

The Impact of Green Marketing on Consumer Purchase Intention: The Moderating Role of Environmental Knowledge

Mahdi Aliyari¹

1. Management Department, Business Management major, Islamic Azad University, Central Tehran Branch, Iran

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ABSTRACT

Today, environmental issues have concerned citizens, organizations, and institutions worldwide more than 30 years ago, prompting consumers to consider environmental issues in their purchases. The increase in public concern and awareness about health and environmental protection has led consumers to consider environmental issues in their purchases. This consumer awareness of climate change and sustainability has led to the supply of environmentally friendly products. Therefore, this study aims to investigate the impact of green marketing on consumer purchase intention with the moderating role of environmental knowledge. The research is applied in terms of objective and descriptive-analytical in terms of method, using a questionnaire tool. The statistical population of the study includes customers of online stores in Isfahan city. The sample size was calculated as 267 individuals using the Cochran formula. Hypotheses were tested using PLS Smart software and structural equation modeling. The results indicate that each dimension of green marketing (green product, green price, green promotion, and green place) has a significant and positive effect on consumers' green purchase intention, and the moderating role of environmental knowledge in the relationship between green marketing and green purchase intention is confirmed.

Introduction

In recent years, research related to green marketing has taken a growing trend and has become one of the important issues in today's world. This subject has allocated special importance among companies and organizations. Furthermore, today customers also have a special focus on environmental issues and its preservation, expecting companies not only to focus on profits and stakeholders' interests but also to pay special attention to their requests and the environment. The increase in public concern and awareness about health and environmental protection has led consumers to consider environmental issues in their purchases. This consumer awareness of climate change and sustainability has led to the supply of environmentally friendly products. This action has prompted companies to adopt green marketing to promote the environmental benefits of their products. Therefore, with increasing environmental concerns and awareness of sustainability, consumer preferences for environmentally friendly products and processes have changed. Companies have embraced "green marketing" to promote the environmental benefits of their products [1].

Green marketing uses ethics to change consumer behavior. Green or environmental marketing is a tool for sustainable development and satisfying the needs of various stakeholders, encompassing all activities designed to facilitate exchanges to meet human needs and desires, with minimal harmful effects on the environment. In green marketing, activities such as recycling packaging, energy efficiency, and promoting sustainable materials are emphasized. By highlighting the environmental benefits of the product, the aim is to attract environmentally conscious consumers and influence their purchases. However, environmental awareness and green concern determine how green marketing influences customer purchase intention. Green products have less environmentally damaging effects throughout their lifecycle compared to other products, resulting in less harm to the environment when purchasing such products [2].

Emphasis on the environmental benefits of a product attracts environmentally conscious consumers and influences their purchase. Green marketing promotes environmentally friendly goods and services to increase sales. However, environmental awareness and concern can potentially limit the impact of green marketing on customer purchase intention. Green consumers consider long-term benefits for people and the environment, while conventional consumers prioritize personal benefits. To promote global sustainability and green development, environmentally conscious buyers may purchase recycled or eco-friendly products [3]. Studies have examined how environmental awareness and recycling affect green consumer behavior. For example, Kuma et al. (2015) concluded in their study that environmental protection, responsible behavior, product interaction, eco-friendly business compatibility, and social attractiveness significantly influence the sales of green products [4].

Many modern consumers view environmentally friendly products as a way to protect the environment. Therefore, businesses should utilize sustainable production methods to promote ethical and environmentally friendly practices due to customer demand. Green products have less environmental impact throughout their lifecycle compared to other products, resulting in less environmental harm when purchasing such products. Awareness and understanding of environmental issues and solutions can influence green marketing and purchase intention. Various factors can impact customer purchase intention. Therefore, understanding the factors influencing the intention to purchase green products by consumers seems essential. Hence, this study was conducted with the aim of investigating the impact of green marketing on consumer purchase intention with the moderating role of environmental knowledge.

2. Theoretical Foundations

1-2- The Concept of Green Marketing

Green marketing is a holistic management process responsible for identifying, predicting, and satisfying the needs of consumers and society in a profitable and sustainable manner. Green marketing, also known as environmental marketing, is recognized as a tool for sustainable development and meeting the needs of various stakeholders. Researchers have used various terms in defining this type of marketing, including green marketing, ecological marketing,

environmental marketing, and responsible marketing. Polonsky defines green marketing as follows: Green or environmental marketing includes all activities designed to facilitate exchanges to meet human needs and desires in a way that minimizes harmful effects on the environment. It is essential in green marketing to demonstrate that less harm is done to the environment rather than no harm at all [4].

Green marketing is the promotion of products assumed to be environmentally safe. A wide range of activities including product modification, changes in production processes, sustainable packaging, and modification of advertising are involved. However, defining green marketing is not a simple task. Other similar terms used are environmental marketing and eco-marketing. Green marketing, environmental, and ecological marketing are part of new marketing approaches that not only re-focus, adjust, or strengthen current marketing thinking and practices but also aim to challenge these approaches and offer a different perspective. Green marketing, environmental, and ecological marketing belong to a set of approaches that seek to address the mismatch between current marketing practices and the ecological and social realities of the broader marketing environment [5]. Green marketing encompasses various dimensions like green products, green pricing, green distribution, and green promotion.

2-2- Green Promotion

Green promotion refers to the transmission of real environmental information to consumers who are engaged with company activities. It also entails companies expressing commitment to conserving natural resources to attract the target market. In various studies, consumers have admitted that environmental advertising has had a positive impact on increasing their knowledge of green products and has helped them make better and informed decisions [6].

3-2- Green Product

A green product contributes to the preservation and enhancement of the environment by conserving energy or resources, reducing or eliminating the use of toxic substances, pollution, and waste. In other words, a green product is one that imposes less harm on the environment and involves methods such as repair, renovation, recycling, reuse, recovery, and reduction [7].

4-2- Green Purchase Intention

Purchase intention is one of the stages of the buying decision process that examines the consumer's motive for purchasing a specific brand. Consumer's purchase intention from a brand is shaped not only by the attitude towards that brand, but also by considering a range of brands [7]. According to Fishbein (1975), an individual's intention to perform a behavior is a function of their attitude towards performing that behavior in a specific situation, the norms governing behavior in that situation, and their motivation to adhere to these norms. What is particularly important is paying attention to the direction of an individual's attitude towards performing a behavior, not their attitude towards the object itself [8].

The importance of green products is perceived as valuable for environmental protection, hence consumers fulfill their responsibility through purchasing activities and acquiring green products. In most cases, a consumer's buying decision is to buy the superior product, but two factors may intervene between the purchase intention and the actual purchase. The first factor is others' attitudes and the second factor includes unexpected situational factors such as anticipated income, anticipated benefits of the product. Therefore, unexpected events can influence the purchase intention [7].

5-2- Environmental Knowledge

Information that influences purchasing decisions includes details about product features, environmental benefits, health effects, and potential economic benefits that can have both medium and long-term impacts. Understanding green products leads consumers to become aware of green marketing and encourages them to care about environmental protection and prevention of its degradation [9].

Environmental knowledge refers to the general knowledge individuals have about the facts, concepts, relationships of ecosystems, environmental issues, and the consequences of environmental behavior. This knowledge means realizing the importance of the environment. Nowadays, environmental knowledge is not just an ideology but a significant issue in market competition that has a noticeable impact on consumer behavior. Environmental knowledge is defined as general knowledge about the facts, concepts, and relationships of the natural environment and its ecosystems [10]. Environmental awareness refers to the ability to minimize the environmental impact by changing habitual behaviors influenced by cognitive, attitudinal, and behavioral components. Consumer habits, including decisions on what and how to consume, influence the development and sale of green products. Gaining knowledge from consumers is not only due to environmental awareness and understanding of their role in the environment but also for personal benefits and sustainable living practices. Many studies show that information and knowledge about green products serve as a stimulus for green consumption [11, 12, 13].

6-2- Environmental Concerns and Green Purchase Intentions

Franzen and Meyer (2010) define environmental concerns as awareness or insight where the natural environment is threatened by excessive resource use and pollution by humans. Theoretically, consumers with higher environmental concerns should purchase green products compared to those with lower concerns. Many studies only indicate a weak relationship between environmental concerns and environmental behaviors [14]. Bamberg (2003) suggests that skepticism about the presumed relationship between environmental concerns and environmentally related behaviors stems from the mistaken assumption that general attitudes like environmental concerns directly determine specific behaviors [15].

Minieri et al. (1997) found that consumers do not always translate their environmental concerns (beliefs) into their purchasing behavior [16]. Bamberg's study in 2003 showed that environmental concerns explain only about 8% of the variance in students' decisions to opt for green electricity products, and after controlling for the effects of specific situational attitudes, environmental concerns had no significant impact on behavioral intentions [15].

7-2- Conceptual Model

The key variables in this model are green marketing, green purchase intention, and environmental knowledge. According to the research model, green marketing serves as the independent variable, green purchase intention as the dependent variable, and environmental knowledge as a moderating variable. Based on the aforementioned, the research model is presented as follows (Figure 1).

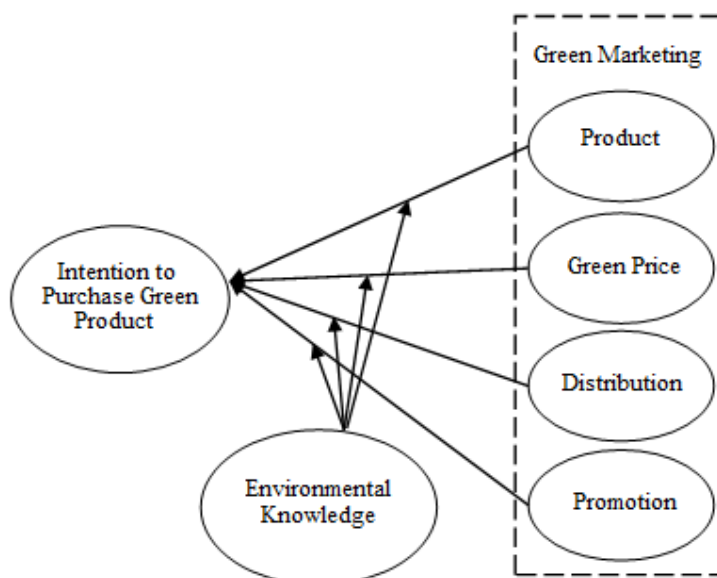


Figure 1: Conceptual Model of the Research

3. Research Methodology

This study is applied in terms of purpose and descriptive-analytical in terms of method. Data collection was conducted through documentary-library studies and field observations using observation tools complemented by questionnaires. The statistical population of the research consisted of customers of online stores in Isfahan city. The sample size of 267 individuals was calculated using the Cochran formula for an unknown population size with a 6% margin of error. The validity of the questionnaire items was confirmed by experts in the field of psychology, and the reliability using Cronbach's alpha was calculated to be 0.82. The hypotheses of the research were examined using PLS Smart software and the structural equation modeling method as shown in Table (1). The Kolmogorov-Smirnov test indicated the non-normality of the data, hence the use of the PLS method for hypothesis testing in the research.

Table 1: Cronbach's Alpha Test

Dimensions	Alpha Value
Intention to Purchase Green Products	0.83
Green Marketing	0.81
Environmental Knowledge	0.85
Product	0.81
Green Price	0.83
Green Distribution	0.78
Green Promotion	0.84

4. Research Findings

1-4- Descriptive Findings

Demographic variables including gender, age, education, income, and average purchase over the past three months are presented in Table (2).

Table 2: Frequency Percentage of Demographic Variables

Population Variables	Category	Frequency Percentage
Gender	Female	2.54
	Male	8.45
Age	Less than 20 years old	2.15
	20 to 30 years old	6.45

	30 to 40 years old	98.21
	40 to 50 years old	12.12
	Over 50 years old	1.5
Education	Below diploma	6.20
	Diploma and Associate Degree	3.51
	Bachelor's degree	19.3
	Master's and above	8.8
Income	Less than 1 million	3.4
	Income from one to two million tomans	4.1
	Two to three million tomans	3.10
	3 million and above	00.84
Average Purchase in the Last Three Months	Once or more every week	4.15
	At least once every month	2.34
	Less than once a month	4.50

The results showed that the number of women (54.2%) was higher than men (40.8%), the dominant age group was between 20 and 30 years old (45.6%), and individuals with diploma and higher diploma degrees (51.3%) with an income of 3 million and above (84%), who purchased green products less than once a month (50.4%), had the largest share in the sample.

2-4- Inferential findings

Considering Table (3), the Kolmogorov-Smirnov test indicated the non-normality of the research data. Therefore, the Spearman nonparametric test has been used to investigate the research hypotheses.

Table 3: The Kolmogorov-Smirnov test, in order to investigate the normality of research variables

Variable	Kolmogorov-Smirnov	Level of Significance
Intention to Purchase Green Products	329.1	0.001
Green Marketing	647.1	0.003
Environmental Knowledge	76.1	0.001
Product	29.1	0.001
Green Distribution	62.1	0.001
Green Price	356.1	0.001
Green Promotion	412.1	0.001

For factor analysis, the Kaiser-Meyer-Olkin (KMO) index was utilized. This index ranges from zero to one, and the closer the value is to one, the more suitable the data are for factor analysis. Bartlett's test was also used to examine the correlation matrix. Bartlett's test, as indicated in Table (4), showed a significance level less than 0.05, rejecting the null hypothesis of correlation matrix being an identity matrix. Hence, it was revealed that factor analysis is appropriate for identifying the structure of variables.

Table 4: Value of KMO and Bartlett's Test Statistic

KMO Test		0.930
Bartlett's Test	χ^2	13606.23
	Sig	0.001

Based on the results in Table (4), the KMO test value (0.930) is higher than 0.3, and the significance level of Bartlett's test is less than 0.05. This indicates the suitability of the data for factor analysis .

3-4- Research Hypothesis Examination

Hypothesis 1: Environmental knowledge moderates the relationship between product and intention to purchase environmentally friendly products. The moderation effect of environmental

knowledge on the relationship between product and intention to purchase green products, with a path coefficient of 0.324 and a T statistic of 27.2, which is greater than 1.96, therefore Hypothesis 1 is accepted (Table 5).

Hypothesis 2: Environmental knowledge moderates the relationship between price and intention to purchase green products. The results of the hypothesis 2 test with a path coefficient of 0.211 and a T statistic of 14.4 indicate that environmental knowledge moderates the relationship between price and intention to purchase green products (Table 5).

Hypothesis 3: Environmental knowledge moderates the relationship between promotion and intention to purchase green products. The test of hypothesis 3 yielded a path coefficient of 0.111 and a T statistic of 19.3, suggesting that environmental knowledge moderates the relationship between promotion and intention to purchase green products (Table 5).

Hypothesis 4: Environmental knowledge moderates the relationship between location and intention to purchase green products. In examining the moderation effect of environmental knowledge on the relationship between location and intention to purchase green products, the path coefficient was 0.212 and the T statistic was 14.2, which is greater than 1.96, therefore Hypothesis 4 is accepted (Table 5).

Table 5: Results of the structural model evaluation for examining the moderator of environmental knowledge.

Research Hypotheses	Path Coefficients	T-Value	Result
Product × Environmental Knowledge → Purchase Intention	0.324	27.2	Hypothesis confirmed
Price × Environmental Knowledge → Purchase Intention	0.211	114.4	Hypothesis confirmed
Place × Environmental Knowledge → Purchase Intention	0.212	146.2	Hypothesis confirmed
Promotion × Environmental Knowledge → Purchase Intention	0.111	149.3	Hypothesis confirmed

Figure 2 and 3 respectively show the research model in standard estimation and the research model in significantly parameterized state.

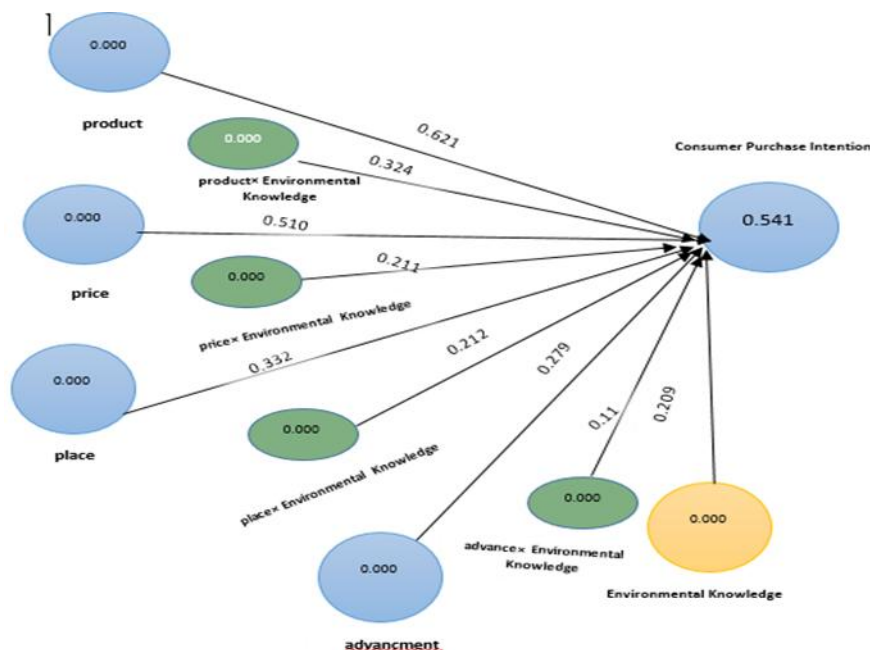


Figure 2. Research Model in Standard Estimation State

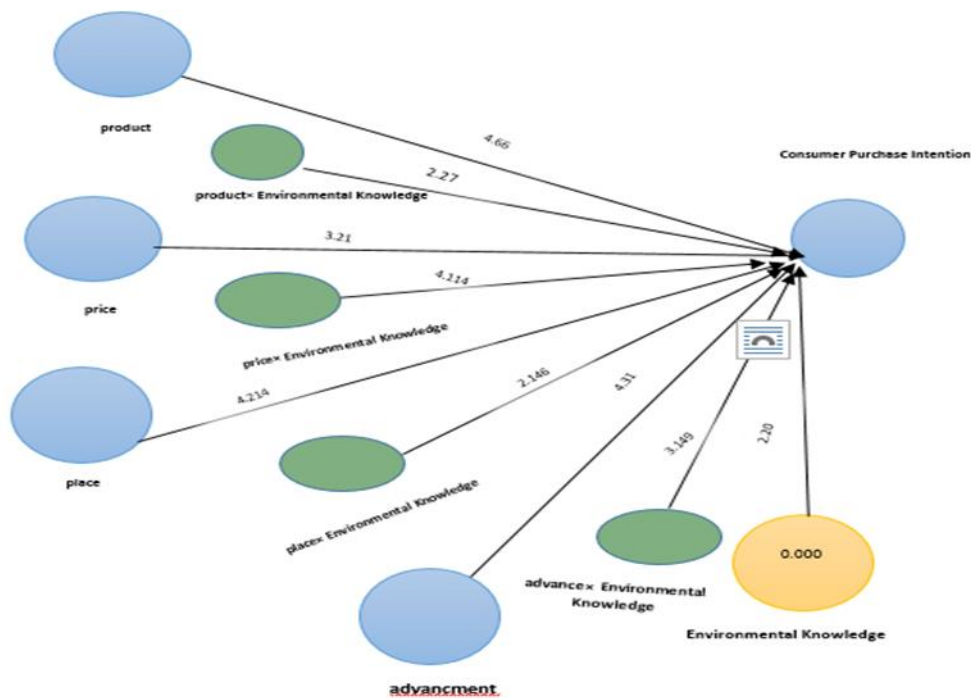


Figure 3. Research Model in Significance of Parameters State

5. Conclusion

Today, environmental issues and conservation have become one of the most important criteria that consumers consider when making a purchase. Environmental preservation has led consumers to rethink the products they buy. Many consumers are willing to pay a higher price for products that adhere to environmental standards to genuinely support the environment [1]. In today's world, resources play a very important role in the development of companies, and on the other hand, resources should be consumed in a balanced manner for sustainable and responsible economic development. Green marketing is a strategy that drives companies to produce and market products made from natural resources that are not harmful to nature and return to nature, thereby preserving natural resources and creating profitability and long-term relationships with customers for the company .

The present study was conducted to investigate the impact of green marketing on consumer purchase intention with the moderating role of environmental knowledge. Considering the production of products with special and unique designs that allow for reuse, assembly, and recycling, and the use of materials that can be recycled, have energy-efficient consumption, and create less environmental pollution compared to similar products, is considered as one of the influential factors on the intention to purchase green products. Therefore, paying attention to the specific nature of these products is of special importance. In this study, confirming the hypothesis related to the impact of the product on the intention to purchase environmentally friendly products aligns with the research carried out by Morl and Kawaki [17].

Additionally, considering the increasing levels of knowledge and education of individuals regarding environmental issues, along with the growing consumer sensitivity towards environmental issues compared to previous years, there is a tendency towards increased consumption of green products. Based on the influence of environmental awareness on consumer purchase intention, which is in line with the results of studies by Ritter and colleagues, the results of the current study indicate that environmental awareness significantly affects consumers' purchase intention. These results are consistent with studies by Ritter and colleagues [18].

Research has shown that environmental concerns of consumers have led them to gradually change their purchasing behavior and reconsider the products they buy. There is even evidence

that many consumers are willing to pay a higher price for products that adhere to environmental standards in support of the environment. Furthermore, the results indicate that price has a significant impact on the intention to purchase green products, which aligns with the study by Gleim and colleagues [19].

Based on the findings of the research, it is recommended to develop educational programs for social media, especially documentary television programs, to culturally influence changing beliefs, perspectives, and consumption habits of society to encourage the consumption of green products. It is also suggested to take actions to increase consumers' willingness to pay more for green products in order to preserve the environment for future generations. One limitation of this study is that the sample population was limited to consumers of products in Isfahan city, hence the generalization of the results is constrained to this specific population and may not be generalizable to the entire Iranian society.

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