

Study on the Influence of Green Advertising Claims on Green Purchase Intention Under Different Product Green Attribute Information

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Abstract: This paper explores the influence mechanism of green advertising appeal on consumers' purchase intention through two sets of experiments. Experiment 1 used a single factor (specific appeal vs. abstract appeal). The results of intergroup experiment show that specific appeal can make consumers have stronger purchase intention, and green perceived value mediates the influence of green advertising appeal on green purchase intention. Experiment 2 explored the internal mechanism of interaction effect between advertising appeal and product green attribute information. The results show that the product green attribute information plays a moderating role in the relationship between green advertising appeal and green perceived value. When the green attribute of the product is reflected in the core attribute, the concrete green advertising appeal has a stronger impact on the green perceived value than the abstract advertising appeal. When the green attribute of the product is reflected in the edge attribute, there is no significant difference between the concrete and abstract green advertising appeal on the green perceived value. The research conclusion provides a reference for enterprises to choose advertising strategy.

Keywords: Green advertising appeal, Product green attribute information, Green perceived value, Green purchase intention.

1. Introduction

At present, the economy of our country develops quickly, with it is the problem of environmental pollution and shortage of resources. Emissions of chemical oxygen demand, nitrogen oxides, particulate matter and volatile organic compounds all exceeded 10 million tons, according to the communique of the Second National Survey of Pollution Sources released by the Ministry of Ecology and Environment in 2020. Take the chemical oxygen demand emissions and nitrogen and oxygen emissions in wastewater for example, the overall trend in the past five years has been rising, and even reached more than 20 million tons and 1 million tons in 2020. These sources of pollution have seriously harmed the current air quality and water environment quality, making the direct use of resources less and less, reflecting that our ecological environment governance system and management capacity need to be further improved. At the same time, the communique pointed out that agricultural sources and domestic sources contribute more to the discharge of water pollutants, motor vehicles contribute more to the emission of nitrogen oxides, industry, domestic and motor vehicles contribute more to volatile organic compounds, pollution sources involve more subjects, the need for the whole industry to participate in environmental protection, in order to reduce pollution sources.

With the rapid increase in the contribution rate of consumption to China's economic growth, the excessive and unreasonable consumption of consumers has also become the main source of environmental pollution, exacerbating the problems of resources and environment. The problems of electronic waste, garbage and excessive packaging in the express delivery industry brought by consumption are very serious. Since 2010, the resource and environmental efficiency or emission intensity in the consumption field has been gradually increasing, which partially offset the improvement of the resource and environment in the production field, thus slowing down the speed of the green

transformation of the Chinese economy.

In terms of the communication form of advertising itself, it plays a guiding role in people's consumption thinking. The consumer culture and consumption concept corresponding to the product marketing mode make users subconsciously recognize the product, form a desire to buy the product itself, and then make certain consumption behaviors. The language, picture and plot in the advertisement are the birth points of consumer culture, so that the product itself has the corresponding promotion value. How to design green advertisements to spread green information and promote green consumption? Scholars mainly study the effect of green advertising from the aspects of advertising appeal, product external attributes, individual psychological factors and green advertising acceptance. However, in terms of domestic green consumption research, there are still few related literatures on green advertising, which is worth further research. Through a comprehensive and in-depth questionnaire survey, this paper will explore the impact mechanism of concrete and abstract advertising appeal methods on green purchase intention, and explore the impact of advertising appeal methods and product green attribute information on consumers' green perceived value combined with product factors (product green attribute information), so as to judge the application conditions of product green attribute information and green advertising appeal.

2. Theoretical Basis and Hypothesis

2.1. The mediating role of green perceived value

In this study, Ariffin and Yusof defined green perceived value as the overall evaluation on the utility of green products by consumers after weighing the perceived benefits of environmental protection and the costs incurred during the purchase of green products (Ariffin S, Yusof J M, 2016). The green perceived value contains the environmental protection

attributes and functional values that consumers obtain from green products. The greater the green perceived value of consumers, the more inclined they are to buy green products. Green perceived value, as an important antecedent variable of consumer purchase behavior in green marketing, is also affected by external situational factors (Chen Y S, 2012). Stimulus-Organism Response was first proposed by the scholars Mehrabian and Russell in the field of environmental psychology. The stimulus (S) refers to the external environmental stimulus that affects people's emotion and cognition. For example, organism (O) refers to the internal state of the stimulated body, such as pleasure, arousal and value perception. A response (R) is an organism's approach or avoidance behavior. The model of stimulating body response also has its application value in marketing and consumer behavior (Baker J, 1994). Perceived value is the most direct motivation for consumers to purchase, and it plays a significant mediating role in the influence of explanatory variables on purchasing behavior. This study believes that enterprises' green advertising appeal can not only directly affect customers' green purchase intention, but also indirectly affect consumers' green purchase intention through their green perceived value.

H1: Green perceived value mediates the influence of green advertising appeal on green purchase intention.

2.2. The moderating effect of product green attribute information

Green attribute is the upgrade or advance of the benefit attribute of the product, that is, on the basis of the original attribute characteristics of the product, add energy-saving, water-saving, recycling and other environmental protection attributes, so that the product can meet the functional and environmental requirements of consumers (Schaltenbrand B, 2018). The green attribute of a product will affect consumers' perception of other value attributes and influence their preferences (Luchs M G, 2013). The view that the green attribute of products is an important source of consumers' green perceived value holds that consumers will recognize the environmental protection effect of products with high green attribute centrality more (Gershoff A D, 2015). It is believed that when the environmental protection effect of a product is generated from its core attribute rather than its edge attribute, that is, when the centrality of the green attribute is higher (core attribute), the green value of the product is more convincing and consumers will thus have a higher degree of green perceived value and purchase intention. The centrality of a product's green attribute will enhance consumers' overall value perception of the product, and thus directly or indirectly enhance consumers' purchase intention (Kumar P, Ghodeswar B M, 2015). However, some scholars put forward different views, believing that the green attribute will have a negative impact on the perceived value of customers, and the higher the centrality of green attribute (core attribute), the lower the perceived value of consumers on products, and the products with lower centrality of green attribute (edge attribute) are easier to be accepted by consumers. Based on the centrality

theory (Skard S, Jrgensen S, 2021), The higher the degree of centrality of attributes, the more important and judgmental the evaluation of a product is. Therefore, when the green attribute of a product is reflected in the core attribute with high centrality, consumers will pay more attention to the functional value and green value of the attribute, and the detailed information in the specific green appeal advertisement can clearly reflect the green attribute of the product. Combining the specific information with the core attribute can enhance the perceived value of customers. However, the marginal attribute with low centrality has a weak influence on the overall evaluation of the product, and the different ways of advertising appeal may not cause the fluctuation of consumers' perceived value.

According to this study, product green attribute information plays a moderating role in the relationship between green advertising appeal and consumers' green perceived value. Based on this, we propose the following hypothesis:

H2: There is a matching effect between green advertisement appeal and product green attribute information on consumers' purchase intention.

H2a: When green information is reflected in the core attributes of products, concrete green advertising appeal has a stronger impact on the perceived value of green than abstract advertising appeal.

H2b: When the green information is reflected in the edge attributes of products, there is no significant difference in the impact of concrete and abstract green advertising appeals on the green perceived value.

3. Experiment 1

3.1. Experimental design and method

The purpose of experiment 1 is to verify the mediating effect of green perceived value. Through the method of situational experiment, the independent variables were controlled by the form of print advertisements described by pictures and words, and the responses of experimental subjects to other variables were measured by the mature scale, mainly for the purpose of testing H1. Single-factor intergroup design was used in this experiment. First of all, the effectiveness of green advertising appeal manipulation is tested through the pre-experiment. Then the main experiment was carried out in the form of questionnaire, including four links: advertising appeal manipulation and test, green perceived value test, purchase intention test and basic information collection of subjects.

3.1.1. Advertising appeal manipulation and testing

Abstract appeal refers to the use of more general or subjective narration in advertising description, and more abstract and non-specific statements to describe the characteristics of green products. Specific appeals refer to the use of detailed and rich information narration in the advertisement description, and the use of more specific slogans to describe the characteristics of green products. Table 1 shows the specific items in the manipulation test of green advertising appeals.

Table 1. Green advertisement appeal manipulation test scale

Variable	Serial number	Item
Abstract/concrete green advertising appeal (GA)	GA	Advertising is abstract or concrete level.

In this experiment, a question was first designed to test the effectiveness of manipulation of abstract and specific green advertising appeals. The results of independent sample T-test are shown in Table 2 and 3. According to the obtained data, under the stimulation of different materials, $M(\text{specific})=4.24 > M(\text{abstract})=2.66$, and the difference

between them is 1.58, $t(198)=-13.648(p < 0.001)$, consumers can better distinguish between the abstract type and the concrete type of advertising, that is, experiment 1 successfully manipulated the participants' perception of the abstract and concrete appeals of green advertising.

Table 2. Descriptive statistical table of green advertisement appeal groups

	Group	N	Mean	Standard deviation	Mean of standard error
GA	abstract	100	2.66	0.867	0.087
	concrete	100	4.24	0.767	0.077

Table 3. Independent sample T test of green advertising appeal

		Levene test of variance equation		T test for mean value equation						
		F	Sig.	t	df	Sig.	Mean difference	Standard error	95% confidence interval The lower ceiling limit	
GA	Suppose the variance is equal	1.446	.231	-13.648	198	.000	-1.58	0.116	-1.808	-1.352
	Assumed variance inequality			-13.648	195.092	.000	-1.58	0.116	-1.808	-1.352

3.1.2. Green perceived value test

This paper selects the functional value of green perceived value and the measurement items of green value dimension. The scale mainly contains four questions: "The choice of this product contributes to the improvement of the ecological environment", "the choice of this product is good for social development", "the quality of this product is good" and "the product provides a value commensurate with its price".

3.1.3. Green purchase intention test

To measure the purchase intention of the subjects, we adopted the four-item 5-point Lichter scale proposed by Teng, La-roche and other researchers (1 = "strongly disagree", 5 = "strongly agree"), and scored the following four items successively: "This green advertisement makes me think about buying this product," "I'm willing to pay more for this product," "If it's a good product, I'm willing to buy it again." "If it's good, I'm willing to recommend it to others. The average of the four questions will be taken to measure the consumers' purchase intention of the new product.

3.2. Experimental results and discussion: The mediating role of green perceived value

With gender, age, education level, marital status, personal

disposable income and occupation unchanged, Bootstrap was used to test the mediating effect of green perceived value. According to the experimental results in Table 4, the total effect value of green advertising appeal on consumers' purchase intention is 0.466, the BootSE standard error is 0.093, and the 95% confidence interval is [0.282,0.647]. The upper and lower limits of the interval do not contain 0, that is, the symbols are the same, indicating that the main effect of green advertising appeal on consumers' green purchase intention is significant. The indirect effect value of green perceived value was 0.366, and the BootSE standard error was 0.063. The 95% confidence interval was [0.246,0.493], and 0 was not included between the upper and lower limits of the interval, indicating that the intermediary effect was significant. However, the 95% confidence interval for the direct effect is [-0.046,0.259], and the upper and lower limits of the interval include 0, that is, the direct effect of green advertising appeal on consumers' purchase intention is not significant. It shows that green perceived value plays a complete mediating role between green advertisement appeal and green purchase intention of consumers, that is, H1 is verified.

Table 4. Table of total effect, direct effect and mediating effect

	Value of effect	Boot standard error	Boot CI lower limit	Boot CI upper limit	Relative effect value
Total effect	.466	.093	.282	.647	
Direct effect	.100	.078	-.046	.259	21.51%
The mediating effect of green perceived Value	.366	.063	.246	.493	78.51%

4. Experiment 2

4.1. Experimental design and method

The purpose of experiment 2 is to verify the moderating effect of product green attribute information. This experiment mainly adopts 2 (Green advertising appeal: Specific appeal vs. Abstract appeal) \times 2 (product green attribute information: core attribute vs. edge attribute) for the test of H2, H2a and H2b using the method of intergroup factor experiment design. The research process of experiment 2 was similar to that of experiment 1, which was carried out in the form of questionnaire. Different from Experiment 1, the moderating variable of product green attribute information was

introduced in experiment 2, so the validity test of product green attribute information was added in the experiment. The whole experiment was divided into six steps, which were advertising appeal manipulation and testing, product green attribute information manipulation and testing, green perceived value testing, purchase intention testing and basic information collection of subjects. Among them, except for the validity test of product green attribute information, the other steps are the same as experiment 1.

The manipulation test method of product green attribute information was appropriately adjusted according to the research situation. The scale mainly contains three items, and the specific measurement items are shown in Table 5.

Table 5. Product green attribute information manipulation test table

Variable	Serial number	Item
Product green attribute information (GP)	GP1	The product is a green product with environmentally friendly properties.
	GP2	How important do you think the product ingredient formula (packaging bottle) is to this product?
	GP3	How environmentally friendly or green do you think the product is?

4.2. Experimental results and discussion

4.2.1. Product green attribute information control inspection

There is no significant difference in the scores of the two groups of subjects on green products (M core = 3.73 vs. M edge = 3.72, $t(198) = 0.084$, $p > 0.05$), and the scores of importance and greenness of the core green attribute group were significantly higher than those of the edge green attribute group (M core = 3.82 vs. M edge = 3.41, $t(198) = 3.216$, $p < 0.01$; M core = 3.76 vs. M edge = 3.37, $t(198) = 3.132$, $p < 0.01$), indicating that the material manipulation of product green attribute information is successful.

4.2.2. Verification of the regulatory effect of product green attribute information

Examine the green advertising appeal (specific vs. abstract) and the product green attribute information (core vs. edge) on the perceived value of green. The results of ANOVA between the two factors showed that green advertising appeal and green attribute information ($F=22.556$, $p < 0.001$; $F=5.407$, $p < 0.05$), and the interaction effect between green advertising appeals and green attribute information is also significant ($F=13.043$, $p < 0.001$). Assume H5 is confirmed.

The results show that when the green attribute is reflected in the core attribute, the specific green advertising appeal has a greater impact on the perceived value of green than the abstract green advertising appeal (M specific = 4.16 > M abstract = 3.315, $p < 0.001$). When the green attribute is represented in the edge attribute, there is no significant difference between the specific and abstract green advertising appeals on the perceived value of green (M specific = 4.03 > M abstract = 3.915, $p > 0.05$). Therefore, the hypothesis H5a and H5b received statistical support.

stronger, enterprises respond to the call and put forward green marketing strategies for sustainable development. Based on the refined processing model, this study explores the influence of abstract and concrete green advertising appeals on consumers' green purchase intention, expounds the mediating role of green perceived value, and tests the moderating effect of green involvement between green advertising appeals and green perceived value, providing theoretical basis for enterprises' advertising strategies. The main conclusions are as follows:

Experiment 1 examines the mediating effect of green perceived value on green advertising appeal and green purchase intention of consumers. The results show that green perceived value plays a complete mediating role between green advertising appeal and green purchase intention of consumers. This paper finds that after receiving the external stimulus of advertising appeal, if consumers perceive the functional value and green value of green products to be strong, they will enhance their green perceived value, and thus have the green purchase intention more easily. In other words, the green perceived value plays an intermediary role in this process.

The results of experiment 2 show that product green attribute information moderates the relationship between green advertising appeal and green purchase intention. When the green attribute of a product is reflected in the core attribute, the specific green advertising appeal has more accurate green index than the abstract advertising appeal, and consumers have certain basis to judge the green attribute of the product, thus generating stronger green perceived value. When the green attribute of a product is reflected in the edge attribute, there is no significant difference in the impact of concrete and abstract green advertising appeal on the green perceived value.

5. Conclusions, Inspirations and Prospects

5.1. Research Conclusion

As the demand for green consumption increases and the supervision of policies, laws and regulations becomes

5.2. Management Implications

When displaying the greenness of products to consumers, enterprises should take the green attribute information of products into full consideration and choose the green advertising appeal method with higher matching degree. For the products whose green attributes are reflected in the core

attributes, detailed and specific advertising terms are used to describe the products, avoiding the abstraction of advertising content, so as to improve consumers' perception of functional value and green value of the products and promote their purchase intention. Since green attributes are reflected in products with edge attributes, different green advertising appeals do not significantly affect the perceived value of green, which may be due to consumers' low attention to the greenness of such products. Therefore, for products with different green attributes, enterprises should use different ways of green advertising appeals to highlight the value of products, enhance consumers' green perceived value, and meet the value needs of different consumers.

5.3. Shortcomings and Prospects

The main limitation of this paper lies in the limitation of the situational experiment: the stimulus materials in this study are in the form of graphics, and the text information of the materials is significantly different. However, in real life, the description of advertisements is more diversified and may contain information that is difficult for consumers to identify. Therefore, consumers' perceived value of green in reality may be different from the experimental results. In addition, the experiment adopts the method of asking the subjects to read the materials before answering the questions. The consumers are not in the real shopping situation, which has certain influence on the accuracy of the research. In the future, video and other advertising methods that are closer to reality can be adopted, combined with field tests, such as experiments in real scenes such as supermarkets or stores, to simulate real advertising scenes and improve external effectiveness.

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