The Effects of Environmental Knowledge, Environmental Concern, and Green Brand Image on Green Purchase Intention with Perceived Product Price and Quality as the Moderating Variable

A Qomariah¹ and B Prabawani¹

¹ Business Administration Department, Diponegoro University, Jalan Profesor Soedarto S.H, Tembalang, Kota Semarang, 50139
bulan@live.undip.ac.id

Abstract. In recent years, public awareness and concern of green products have begun to increase. People are starting to pay attention to the ingredients in all the products they use. This condition triggers companies to create beauty products that are environmentally friendly and safe to use. This study aims to determine and explain the effects of environmental knowledge, environmental concern, the green brand image on green purchase intention with perceived product price & quality as a moderating variable. The type of this research is explanatory research with a quantitative approach. The sample used was 100 visitors of The Face Shop at Ciputra Mall Semarang. The sampling technique used was purposive sampling and accidental sampling. Data collection methods used were physical questionnaires and online questionnaires. Data processing using SmartPLS 3.2.8. The results of this study indicate that green brand image and the perceived product price & quality significantly influence the green purchase intention. While environmental knowledge and environmental concern do not significantly influence green purchase intention. The moderation type of perceived product price & quality of environmental knowledge is a quasi-moderator. Whereas the moderating type of variable perceived product price & quality towards environmental concern variables and green brand image is an antecedent.

1. Introduction

For the last 2 decades, public awareness and concern of green products have begun to increase. People start to consider what ingredients are contained in foods, cleaning products, and even beauty products they use. This is triggered by the emergence of articles and researches concerning ingredients contained in beauty products that potentially have bad effects on health. In 2004, the Journal of Applied Toxicology released their study results that found paraben in breast cancer tissue. Paraben is a preservative that is commonly used in facial, hair and body care products. The researcher did not test healthy woman tissue and they did not say that paraben caused cancer. This study is the first research on chemicals that is well known among controlling consumer groups. Besides, to study concerning the potential effects of certain ingredients in skincare products, there were some complaints reported directly by customers. According to
the article published by New York Times in 2010, the regulator in Canada and Oregon received complaint reports regarding Brazilian Blowout products causing nosebleeds, respiratory problems, and eye irritation. In such hair straightening products, large amounts of chemicals that can change into formaldehyde gas when heated was found. Complaints and reports that have been mass-published have caused consumers to be concerned about using products with certain chemical ingredients and they shift to safe natural products. This subsequently increases the popularity of natural products or products with natural ingredients that are not potentially harmful to consumers.

Problems then arise when many products widely distributed contain only a small amount of natural ingredients with the basic ingredients of synthesis and preservatives which makes their natural value is doubtful. For this reason, consumers need to buy products from skincare companies that are committed to using natural ingredients because they know how to process ingredients to maintain their contents [11].

The Face Shop is one of Korea's natural brands under LG Household & Healthcare license that has successfully entered the Indonesian market. The Face Shop was established in 2003 in Myeongdong, South Korea manufacturing natural ingredients-base skincare products. On June 2004, The Face Shop has successfully opened its 100th shop and become the third-largest cosmetics company in South Korea in 2005. Bringing naturalism, variety and value concepts, The Face Shop is committed to produce a variety of natural-base products and offer affordable high-quality products. One of The Face Shop's powers of attraction was its success in manufacturing products without doing a test to animals (against animal testing), manufacturing products made from natural ingredients which are dermatologically tested and packaged in the recyclable package making them very environmentally friendly. In Indonesia, The Face Shop has 52 outlets spread across big cities such as Jakarta, Surabaya, Makassar, Medan, and Semarang. In Central Java, The Face Shop only has 2 outlets namely in Ciputra Mall Semarang and Paragon Solo.

In a study conducted by Giarti and Santoso [6], the perceived product price & quality became a variable that moderates environmental knowledge, environmental concern, the organization's green image and green purchase intention. Therefore, this study aims to identify the "Effect of Environmental Knowledge, Environmental Concern and Green Brand Image on Green Purchase Intention with Perceived Product Price and Quality as the Moderating Variable"

2. Theoretical review

2.1. Green marketing

American Marketing Association (AMA) defines green marketing in three aspects namely the definition of retail, social marketing, and environment. The retail definition views green marketing as a step to market perceived-environmentally-friendly products. The social marketing definition defines green marketing as product development and marketing designed to minimize negative effects on the physical environment or to improve its quality. Whereas, environment definition views green marketing as an effort conducted by companies to produce, promote, package and update products in an environmentally sensitive and responsible manner [13]. Green marketing has several benefits as described by Levinson and Horowitz [10] namely:

a. Environmentally friendly goods and services are easy to enter the market
b. Environmentally friendly goods and services are often at premium prices, making it easier to get profits

c. Environmentally friendly goods and services use a smaller amount of resources, less energy, and more organic and natural ingredients resulting in less pollution and carbon footprint.
2.2. Green product
USDA Organic Skin Care defines the organic product as a product manufactured without using synthetic preservatives, petrochemicals, ionizing radiation or pesticides. USDA Organic Skin Care classifies organic products based on organic ingredients percentage contained in the product as follows (USDA Organic Skin Care, 2019):

a. 100% Organic: as a product that shall contain ingredients that are only produced organically and there shall be a seal from USDA that appears on the product packaging.

b. Organic: as a product that shall contain at least 95% of ingredients produced organically. This Product shall also not be produced using synthetic preservatives, petrochemicals, ionizing radiation or other unspecified methods. There is the USDA seal appeared on the product package.

c. Made with Organic Ingredients: as a product containing at least 70%, organic ingredients and the seal of USDA is not included in the product packaging.

2.3. Environmental knowledge
Environmental knowledge is a person’s perception of how far he knows about environmental issues in general and assumes that environmental knowledge is positively related to green purchase intention [9]. Murphy et al. [14] states that environmental knowledge consists of the following components;

a. General knowledge, including knowledge on air pollution, water pollution, global warming, wetlands, wastes, and causes of animal extinction.

b. Knowledge of energy, including knowledge on energy sources and their impact on health, environment, and economy.

c. Knowledge reported by respondents themselves concerning environmental issues, covering environmental topics, including knowledge on environmental problems, air pollution, energy issues, water quality and global warming known by individuals

d. Specific environmental topics, which are specific environmental topics known to individuals such as micro-plastic hazards, soil pollution, and others

2.4. Environmental concern
Ahmad et al. [1] defines environmental concern as a psychological response to the environment as individuals and consumers. One of the environmental attitude aspects is an environmental concern, referring to the effects correlated with belief on environmental problems [2]. Schultz [16] divides environmental concern into 3 categories, namely;

a. egoistic, as a selfish attitude;

b. altruistic, altruistic, as an attitude of care to others; and

c. biospheric, as an attitude of care to the biosphere life

2.5. Green brand image
Chen [5] states that a green brand image is a perception adhered to a brand by combining commitment and care to the environment. This perception will automatically come into the consumers’ minds when they hear about a brand. Furthermore, the green brand image can also affect the consumers’ purchase and repurchase intentions. According to Chen [5], important aspects in determining the size of Green Brand Image are as follow:

a. The brand emerges itself as the best one with seriousness in protecting the environment

b. The brand is professional and gives a good reputation in protecting the environment

c. The brand emerges itself as a brand that has successfully protected the environment

d. The brand’s business process is trusted in protecting the environment
2.6. Green purchase intention

Purchase intention is the consumer's likelihood to buy products they like [15]. Purchase intention is usually correlated with consumers' behavior, perception and attitude and can change under the effect of price or perceived quality and value [12]. According to Chang [3] and Chen [4], green purchase intention can be measured using 3 questions, namely:

- a. Do you have the intention to buy the product?
- b. Do you expect to buy the product in the future?
- c. Overall, will you be proud if you buy the product?

2.7. Perceived product price & quality

Perceived Quality is a consumer's perception of the general quality or excellence of a product or service with a focus on the objectives of the product or service compared to the other alternatives [12]. According to Chang [3], green product is believed to be a lower quality product. Consumers may have doubts about buying green products because they suspect that the products have a lower quality or higher price. Some doubts might also reflect individual diversity, such as doubts that the product can change the world or skepticism towards green marketing in general [3]. According to James [8], perceived product price and quality can be measured with the following items:

- a. The product has an expensive price
- b. The product has a price that conforms to the benefits offered
- c. The product has a fairly affordable price
- d. The product has very good quality
- e. The product has a reliable quality
- f. The product has a consistent quality
- g. The product has a long durability
- h. The product has many benefits

2.8. Hypothesis

Based on the formulation of problems, the following hypothesis is made:

- a. Environmental knowledge affects green purchase intention
- b. Environmental concern affects green purchase intention
- c. Green brand image affects green purchase intention
- d. Perceived product price and quality affects green purchase intention
- e. Perceived product price and quality moderate the correlation between environmental knowledge and green purchase intention
- f. Perceived product price and quality moderate the correlation between environmental concern and green purchase intention
- g. Perceived product price and quality moderate the correlation between grand brand image and green purchase intention

3. Research method

The type of this study is explanatory research while the population in this study is prospective consumers who have visited The Face Shop outlet in Ciputra Mall Semarang with a total sample of 100 persons who have visited The Face Shop outlet in Ciputra Mall Semarang. The sampling technique used in this study is non-probability sampling with incidental sampling and purposive sampling. The total respondents studied using purposive sampling technique was determined to be 50 persons through online questionnaires. Whereas incidental sampling was determined to involve 50 visitors of The Face Shop outlet in Ciputra Mall Semarang. The criteria for respondents in this study are having at least 18-year-old and having
visited The Face Shop outlet in Ciputra Mall Semarang. Data processing was conducted with the help of SmartPLS 3.2.8 software. The tests include a validity test, reliability test, structural model test, the goodness of fit evaluation, and hypothesis test.

4. Results

4.1. Validity test

4.1.1. Convergent validity test. Based on the table below, it can be seen that the AVE values of all variables are greater than 0.5, thus, it can be concluded that this study has fulfilled the convergent validity requirements. It shows that this research model has very good accuracy and precision so that the convergent validity is fulfilled.

| Variables               | AVE Value | Conclusion |
|-------------------------|-----------|------------|
| Environmental Knowledge | 0.559     | Valid      |
| Environmental Concern   | 0.590     | Valid      |
| Green Brand Image       | 0.647     | Valid      |
| Green Purchase Intention| 0.667     | Valid      |
| Perceived Product Price & Quality | 0.677 | Valid |

4.1.2. Discriminant validity test. Based on the table below, it can be seen that each variable has AVE square root value which is greater than AVE value, thus, it can be concluded that all constructs in this research model meet the discriminant validity criteria.

| Variables               | AVE Value | AVE Square Root Value |
|-------------------------|-----------|-----------------------|
| Environmental Knowledge | 0.559     | 0.748                 |
| Environmental Concern   | 0.590     | 0.768                 |
| Green Brand Image       | 0.647     | 0.804                 |
| Green Purchase Intention| 0.667     | 0.817                 |
| Perceived Product Price & Quality | 0.677 | 0.823 |

4.2. Reliability test

4.2.1. Composite reliability. Based on the data below, it can be seen all variables have composite reliability values of greater than 0.8, thus, it can be concluded that all variables are reliable. Besides, the composite reliability value approaching 1 (one) shows the high consistency of blocks in measuring constructs.

| Variables               | Composite Reliability values | Conclusion |
|-------------------------|------------------------------|------------|
| Environmental Knowledge | 0.932                        | Reliable   |
| Environmental Concern   | 0.919                        | Reliable   |
| Green Brand Image       | 0.928                        | Reliable   |
| Green Purchase Intention| 0.923                        | Reliable   |
| Perceived Product Price & Quality | 0.936 | Reliable |
4.2.2. Cronbach’s alpha. Based on table 4, it can be seen that all variables in this study have Cronbach’s Alpha values which are greater than 0.8, thus, it can be concluded that all variables are reliable.

Table 4. The results of Cronbach's alpha reliability test

| Variables          | Cronbach’s Alpha Values | Conclusion |
|--------------------|-------------------------|------------|
| Environmental Knowledge | 0.923                   | Reliable   |
| Environmental Concern    | 0.903                   | Reliable   |
| Green Brand Image       | 0.909                   | Reliable   |
| Green Purchase Intention| 0.900                   | Reliable   |
| Perceived Product Price & Quality | 0.919 | Reliable   |

4.3. Determination coefficient

Table 5. R-square and r-square adjusted

| Variables          | R-square | R-square Adjusted |
|--------------------|----------|-------------------|
| Green Purchase Intention | 0.549    | 0.515             |

Based on the table above, it can be seen the R-square value is 0.549, thus, it can be categorized as having medium strength. This value also means that 54.9% of the variance in the green purchase intention variable is explained by the model.

4.4. f-square effect size

Table 6. Effect size for path coefficient

| Variables          | f-square | Interpretation |
|--------------------|----------|----------------|
| Environmental Knowledge | 0.001    | Small          |
| Environmental Concern    | 0.000    | Small          |
| Green Brand Image       | 0.275    | Medium         |
| Perceived Product Price & Quality | 0.115 | Medium         |

Based on the above data, it can be seen that environmental knowledge and environmental concern variables have small or weak strengths while green brand image and perceived product price and quality variables have medium strength.

4.5. The goodness of fit evaluation

In this study, the average commonalities index value is obtained from AVE value of the green purchase intention variable. AVE values can be seen in table 3.4. The calculation results are as follows:

\[
\text{GoF} = \sqrt{0.667 \times 0.549} \\
\text{GoF} = \sqrt{0.348} \\
\text{GoF} = 0.590
\]

Garson [7] interprets the GoF value of 0.1 for small GoF, 0.25 for medium GoF value and 0.36 for large GoF value. Based on the above calculation, the GoF value obtained is 0.590. This value is greater than 0.36, thus, it is included in the large GoF category. This value indicates that the research model is fit and feasible to use.
4.6. Hypothesis test

4.6.1. Direct effect test. Based on the below data, it can be seen that the P values of environmental knowledge, environmental concern, moderation effect of environmental concern, and moderation effect of green brand image are greater than 0.05. Thus, it can be concluded that environmental knowledge, environmental concern, moderation effect of environmental concern, and moderation effect of green brand image have no impact on green purchase intention. However, the P values of green brand image, perceived product price & quality, and moderation effect of environmental knowledge are less than 0.05. Thus, it can be concluded that green brand image, perceived product price & quality, and moderation effect of environmental knowledge have impact on green purchase intention.
Table 7. The result of output path coefficient direct effect test

|                | Original Sample Mean | Sample Mean | Standard Deviation | T-Statistic | P Values |
|----------------|----------------------|-------------|--------------------|-------------|----------|
| EK -> GPI      | -0.032               | -0.014      | 0.087              | 0.363       | 0.359    |
| EC -> GPI      | 0.010                | 0.014       | 0.087              | 0.115       | 0.454    |
| GBI -> GPI     | 0.448                | 0.467       | 0.093              | 5.268       | 0.000    |
| PPQ -> GPI     | 0.330                | 0.348       | 0.098              | 3.733       | 0.000    |
| MO EK -> GPI   | -0.183               | -0.153      | 0.103              | 1.775       | 0.038    |
| MO EC -> GPI   | 0.076                | 0.066       | 0.108              | 0.703       | 0.241    |
| MO GBI -> GPI  | 0.330                | 0.348       | 0.082              | 0.937       | 0.175    |

4.6.2. Result of moderation test. The data above show the types of moderating effects of perceived product price & quality on green purchase intention. On environmental knowledge, perceived product price & quality acts as quasi moderation. However, perceived product price & quality acts as predictor moderation on environmental knowledge and green brand image.

Table 8. The result of moderation test

| Effects of Moderating Variables | Moderation Effects | Conclusion         |
|---------------------------------|--------------------|--------------------|
| MO EK -> GPI                    | Significant        | Quasi Moderation   |
| MO EC -> GPI                    | Significant        | Predictor Moderation|
| MO GBI -> GPI                   | Insignificant      | Predictor Moderation|

5. Conclusion and suggestion

5.1. Conclusion
The green brand image, perceived product price & quality, and moderating effect of environmental knowledge significantly affect the green purchase intention to The Face Shop products at Ciputra Mall Semarang. However, the environmental knowledge, environmental concern, moderating effect of environmental concern, and moderating effect of green brand image do not significantly affect the green purchase intention to The Face Shop products at Ciputra Mall Semarang. On environmental knowledge, perceived product price & quality acts as quasi moderation. It means that with the help of perceived product price & quality, environmental knowledge can significantly affect the green purchase intention. However, perceived product price & quality acts as predictor moderation on environmental knowledge and green brand image. It means that perceived product price & quality act only as predictor on green purchase intention.

5.2. Study limitation
This study has been conducted in accordance with scientific procedures, however, it still has limitations, namely:

a. The factors that affect green purchase intention in this study only consist of 4 variables, namely environmental knowledge, environmental concern, green brand image, and perceived product price & quality, meanwhile, there are many other factors that can affect green purchase intention such as green brand positioning, green trust, green brand knowledge, and health consciousness.

b. The perceived product price & quality in this study are only described in a broad sense and have not yet reflected the perceived price and quality of green products.
c. This study only focused on one outlet of The Face Shop, which is located in Ciputra Mall Semarang so that the results of this study cannot be generalized.

d. The use of questionnaires, sometimes, makes the answers given by respondents do not show the real situation, thus, open questions need to be added.

5.3. Suggestions

a. The Face Shop needs to improve its green brand image by improving the perception of its products as an environmentally friendly product, packaged in a recyclable package, focusing on manufacturing environmentally friendly products, and publicizing environmentally friendly production processes.

b. To increase sales, The Face Shop outlets shall increase the perceived product quality on its products. The things to be improved include creating products which are cheaper than The Body Shop's products, making products with affordable prices, making products having product longer durability than The Body Shop's products, making products with better quality and more benefits than The Body Shop's products.

c. Environmental knowledge does not affect the green purchase intention to The Face Shop's products, thus, to increase sales, The Face Shop outlets do not need to pay attention to the environmental knowledge level of its prospective customers.

d. If The Face Shop outlets want to increase sales with their existing product price and quality, The Face Shop outlets shall pay attention to prospective customers having a low environmental knowledge level.

e. The study results show that environmental concern does not affect the green purchase intention to The Face Shop's products, thus, to increase sales, The Face Shop outlets do not need to pay attention to the environmental concern level of its prospective customers.

References

[1] Ahmad S N B, Nurita J, Azlina S and Awadz 2010 Examination of Environmental Knowledge and Perceived ProEnvironmental Behavior Among Students of University Tun Abdul Razak Malaysia International Journal of Multidisciplinary Thought 1 328 – 342

[2] Bruni C M, Randie C C and P Wesley S 2012 Measuring Values-Based Environmental Concerns in Children: An Environmental Motives Scale The Journal of Environmental Education 1 1-15

[3] Chang C 2011 Feeling Ambivalent About Going Green Journal of Advertising 4 19-32

[4] Chen Y S and Ching H C 2012 Enhance green purchase intentions: The roles of green perceived value green perceived risk and green trust Journal of Management Decision 3 502-520

[5] Chen Y S 2010 The Drivers of Green Brand Equity: Green Brand Image Green Satisfaction and Green Trust Journal of Business Ethics 307–319

[6] Giarti P dan Haryo S 2015 Analisis Faktor Yang Mempengaruhi Intensi Pembelian Hijau Pada Green Cosmetic Industrial Engineering Online Journal 1

[7] Garson D G 2016 Partial Least Squares: Regression and Structural Equation Models

[8] James F P 2002 Development of a Multi-Dimensional Scale for Measuring the Perceived Value of a Service Journal of pLeisure Research 2 119-134

[9] Lee Y K 2017 A Comparative Study of Green Purchase Intention between Korean and Chinese Consumers: The Moderating Role of Collectivism Sustainability 10 1-17

[10] Levinson J C and Shel H 2010 Guerilla Marketing Goes Green: Winning Strategies to Improve Your Profits and Your Planets New Jersey: John Wiley & Sons Inc

[11] Manley Nada 2014 The Skin You’re In: Simple Skincare Solution US: Nada Manley at Smashword
[12] Mirabi V Hamid A and Hamid T 2015 A Study of Factors Affecting on Customers Purchase Intention Journal of Multidisciplinary Engineering Science and Technology 1 267-273

[13] Morel Magali dan Francis Kwayke 2012 Green marketing: Consumer’s Attitudes towards Eco-friendly Products and Purchase Intention in the Fast Moving Consumer Goods (FMCG) sector Tesis Umeå School of Business

[14] Murphy et al 2008 The Third Minnesota Report Card on Environmental Literacy: A survey of adult environmental knowledge attitudes and behavior Minnesota: Minnesota Pollution Control Agency

[15] Rini Ayu S I P G Sukaadmaja I Gst A Kt Giantari 2017 Pengaruh Pengetahuan Lingkungan Dan Kepedulian Lingkungan Terhadap Sikap Dan Niat Beli Produk Hijau “The Body Shop” Di Kota Denpasar E-Jurnal Ekonomi dan Bisnis Universitas Udayana 1 137-166

[16] Schultz P Wesley Chris Shriver Jennifer J Tabanico Azar M Khazian 2004 Implicit connections with nature Journal of Environmental Psychology 31–42