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The Influence of Excessive Product Packaging on Green Brand Attachment: The Mediation Roles of Green Brand Attitude and Green Brand Image

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Abstract: This study develops an original framework to explore the influence of excessive product packaging on green brand attachment and to discuss the mediation roles of green brand attitude and green brand image. Structural Equation Modeling (SEM) is applied to verify the research framework. The results from a dataset of 238 valid questionnaires show that excessive product packaging has no direct effect on green brand attachment. However, green brand attitude and green brand image fully mediate the negative relationship between excessive product packaging and green brand attachment. Managerially, this study helps firms understand that excessive product packaging may bring damage to green brand attitude and green brand image, which positively relate to green brand attachment. Thus, committing to promoting the functional benefit of green products, firms must not neglect the negative effects of excessive product packaging.

Keywords: excessive product packaging; green brand attachment; green brand attitude; green brand image

1. Introduction

Many countries have raised a number of solutions for the global warming problem, which is believed to have a significant impact on climate change [1,2]. The critical issue of this problem is to control greenhouse gas (GHG) emissions, which could be done by recycling. The United States Environmental Protection Agency claimed that about 258 million tons of municipal solid waste (MSW) were generated in 2014 in the United States [3]. Containers and packaging made up the largest portion of MSW generated (29.7 percent). Over 89 million tons of MSW were recycled and composted, equivalent to a 34.6 percent recycling rate, which provided an annual reduction of over 181 million metric tons of carbon dioxide equivalent emissions, comparable to the annual emissions from over 38 million passenger cars. This fact shows that recycling contributes to GHG emissions reduction. According to the 2008 report of the National Environment Protection Council in Australia [4], the claimed packaging consumption change was consistent with the GDP growth rate from 2003 to 2007, which witnessed the increasing consumption of packaging over the past few years. However, the recycling rate of packaging remained a problem. Packaging waste eventually will go to landfills, which creates methane and causes land pollution, or even go to the oceans and threaten the lives of marine creatures. Consequently, litter due to excessive packaging is increasingly important among those interlocking environmental problems in recent years [5].

The most effective way to promote eco-friendly packaging is to set the packaging standards and regulations [6]. Enterprises adopt greening for various reasons, such as obeying the laws, gaining

competitive advantage, the pressure from stakeholders, and initiatives of top management [7–11]. While assuming the social responsibilities and facing intense competitions, enterprises gradually perceive the importance of building a green image to highlight their environmental awareness and social responsibility [12,13]. Furthermore, green consumers care about environmental issues, and their purchase decisions will be based on green consideration [14]. Therefore, many enterprises have started to develop green marketing strategy to derive competitive advantages [15,16].

Additionally, environmental problems have been increasingly noticed in recent years [17]. Excessive packaging creates litter that cannot be resolved by recycling, not to mention the fact that the package recycling rate is far below 100 percent. Enterprises consider packaging cost and attraction first when choosing product packaging strategy. However, consumers tend to feel guilty for discarding plastic bottles, and hence are concerned more about excessive packaging problems and their environmental impact [18]. The above conflicts invoke the branded litter problem that enterprises are facing now.

Prior research mostly focuses on the benefit and tendency of green marketing and green packaging [11,19–23], but seldom explores the problem of branded litter caused by excessive packaging and its impact on consumer perception and branding effects. Furthermore, eco-friendliness and excessive packaging are two relatively complex environmental issues for consumers, so there is a lot of uncertainty [24,25]. Thus, this study attempts to narrow this gap by empirically testing the influence of excessive product packaging on green brand attachment with the mediation roles of green brand attitude and green brand image. Hopefully, the finding can reveal the damage of excessive packaging to brand images and remind enterprises to formulate their green product packaging strategy through a consumer's viewpoint.

2. Literature Review

2.1. Excessive Packaging

Product packaging is a part of the product and its brand [26], which showcases the characteristics of the brand [27]. In general, product packaging should be attractive, protective and unwrapped easily. However, the meaning of green product packaging is totally different. A green product, also called an ecological product or an environmentally friendly product [15], refers to a product whose design and/or attributes use recycling resources and thus improves environmental impact or reduces environmental toxic damage throughout its entire life cycle [28]. Hence, the green product is harmless to the environment and integrates recycling strategy to implement green packaging using reusable, recyclable or naturally degradable wrapping materials [29].

There is currently no unified official definition of excessive packaging. However, judging from the regulations of package standards and limitations by different counties, excessive packaging can be viewed as packaging that supplies too much weight, is too heavy, too large, too costly, has too ornate decor, rhetoric that is too flattering and so on.

2.2. Green Brand Attitude

Breckler [30] proposed the most influential ABC model of attitude: (1) affective component is the reflection of consumer's likes or dislikes [31], (2) behavioral component refers to the past behaviors or experiences regarding an attitude object, and (3) cognitive component reflects the beliefs, thoughts, and attributes that we would associate with an object. Many studies use the ABC model to construct eco attitudes for predicting the eco behaviors [32–34]. Eco attitude derives from one's self concept, one's focus on the environment, and one's self-consciousness of being part of the natural environment [35–37]. As for brand attitude, it refers to a consumer's automatic affective reaction to an object, which is one's subjective feeling for the entire brand [38,39].

This study integrates the concepts of brand attitude and environmental sustainability to define green brand attitude as consumer's eco attitude, which leads to one's entire judgment of green brand.

2.3. Green Brand Image

Brand image is the key element of brand benefit or brand value [40], forming consumer's concepts and associations of the brand [41–43]. Strong brand image will create a better brand message than its competitors [44]. A product with greater brand image is likely related to better quality and higher value [45], thus shaping a positive spiritual image [46]. This symbolic meaning facilitates consumers to support the brand to express their self-identities [47,48], and further influencing one's brand attitude, purchasing frequency and brand loyalty [49–51].

As for green brand, the brand image refers to a consumer's perception of the brand to be environmentally sustainable and eco-friendly [52]. Consumers tend to perceive higher quality and green brand image of an enterprise when it claims to provide eco-friendly products [46].

2.4. Green Brand Attachment

Attachment is the degree of perceptive connection between an individual and a specific object [53]. Brand attachment is the result of a long-term relationship between oneself and the brand [54]. The closer the relationship is, the stronger the brand attachment becomes. When a brand is considered as part of oneself, it reaches the brand-self connection [55,56]. Moreover, when a brand reflects the cognition and affection of brand-self linkage, it reaches brand prominence [57].

Referring to Park et al. [58], this study indicates three consumption types of green brand attachment: (1) buying green products for gratifying the self and expressing one's concern and positive emotion toward the environment; (2) buying for enriching the self and binding the green image with the future ideal self; and (3) buying for enabling the self to solve problems.

2.5. Prior Relevant Research Models

Roper and Parker [59–61] tested the relationship between branded litter and brand evaluation, and suggested that branded litter might convey negative brand message, which influences brand personality, consumer's brand attitude and purchase intention. Since excessive product packaging is one of branded litter, and brand image reveals brand personality, this study further explores the relationships of excessive product packaging, green brand attitude and green brand image.

Regarding the research on consumer's behavior and brand management, Lavidge and Steiner [62] built the three-staged effects model: (1) cognitive stage for establishing consumer's awareness and knowledge; (2) affective stage for constructing consumer's affection and belief; and (3) behavior stage for priming the purchase. Most of the literature linked brand image with brand awareness [63,64], and green brand attitude resulted from both a consumer's eco attitude and brand attitude. Hence, this study proposes green brand attitude and green brand image to evaluate a consumer's green brand awareness in the cognitive stage, and positioned green brand attachment in the affective stage.

According to the customer-based brand equity model by Keller [42], there are four levels to measure consumer's viewpoints of brand: brand identity, brand meaning, brand response and brand relationships. This study positions excessive product packaging at the brand identity level, the green brand image at the brand meaning level, green brand attitude at the brand response level, and green brand attachment at the brand relationships level, respectively.

3. Hypothesis Development

3.1. The Negative Effect of Excessive Product Packaging on Green Brand Attitude

When highly involved in environmental issues, a consumer gains more environmental consciousness, which leads to a positive attitude for those environmentally sound brands [65,66]. Consumers already realize the packaging waste problem [67], and excessive packaging will worsen the environmental situation [68].

Many empirical studies showed that a consumer's environmental protection attitude is derived from moral reasons [69–72]. Consumers will boycott those immoral enterprise or countries, and even

change their purchase decisions [73]. In Thøgersen's research [74], 75% respondents felt obliged to select environmentally friendly products. According to behavior theory, subjective norms are considered to be one of the direct decisive factors of behavior [75]; therefore, the subjective norm of avoiding purchasing products causing post-consuming waste can be used to measure the obligation belief of avoiding buying products with excessive packaging [74]. When realizing excessive packaging is harmful to the environment, the consumers are driven to change their attitudes [19], and hence form beliefs, subjective norms and ability cognition for themselves to select eco-friendly packaged products [71]. Thus, this study asserts that consumers will consider excessive product packaging as environmentally unfriendly, which leads to negative green brand attitude, and proposes the following hypothesis:

Hypothesis 1 (**H1**). *Excessive product packaging is negatively associated with green brand attitude.*

3.2. The Negative Effect of Excessive Product Packaging on Green Brand Image

The product packaging is part of the product and the brand [26]; i.e., it can reveal the brand characteristics through abundant brand association factors [27] that explain and create a unique brand image [76]. Hence, it becomes one of the brand marketing methods. When compared with other fast changing marketing tactics, product packaging lasts longer to establish consumer-brand relationships and create a vivid brand image [77].

Regarding green brands, the consumers focus more on environmental protection issues; hence, excessive packaging not only increases a consumer's financial burden and produces a lot of garbage, but also labels the green brand image with brand litter and causes a negative impression. Furthermore, Gupta et al. [78] discovered that when enterprises adopted green initiatives, it increased the cost-effectiveness and eco-friendliness, and meanwhile improved brand image and created brand differentiation. Therefore, this study argues that excessive product packaging would negatively affect green brand image and implies the following hypothesis:

Hypothesis 2 (**H2**). *Excessive product packaging is negatively associated with green brand image.*

3.3. The Positive Effect of Green Brand Attitude on Green Brand Attachment

Brand attitude and brand attachment are different but easily confused concepts. In fact, brand attitude reflects an individual's positive or negative evaluation of the brand and could be formed in a short time [57], while brand attachment refers to individual's affective linkage to the brand and the willingness to respond to the brand, which requires long-term development [79]. Based on required development time and managerial level, brand attitude is established in the cognitive stage and brand attachment is in the affective stage. The former is the consumer's evaluation for the brand, which has a weaker link to the brand [80], but the latter will steady the brand relationship and eventually create a more positive brand attitude [81].

When consumers link themselves with the brand, they will see it as a relationship partner that helps them achieve personal goals and resolve the hardship they are facing. This study defines "green brand attachment" as the degree of perceptive connection between consumers and a specific green brand. As the brand becomes part of a consumer's life, it will lay an emotional foundation for affection, self-linkage, commitment, trust and intimacy [82], which has important meaning for establishing consumer-brand relation [83]. Thus, this paper proposes that green brand attitude positively affects green brand attachment and proposes the following hypothesis:

Hypothesis 3 (**H3**). *Green brand attitude is positively associated with green brand attachment.*

3.4. The Positive Effect of Green Brand Image on Green Brand Attachment

Brand is one of consumers' value-judging criteria. They tend to choose products and brands that can promote or maintain their self-concept [84], and avoid those incompatible with their values [61]. Lee et al. [85] categorized brand avoidance into three types: (1) experiential avoidance derived from the first unsatisfied experience of the consumer; (2) identification avoidance happens when the brand image does not match one's identity; and (3) moral avoidance arises when brand value or association conflicts with one's belief. Brand avoidance results in a consumer's negative thoughts of the brand and hence lowers the brand attachment.

Brand image also influences a consumer's brand cognition, which reflects consumer's brand association [64]. To build a successful green brand image, the enterprise must facilitate consumers to think of the brand as eco-friendly [15]. For green consumers, if they believe the green brand image matches their self-value, they will have stronger brand attachment. Furthermore, Barreda et al. [86] noted that brand image is positively associated with emotional brand attachment from their study of an online social network website. Thus, this paper asserts that green brand image positively affects green brand attachment and proposes the following hypothesis:

Hypothesis 4 (H4). *Green brand image is positively associated with green brand attachment.*

3.5. The Negative Effect of Excessive Product Packaging on Green Brand Attachment

Consumers consider the product as the symbol of their characteristics, goals, social types and ideals [87]; therefore, they purchase it for its function and its symbolic meaning [88]. The symbolic meaning of product packaging includes convenience, environmental awareness, expertise, reputation, value, etc. [89], which enriches brand value and fortifies brand inheritance [90], and further impacts the consumer-brand relationship. Product packaging could also become a close part of consumers' lives, helping them making quality judgments and enhance their involvement and linkage to the brand [61], which becomes an important source of brand equity [91]. However, excessive packaging may be inconvenient for using the product and thus produce negative association and damage the consumer–brand relationship [89].

In the context of environmental management, green consumers support green products for decreasing the environmental impact and thus reduce the anxiety for the unknown environmental variables. Therefore, they would have a closer attachment with those green brands. When they realize those green products have excessive packaging and causing more litter, they will turn away and decrease their emotional attachment for the green brand. Thus, this study argues that excessive product packaging is positively associated with green brand attachment and proposes the following hypothesis:

Hypothesis 5 (H5). *Excessive product packaging is negatively associated with green brand attachment.*

To sum up, this study asserts that excessive product packaging negatively affects green brand attachment, while green brand attitude and green brand image mediate the negative relationship between excessive product packaging and green brand attachment. The antecedent of the research framework is excessive product packaging and the consequent is green brand attachment, while green brand attitude and green brand image are two partial mediators in this study. The research framework is shown in Figure 1.

Greenwash is firms' misleading behaviors in the field of green marketing that cheat consumers about the environmental features of their green products [13]. Because of the popularity of greenwash in the market, this study argues that green brand image does not significantly affect green brand attitude in the field of green marketing, though there is a positive relationship between brand image and brand attitude in the field of marketing. This is why this study takes out the path between green brand image and green brand attitude in the research framework.
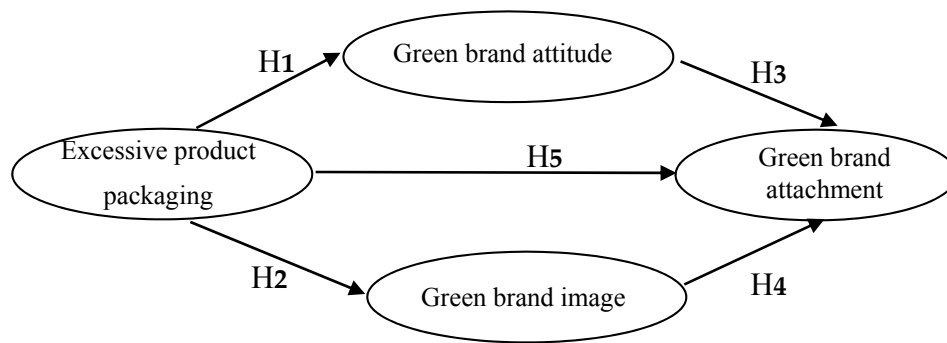
Figure 1. Research framework.

4. Methodology and Measurement

4.1. Data Collection and the Sample

The unit of analysis in this study is the consumer level. This study applies the questionnaire survey, developed on the basis of relevant literature, to verify the hypotheses and research framework. The research object of this study focuses on Taiwanese consumers who have the purchase experience of green products or have been highly impressed by certain green brands or products.

Prior to mailing to the respondents, six experts and scholars were asked to modify the questionnaire in the first pretest. Subsequently, the questionnaires were randomly mailed to thirty consumers who were asked to fill in the questionnaire and identify the ambiguities in terms, meanings, and issues in the second pretest. After the second pretest, the sample was randomly selected from the "2015 Yellow Book of Taiwan". To heighten the valid survey response rate, the research assistants called to each randomly selected consumer who had the purchase experience of green products, explained the objectives of the study and the questionnaire contents, and confirmed the names and addresses of the respondents prior to questionnaire mailing. The respondents were asked to return the completed questionnaires within two weeks through mailing. High content validity is a necessary requisition for the questionnaire survey in this study. Therefore, the questionnaire of this study has a high level of content validity. This study sent 700 questionnaires with prepaid reply mail envelopes to the consumers who were randomly selected according to the provincial population ratio, and, upon conclusion, 238 valid responses were received, yielding a response rate of 34%.

This sample is approximately 2/3 female (158 females, 80 males), and 94.6% held at least a bachelor's degree. The majority of respondents (approximately 70.6%) were between the ages 21 and 30. They represented diverse occupational backgrounds including civil servant (8.8%), service industry (14.7%), student (57.1%), production/manufacturing (10.1%), doctor/nurse (1.7%), and others (7.6%).

4.2. Measurements of the Constructs

This study measures the questionnaire items by means of a "seven-point Likert scale from 1 to 7" rating from strongly disagree to strongly agree. This study asked every respondent to identify a particular green product that was the most impressive for oneself. Then, all respondents were requested to regard this product as the focal one for filling in the questionnaire. The measurements of the constructs in this study are listed in Table 1.

Table 1. The items' loadings (λ) and the constructs' Cronbach's α coefficients and AVEs.

Constructs	Items	λ	Cronbach's α	AVE	√AVE
Excessive product packaging (Rokka and Uusitalo [92])	GP1: You need to spend a lot of time to open the product package.	0.922	0.955	0.877	0.936
	GP2: You consider that the product has excessive packaging.	0.960 **			
	GP3: You consider that the product has lots of unnecessary packaging.	0.927 **			
Green brand attitude (Batra and Stamen [93]; Baumgarth [94]; Li et al. [95])	GA1: You prefer the brand because it is environmentally friendly.	0.928	0.946	0.856	0.925
	GA2: You favor the brand because of its environmental concerns.	0.906 **			
	GA3: You think the brand is valuable because of its environmental performance.	0.941 **			
Green brand image (Chen [52]; Cretu and Brodie [64]; Padgett and Allen [96])	GI1: The brand is considered as the benchmark of environmental commitment.	0.841	0.940	0.760	0.872
	GI2: The brand's environmental reputation is outstanding.	0.910 **			
	GI3: The brand's environmental performance is successful.	0.902 **			
	GI4: The branding is based on its emphasis on environmental protection.	0.834 **			
	GI5: The brand's environmental commitment is trustworthy.	0.868 **			
Green brand attachment (Park et al. [57]; Thomson et al. [97])	GT1: The brand's eco-friendliness makes you feel strongly passionate about it.	0.889	0.894	0.682	0.826
	GT2: The brand's environmental concern makes you feel strongly passionate about it.	0.868 **			
	GT3: The brand's environmental performance makes you crave for it.	0.792 **			
	GT4: The brand's extraordinary environmental features make you willing to pay for it.	0.745 **			

Note: ** $p < 0.01$.

5. Empirical Results

The first part of the questionnaire is about the purchase behavior of green products, which includes the most impressive green product type, their purchase frequency, and purchase amount. The statistics of respondents' green product purchase experiences shows that they all had purchased green products or were highly impressed by a green product. In their purchase experience, 47.9% considered clean supplies to be the most impressive green product type, and 18.9% thought electrical products to be particularly impressive. We assume that clean supplies are highly related to the safety concerns of what may be ingested, inhaled or touched, while electrical products are more related to save money and energy at home. Furthermore, over half of the respondents (55.9%) had one to three purchases in a year, 20.6% had less than one purchase per year, and 13.9% had four to six purchases per year. The majority of respondents spent less than $150 per year for green products purchase (approximately 89.1%). This reveals that green products or green brands were no stranger to customers; however, the purchase amount and frequency are still limited.

This study utilizes structural equation modeling (SEM) to verify the research framework and hypotheses, and applies AMOS 21.0 (IBM, Armonk, North Castle, NY, USA) to obtain the empirical results. SEM of this study examines the two levels of analysis, the measurement model and the structure model, and their results are shown in the following.

5.1. The Results of the Measurement Model

The means, standard deviations, and correlation matrix are shown in Table 2. In Table 2, excessive product packaging is negatively correlated with both green brand attitude and green brand image, while the latter two variables are positively correlated with green brand attachment.

Table 2. Means, standard deviations, and correlations of the constructs.

Constructs	Mean	Standard Deviation	A	B	C
A. Excessive product packaging	2.97	1.50			
B. Green brand attitude	5.43	1.02	−0.247 **		
C. Green brand image	5.11	1.01	−0.169 **	0.735 **	
D. Green brand attachment	4.97	1.06	−0.07	0.642 **	0.695 **

Note: ** $p < 0.01$.

There are several measures to confirm the reliability and validity of the constructs. Firstly, one measure of the reliability is to examine the loadings of each construct's individual items. With respect to the quality of the measurement model, the loadings (λ) of all items of the four constructs listed in Table 1 are significant. Secondly, Cronbach's α is the other measure of the reliability. Generally, the minimum requirement of Cronbach's α coefficient is 0.7 [98], and a value between 0.7 and 0.8 represents high reliability [99]. In Table 1, the Cronbach's α coefficients of all constructs are more than 0.7, and, among which, three constructs are over 0.9, thus yielding the high reliability of the internal consistency in the questionnaire. Thirdly, it is also important to verify whether the validity of the measurement in this study is acceptable. This study applies Fornell and Larcker's measure of average variance extracted (AVE) to evaluate the discriminant validity of the measurement [100]. To satisfy the requirement of the discriminant validity, the square root of a construct's AVE must be greater than the correlations between the construct and the other ones in the model. For example, the square roots of the AVEs for the two constructs, green brand attitude and green brand image, are 0.925 and 0.872 in Table 1, which are more than the correlation, 0.735, between them in Table 2. It demonstrates that there is adequate discriminant validity between the two constructs. The square roots of all constructs' AVEs in Table 1 of this study are all more than the correlations among all constructs in Table 2. Therefore, the discriminant validity of the measurement is acceptable. Fourthly, if the AVE of a construct is higher than 0.5, it means that there is convergent validity for the construct. As shown in Table 1, the AVEs of the four constructs are all higher than 0.5. It indicates that the convergent validity of the measurement is acceptable. According to the above results, the reliability and validity in this study are acceptable.

5.2. The Results of the Structural Models

The overall fit measures of the full model indicate that chi square = 283.07, *df* = 69, GFI = 0.884, RMSEA = 0.114, NFI = 0.915, CFI = 0.934, and IFI = 0.935. The results of the overall fit measures of the full model in the SEM indicate that the fit of the model is acceptable. Table 3 shows the results of the structural model in this study. Four path coefficients are significant and one is not. Figure 2 presents the results of the full model in this study and indicates that H1, H2, H3, and H4 are supported, and H5 is not supported. It demonstrates that excessive product packaging would negatively affect both green brand attitude and green brand image; meanwhile, green brand attitude and green brand image are positively associated with green brand attachment. However, no significant correlation was uncovered between excessive product packaging and green brand attachment. It implies the possible mediating effect of green brand attitude and green brand image.

Table 3. The results of the structural model.

Hypothesis	Proposed Effect	Path Coefficient	Results
H1	−	−0.251 ***	H1 is supported
H2	−	−0.180 **	H2 is supported
H3	+	0.408 ***	H3 is supported
H4	+	0.620 ***	H4 is supported
H5	+	0.109	H5 is not supported

Note: ** $p < 0.01$, *** $p < 0.001$.
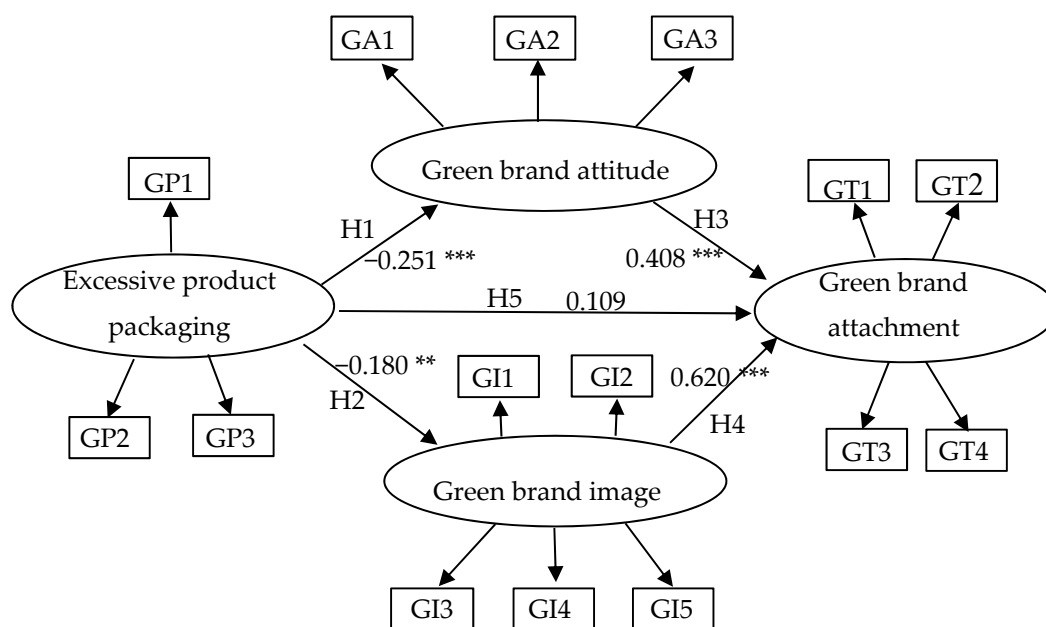
GFI = 0.884, RMSEA = 0.114, NFI = 0.915, CFI = 0.934.

Figure 2. The results of the full model. Note: ** *p* < 0.01, *** *p* < 0.001.

A two-step process of sequential chi-square difference tests [101] was employed to test the mediating effect, and the mediator's role for both green brand attitude and green brand image was tested through a series of nested model comparisons. The study compares three nested models for each path: (1) the partial mediation model (model 1) is the baseline model where all paths exist; (2) the direct model (model 2) indicates no mediating effect where the path between the independent variable and the mediating variable is deleted; and (3) the complete mediation model (model 3) removes the direct path between the independent variable and the dependent variable.

As reported in Table 4, the difference in chi-square value between models 1 and 2 is significant in both paths, but is not significant between models 1 and 3. Thus, based on the principle of model parsimony, the results suggest that the fit of model 3 in both paths is the best; namely: (1) green brand attitude fully mediates the relationship between excessive product packaging and green brand attachment; and (2) green brand image fully mediates the relationship between excessive product packaging and green brand attachment.

Table 4. Comparison of structural equation models for path "EP→GA→GB" and "EP→GI→GB".

Model	χ^2	*df*	$\Delta\chi^2$	Δdf	GFI	AGFI	CFI	RMSEA
Path 1: "EP→GA→GB"								
1. Partial mediation model	283.069	69	-	-	0.884	0.824	0.934	0.114
2. Direct model	296.927	70	13.858	1	0.880	0.821	0.930	0.117
3. Complete mediation model	286.486	70	3.417	1	0.882	0.824	0.933	0.114
Path 2: "EP→GI→GB"								
1. Partial mediation model	283.069	69	-	-	0.884	0.824	0.934	0.114
2. Direct model	290.025	70	6.956	1	0.883	0.824	0.932	0.115
3. Complete mediation model	286.486	70	3.417	1	0.882	0.824	0.933	0.114

Note: 1. EP = excessive product packaging; GA = green brand attitude; GB = green brand attachment; GI = green brand image; 2. Significant while $\Delta\chi^2 \geq 3.84$.

6. Conclusions

This study proposes a research framework for testing the impact of excessive product packaging on a consumer's attitude and cognition of its brand image, and thus addresses its possible damage

to the brand. The empirical results show that excessive product packaging negatively influences a consumer's green brand attitude and one's awareness of the green brand image, and both green brand attitude and green brand image positively affect green brand attachment. Therefore, the damage brought by excessive product packaging on both green brand attitude and green brand image will influence consumer's green brand attachment and cause brand avoidance, eventually hurting the brand. This also echoes our hypothesis that the increasing eco-awareness results in stronger belief and obligation of recycling and reducing waste. From this viewpoint, a consumer purchases green products not only for their functions, but also for the support for those "prevention behaviors". Hence, excessive product packaging will negatively influence a consumer's green brand attitude.

Packaging is a part of the product and the brand. It expresses the brand attribute, and also contributes to shaping the brand image. Product packaging is a double-edged sword for brand marketing. It could create a vivid positive brand image and also induce a negative brand image of brand litter. Thus, excessive packaging for green product would damage a consumer's cognition of that green brand image. However, the study finds no significant relationship between excessive product packaging and green brand attachment. The results do not support the proposed hypothesis that the symbolic meaning of product packaging and the fear to worsen the environment problem will enhance brand attachment. It only highlights that green brand attitude and green brand image play key roles in the consumer–brand relationship, and suggests the indirect damage of green brand attachment to consumer–brand affective link.

In addition, prior literature discussed this new issue of excessive packaging broadly, but seldom regarded it as the main variable. This is probably due to the fact that the attached value of the product itself has overridden other concerns in the past decades, which leads to numerous studies on the package design to meet consumer preference and preserve culture value. In fact, product packaging is equally important for branding and the product itself.

There are four theoretical contributions in this study. First, this study combines the concepts of green marketing and environmental protection to develop a research framework to build up green brand attachment from the perceptions of excessive product packaging, green brand attitude, and green brand image. Second, there is no prior study exploring the relationship between excessive product packaging and green brand attachment. Although excessive product packaging cannot directly affect green brand attachment, it has a negative indirect effect on green brand attachment via green brand attitude and green brand image to fill the research gap. Third, this study indicates that the relationship between excessive product packaging and green brand attachment is fully mediated by green brand attitude and green brand image. Fourth, decreasing excessive product packaging can help green companies to increase their green brand attitude and green brand image, which positively affect green brand attachment. This paper extends the research of green marketing and sustainable development.

The results of this study provide three practical contributions. First, this study verifies that decreasing excessive product packaging can raise green brand attitude and green brand image that can increase green brand attachment. If companies would like to enhance their green brand attachment for their products, they should avoid excessive product packaging. Second, in a more sophisticated marketing context, it is worth educating experienced retailers as a reliable information channel between consumers and producers to decrease excessive product packaging in order to indirectly raise green brand attachment. Third, companies need to enhance green brand attitude and green brand image. Because full mediation effects of green brand attitude and green brand image exist in this study, green companies can increase green brand attitude and green brand image to raise green brand attachment.

Overall, our findings can make enterprise understand that eco-friendly product packaging is not only helpful for reducing the environmental problems, but also brings other benefits like: (1) reducing costs for transportation and warehousing; (2) meeting green consumers' requirements by using green materials; and (3) attracting green consumers. Consumers with positive emotions are prone to evaluating the brand positively and vice versa. Therefore, enterprises should avoid connecting their brands with negative content or experiences [102], such as excessive packaging. Although green

packaging contributes to the value promotion of green branding or environmental problem solving, enterprises should prevent overdoing it. According to the theory of psychological reactance, when perceived social pressure of avoiding excessive packing is overloading, one will try to resist it and exhibit the opposite behavior [74]. This is true for both consumers and enterprises.

Environmental problems have urgency and hence increase consumers' concerns about green products and green brands. While committing to promoting the functional benefit of green products, the enterprises must not neglect the brand value or damage behind green product packaging. Most enterprises are facing the challenge for balancing environmental protection issues and profitability; thus, it is critical to solve the conflict between carrying out eco-friendly product packaging and promoting the product. This study suggests that enterprise need to focus on brand positioning instead of attracting consumers by beautiful packaging. Green products position themselves at protecting the environment, providing natural products with the same functional benefits as ordinary products while considering environmental issues. Thus, green brand marketing should start from the core value of green consumers and focus on the basic brand value.

Since the questionnaire was mainly distributed to the young generation, it may not represent all consumers' situations. In addition, consumers' definitions of excessive packaging might vary with different product types. Therefore, future studies are recommended to examine the excessive packaging issue of various product types. In addition, we suggest that future studies can adopt experimental design methodology to test the relevant topics about excessive product packaging.

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Conflicts of Interest: The authors declare no conflict of interest.

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