(Cretu and Brodie, 2007). Hence, green reputation could refer to a set of perceptions of consumers on meeting a firm's green commitments. We revise a 3-item scale developed and validated by Nguyen & Leblanc (Nguyen and Leblanc, 2001). A sample item is: "Compared to other similar products, this product has a better environmental image." The scale's reliability Cronbach's alpha is .857 in this research.

4. Empirical results

4.1 The results of the measurement model

Table 2 presents the means, standard deviations, composite reliability (CR), average variance extracted (AVE), the square root of AVE, and correlations among the study variables. Greenwashing negatively relates to green satisfaction (r=-.313, *p*<.01), green perceived value (r=-.313, *p*<.01), and green reputation (r=-.286, *p*<.01). Both green satisfaction and green perceived value significantly positively relate to green reputation (r=.768, *p*<.01; r=.650, *p*<.01, respectively), and green satisfaction positively relates to green perceived value (r=.792, *p*<.01). All the coefficients between variables have medium or lower correlations. The research shows values of composite reliability (CR) ranging from .893 to .946, which are all above the recommended values of .70 (Fornell and Larcker, 1981). Each construct's AVE exceeds the recommended value of .50. The factor load is above 0.5, and the t-test of each estimate reaches a significant level (p<0.001), indicating that this scale has a considerable degree of convergence validity

(Bagozzi *et al.*, 1988; Fornell and Larcker, 1981). In addition, the estimated inter-correlations among the variables are less than the square roots of AVE of each variable, which provide support for discriminant validity. There is low correlation between the control variables and the four constructs of each demographic variant: gender and green satisfaction, age and green perceived value, green reputation, and annual purchasing frequency and green satisfaction.

We perform CFA for each of the latent variables and the four-factor. The SEM framework is measured using 19 indicators. All the model fit indices exceed the recommended value of .90. RMSEA is .09, which is a mediocre fit. Thus, the goodness-of-fit indices for the measurement model are acceptable. The results of the proposed model depicts an acceptable fit to the data (χ^2=670.049, df=146, CMIN/df=4.589, CFI=.936, NFI=.920, TLI=.925, IFI=.936, RMSEA=.084, SRMR=.036).

Table 2
Means, standard deviations, CR, AVE, and correlations among variables

	Mean	S.D.	CR	AVE	1	2	3	4
gender	1.58	.495			-.049	.092*	.082	.081
age	1.92	.620			-.029	.080	.096*	.093*
occupation	3.03	1.527			.011	.070	.079	.069
education	4.42	1.194			.020	-.004	-.020	-.002
annual purchasing frequency	1.46	.813			-.049	.088*	.060	.051
annual purchasing amount	1.36	.819			-.031	-.004	.057	-.033
1. Greenwashing	3.54	1.165	.929	.723	**.850**			
2. Green satisfaction	5.28	.901	.946	.743	-.313**	**.862**		
3. Green perceived value	5.00	.854	.915	.684	-.313**	.792**	**.827**	
4. Green reputation	5.34	.898	.893	.735	-.286**	.768**	.650**	**.858**

N=480. **p<.01. The bold diagonal line shows the square root of AVE.

According to Hair *et al.* (2006), the standardized factor loading of each item exceeds the recommended value of .50. The values of SMC (R2) range from .358 to .795, which indicate the explanatory power of each item goes from medium (>.33) to large (>.67). More details of the data appear in Table 3.

Table 3

The items' standardized factor loadings, SMC (R^2), and the constructs' Cronbach's α

| Construct	No. of items	Items	Standardized factor loading	t	SMC (R^2)	Cronbach's α
Greenwashing	5	GW1	.870**		.757	.928
		GW2	.872**	27.140	.761	
		GW3	.817**	22.981	.668	
		GW4	.836**	22.438	.700	
		GW5	.849**	23.133	.721	
Green satisfaction	6	GS1	.813**		.660	.946
		GS2	.863**	23.486	.745	
		GS3	.892**	24.713	.795	
		GS4	.877**	23.708	.769	
		GS5	.885**	24.087	.783	
		GS6	.847**	22.661	.717	
Green perceived value	5	GPV1	.837**		.701	.893
		GPV2	.860**	22.329	.739	
		GPV3	.752**	17.540	.566	
		GPV4	.644**	14.502	.415	
		GPV5	.598**	13.603	.358	
Green reputation	3	GR1	.895**		.801	.857
		GR2	.796**	22.683	.634	
		GR3	.825**	23.238	.681	

**p<.01.

4.2 Common method variance

This research conducts Harman's one-factor test to verify common method variance (CMV) (Podsakoff *et al.*, 2003). The first principal factor explains less than 31% of variance (< 50%), which suggests that there are no serious CMV problems. In addition, this study also uses confirmatory factor analysis (CFA) to detect CMV problems. (Lindell and Whitney, 2001). There are significant differences in chi-square values between single-factor and multi-factor models. The results are in Table 4. Based on the abovementioned findings, there are no serious CMV problems in this research.

4.3 Structural model

To illustrate the full effects among greenwashing, green reputation, green satisfaction, and green perceived value, Figure 1 lists the SPC s and the statistical significance for the five proposed hypotheses as a full model. The goodness-of-fit indices for the full model are acceptable (CMIN/df=1.539, CFI=.990, NFI=.973, TLI=.989, IFI=.990, RMSEA=.033, SRMR=.036). Figure 1 reveals that the significant results of the standardized path coefficients of H1, H3, H4, and H5 are -.313, .671, -.313, and .105, respectively. The standardized path coefficient of H2 is -.043, which is not significant. Table 5 illustrates the results that H1, H3, H4, and H5 are supported, but H2 is not supported. This study shows that (1) greenwashing negatively influences both green satisfaction and green perceived value, and (2) green satisfaction and green perceived value both positively influence green reputation.

Table 4

Factor analysis

Model	χ^2	DF	$\triangle\chi^2$	$\triangle$DF	*P*
Single-factor	2802.28	152	2132.231	6	.000
Multi-factor	670.049	146			
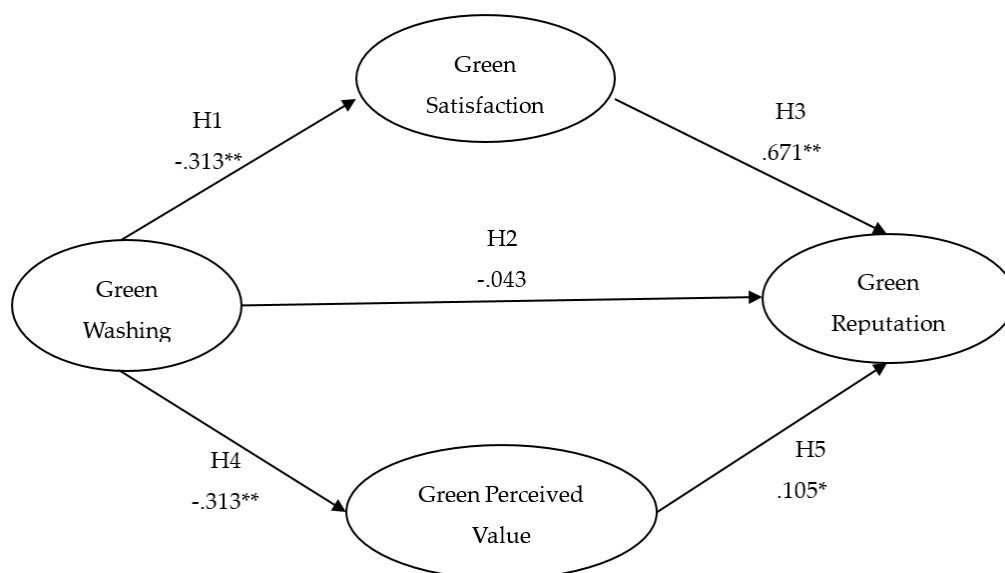
*p<.05, **p<.01.

Figure 1

Standardized path coefficients of the research framework model

Table 5

Results of the structural model

Hypothesis	Proposed effect	Path coefficient	t value	Results
H1	-	-.313**	-7.398	supported
H2	-	-.043	-1.435	not supported
H3	+	.671**	14.309	supported
H4	-	-.313**	-7.402	supported
H5	+	.105*	2.248	supported

*p<.05, **p<.01.

4.4 Mediation effect

To investigate the indirect effect of greenwashing on green reputation based on green satisfaction and green perceived value, we conduct bias-corrected bootstrapping at a 95% confidence interval using 2000 bootstrap samples. We

calculate the confidence intervals of the lower and upper bounds to see whether zero is included in order to examine the indirect effect. Table 6 exhibits the results of the bootstrapping test, which confirm both green satisfaction and green perceived value exhibit full mediation effects in the research framework.

Table 6
Bootstrap mediation effects

	Estimate	BootSE	BootLLCI	BootULCI
indirect effect				
GW→GS→GR	-.207	.040	-.362	-.207
GW→GPV→GR	-.283	.042	-.368	-.202
direct effect				
GW→GR	-.029	.033	-.096	.036

N=480. GW: Greenwashing, GS: Green satisfaction, GR: Green reputation, GPV: Green perceived value.

5. Discussion

Greenwashing has become a critical issue in the marketplace. Although the public discourages greenwashing strategies, it is still widespread (Chen *et al.*, 2014). This study develops a framework to deal with this dilemma via exploring the impact of greenwashing and both its perceived value and satisfaction to enhance the green reputation of environmental needs under the context of customers' skepticism. The empirical results exhibit that greenwashing I negatively associated with green satisfaction and green perceived value as stated. This study also indicates that both green satisfaction and green perceived value are positively associated with green reputation. Therefore, companies should of course abstain from greenwashing activities and instead enhance their green satisfaction and green perceived value to improve their green reputation and meet the current situation of the green market.

Although the direct effect of greenwashing on green reputation is not

significant in this study, the relationship between greenwashing and green reputation is fully mediated by both green satisfaction and green perceived value. We may infer that when consumers perceive the firm as exaggerating or deceiving the environmental performance of the product or service, they will be dissatisfied with the company's products, which will affect their green perceived value and in turn the company's green reputation. Greenwashing damages green marketing by confusing consumers and making them uncertain about purchasing green products and even stop buying green products (Chen, Huang, Wang *et al.*, 2020). As a result, greenwashing causes consumers to distrust green claims (Chen, Huang, Wang *et al.*, 2020). Thus, perceptions of a corporate's greenwashing undermine consumers' attitude towards it and its environmental commitments (Chen, Huang, Wang *et al.*, 2020). Greenwashing may hurt enterprises' green image, because it causes consumers to disbelieve them (Chen, Huang, Wang *et al.*, 2020; Polonsky *et al.*, 2010). Based on the above-mentioned, marketers need to eliminate and reduce the perception of greenwashing at every opportunity.

Companies must further increase their green perceived value and green satisfaction to enhance their green reputation in the environmental era. Since firms have finite resources, they should utilize their resources, take every chance to reduce the negative determinant of greenwashing and their consumers' skepticism, and raise the two positive dimensions of green satisfaction and green perceived value. Based on the results herein, companies must strengthen their consumers' green satisfaction and green perceived value when improving their green reputation, which can effectively increase consumers' willingness to buy green products and develop longer-term relationships in this environmental era (Chen and Chang, 2012).

6. Conclusions and implications

Sustainable consumption has become more popular nowadays, as consumers prefer green products over traditional products and are willing to spend more money on green products or services (Chen, 2010; Paco and Raposo, 2009). With the evolvement of the green economy, the active pursuit of high environmental

standards can bring benefits to corporations (Chen *et al.*, 2006; Tarabashkina *et al.*, 2020). Companies should actively differentiate their green products and improve their competitive advantage for achieving sustainable development (Shang *et al.*, 2019). In this way, they can expand their higher market share in the green marketplace (Bernal-Conesa *et al.*, 2017; Braga Junior *et al.*, 2019; Chang, 2020; Han *et al.*, 2019).

The results of this study reveal that greenwashing is negatively associated with both green satisfaction and green perceived value of customers. Greenwashing in turn decreases the firms' green reputation. Thus, when a firm is perceived as employing greenwashing, a negative impact is experienced by it, because consumers will no longer trust it nor its product or services, causing a decline in profits. Hence, enterprises have to utilize sustainable management instead of greenwashing to increase their market share.

There are four academic contributions from this study. First, it summarizes the notion of greenwashing, extends the literature on sustainable consumption, and raises green reputation from the increase of green satisfaction and green perceived value. Second, this study demonstrates that greenwashing negatively relates to green satisfaction and green perceived value. Third, this study presents that both green satisfaction and green perceived value are positively associated with green reputation. Increasing green satisfaction and green perceived value leads to an increase of green reputation. Fourth, the relationship between greenwashing and green reputation is fully mediated by green satisfaction and green perceived value. This study indicates that green satisfaction and green perceived value are two mediators in the research framework and extends the field of sustainable consumption, thereby filling the gap in the literature.

6.1 Managerial implications

There are four practical implications in this study. First, it demonstrates that enhancing green satisfaction and green perceived value can increase a firm's green reputation. If companies want to enhance their green reputation, then they should combine the concepts of green satisfaction and green perceived value into their

long-term environmental strategies. Green product innovation allows users to focus on the physical environment, but also through product and user interaction, stimulate users' psychological green awareness, so that limited resources can be used more long-term.

Second, in a more sophisticated marketing context, some firms exploit environmental concerns to differentiate their products. Their goal is to seize green markets and increase green satisfaction and green perceived value. The major challenge for them is how to comprise their environmental mission into their marketing strategies rather than via greenwashing.

Third, the aim of this study is to elucidate that firms have to make more trustworthy and less ambiguous green claims. Misleading and deceptive greenwashing marketing can increase perceived risk, because consumers may perceive that those products could harm their image or reputation (Chen *et al.*, 2014; Szabo and Webster, 2021). Therefore, eliminating the sources of greenwashing can increase green perceived value and green satisfaction and further enhance green reputation.

Fourth, greenwashing is the selective disclosure of positive messages about products without revealing negative messages in order to expand a firm's green market share (Lyon and Montgomery, 2015). As a result, consumers have an increasing disbelief about firms' fraudulent claims. Corporates have to reduce their greenwashing behaviors and enable consumers to obtain enough messages to decrease their skepticism towards their green claims. Hence, companies should reveal more signals about the authenticity of green products and not just claim to be "green" (Chen, Huang, Wang *et al.*, 2020).

6.2 Limitations and future research

There are four research limitations in the study. First, this study concentrates on consumers who had purchasing experiences of green products, such as chemical products. Future research can focus on other consumers having different purchasing experiences in other industries.

Second, the respondents are consumers who only had purchasing experiences

in Taiwan. The concept and survey used in this research are eastern-based. Results may be diverse and varied due to different cultural impacts.

Third, this study illustrates the hypotheses by means of a questionnaire survey, which only provides cross-sectional data. Thus, this study cannot observe the dynamic change of greenwashing, green reputation, green satisfaction, and green perceived value in different stages through longitudinal data. Future research can set up a longitudinal study to find out the in-depth contextual facets to design and gather multiple sources. Doing so should gain a better understanding of relational factors and causality.

Fourth, another avenue for future research can be to extend our study into other areas. Examples include examining antecedents of greenwashing and potential mediators or moderators of the framework, such as culture or green advertisement.

Appendix: Survey items of the con structs

A. Greenwashing measure

    (1) The product deceives me by means of words in its environmental features

    (2) The product deceives me by means of visuals or graphics in its environmental features

    (3) The product deceives me by means of green claims that are unclear

    (4) The product exaggerates or overstates its green functionality

    (5) The product hides important information, making the green claim sound better than it is

B. Green satisfaction measure

    (1) I am glad about the decision to select this product, because of its environmental image

    (2) I think that it is the right decision to purchase this product, because of its environmental functionality

    (3) Overall, I am happy to purchase this product, because it is environmentally friendly

(4) From an environmental effectiveness perspective, buying this product is the right decision

(5) I am satisfied with the environmental appeal of this product

(6) Overall, I am satisfied with this product, because of its environmental performance

C. Green perceived value measure

(1) This product's environmental functions provide very good value for me

(2) This product's environmental performance meets my expectations

(3) I purchased this product, because it illustrates more environmental concern than other products.

(4) I purchased this product, because it is environmental friendly

(5) I purchased this product, because it has more environmental benefit than other products

D. Green reputation measure

(1) I think this product has a good environmental image

(2) I think the environmental claims of this product obtain the support of the public

(3) Compared to other similar products, this product has a better environmental image

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