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Knowledge, Self-Image, and Attitude on Pro-Environmental Behavior: An Empirical Study in Indonesia

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Abstract

This study aimed to analyze pro-environmental behavior (PEB) in students affected by environmental knowledge, green self-image (SI), and ecological attitude (EA). This survey research involving 249 respondents, with data obtained through the distribution of questionnaires. Relationships between variables were analyzed using PLS-SEM. The results show that environmental attitude and green SI positively affect ecological attitude and pro-environmental behavior. The results of subsequent studies indicate that ecological attitude has a positive impact on pro-environmental behavior. This study also shows that the direct effect of SI and EK is relatively small on pro-environment behavior. PEB can be enhanced by increasing green SI and consumer knowledge about environmental protection. It would be better if attitudes toward environmental protection are also considered because the results of this study indicate that attitudes have the most substantial influence in shaping PEB. This research was conducted in Indonesia, which geographically differs from other countries because Indonesia is a tropical and agricultural country with a large land area with thousands of plants as natural protectors. This condition is different from countries on other continents so that the pro-environment behavior also becomes different. These study results strengthen earlier findings of the positive relationship between green SI, EK, EA, and PEB.

Keywords: Environmental Knowledge, Green Self-Image, Ecological Attitude, Pro-Environmental Behavior

JEL Classification Code: Q56, I25

1. Introduction

The phenomenal mechanical revelations of the twentieth century have had both great and terrible impacts, particularly identified with the breaking down environment of human existence (Effendi et al., 2019). Human behavior is usually the leading cause of various environmental problems, such as the greenhouse effect, pollution, climate change, and the extinction of biodiversity (Stern, 1992; Wynes & Nicholas,

2017; Effendi et al., 2020). Efforts to deal with environmental damage require human awareness to behave that encourages ecological improvement. Larson et al. (2015) showed that pro-environmental behavior entered into the realm of science organizational psychology (Norton & Parker, 2015; Effendi et al., 2021), environmental psychology (Steg & Vlek, 2009; Zacher & Ashkanasy, 2015), and behavior consumers (Peattie, 2010). Pro-environment behavior shows actions that are beneficial to the environment, for example, recycling and reduce activities that damage nature.

Pro-environment behavior (PEB) considers all activities that support the preservation of nature such as life motivation that impacts the environment (Yoder et al., 2018). Many studies show that environmental knowledge (EK) has a connection with environmental behavior (Geiger et al., 2018, 2014; Sugandini et al., 2019). But some studies report correlations of weak EK and behavior (Frick et al., 2004). Bamberg and Möser (2007) found the results of a meta-analysis showed a lack of connection between awareness of environmental problems (as a proxy for knowledge) and PEB. Even Bamberg and Möser (2007) also show that EK is still far from reflecting PEB. Although many studies

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require familiarity to be analyzed in PEB settings, EK is not enough to be a prerequisite for developing PEB, moral norms, attitudes, and behaviors (Frick et al., 2004; Schahn & Holzer, 1990). Even though the consequences of exploration on the relationship of information and PEB are as yet being discussed, Geiger et al. (2018) suggest that future research must be carried out to look further into EK's role in different cultures.

In today's modern society, consumer awareness is growing along with advances in various fields of science (Nguyen & Dat, 2017). EK is the first issue analyzed in this research because there is still debate over the results obtained for EK's relationship with pro-environment behavior. Another reason for using ecological knowledge variables is because EK is needed to achieve the right level of environmental protection, so people must have a basic understanding of the environment before they behave pro-environment (Sultana, Hossen, & Khatun, 2017). Aral et al. (2017) show that environmental awareness/knowledge is the best method to take care of environmental issues (Uzun & Saglam, 2006). Positive opinions, emotions, and behavior of individuals regarding environmental protection and good EK in future generations enable them to have a definite manner against the environmentally renewable (Aral et al., 2017).

Another issue discussed in this study is the role of SI in PEB. SI is the willingness of persons to work together for the public good (Fiorillo & Senatore, 2016). SI is the feeling of individuals who are socially responsible. This SI is determined by comparing the actual behavior of individuals with exemplary moral behavior. Previous research in economic literature also considers the role of SI in pro-environment attitudes and behavior. According to Brekke et al. (2003, 2010) and Czajkoswi et al. (2015), SI is an antecedent for behavioral recycling. Based on a theoretical perspective, green SI plays a role in influencing the pro-environment manner and adopting pro-environment behavior. Social norms affect recycling behavior, but there is no significant relationship between SI and recycling behavior (Abbot et al., 2013). Then again, Daube and Ulph (2016) show that pro-environment behavior is derived from individual SI motives' intrinsic value. Nyborg et al. (2006) build wherein people are persuaded by SI worry about getting good results for populations who choose to consume green options. Brekke et al. (2003) identify that positive SI relies upon the degree to which people accept that their behavior is socially capable. Binder and Blankenberg (2017) found that green SI is associated with greater environmental welfare than just green behavior. Green SI can be considered as the norm. It can be observed from an individual who has a green SI and is associated with decisions, more pro-environmental involvement (Fielding & Hornsey, 2016). Welsch and Kühling (2018) have shown that if a green SI is by existing

social norms in society, then the benefits of green SI welfare will increase in these social norms' strength.

This research intends to dissect the impact of environmental demeanor, green self-image, and attitude on PEB. Some theories used as the basis for understanding green marketing are psychological theories from Rettie et al. (2014), Theory of Reasoned Action from Fishbein and Ajzen, 1975, and the Theory of Planned Behavior (Ajzen, 1985). Several previous researchers have also used this theory to measure PEB, such as Nguyen and Nguyen (2020); Issa and Hamm (2017); Azam and Shaheen (2019). Peattie et al. (2009) state that environmentally-friendly behavior creates more supportable behavior and usage. However, green marketing has failed in conducting green marketing, according to Peattie and Crane (2005). Green marketing is considered disappointing because of a misunderstanding and ineffective marketing practices. Greenwashing practices (Grant, 2007), which only emphasize environmentally-friendly products' high cost, become useless. The results of the study carried out by Aman et al. (2012) show that environmental concerns and EK do not influence individual attitudes. Still, environmental concerns and EK have a significant effect on the intention to buy green products.

Aside from these models' prominence, there is exact proof comprehensive mentality conduct or green gap (Black, 2010), where master condition perspectives are not generally reflected in observed behavior. Young et al. (2010) note that, albeit 30 percent of purchasers guarantee to be worried about the earth, this does not generally convert into eco-friendly buying behavior. Jansson (2011) shows that environmental behavior studies still produce a low correlation between ecological values, attitudes, intentions, and actual behavior. Bamberg and Moser (2007) show that the influence of intention is only considered small on PEB. The research gap is demonstrated by Carrigan and Attalla (2001), who reported that, in fact, consumer intentions and buying behavior also often occur without being influenced by ethical issues. Szmigin et al. (2009) state that, although consumers have the awareness to preserve the environment, their behavior is not consistent when making a purchase. Behavioral inconsistencies are caused by the influence of social factors and habits so that the treatment is carried out when providing more information toward the formation of positive attitudes and behavior changes.

Measuring PEB becomes context-specific that must be considered in predicting actual behavior. For example, can recycling be said to be PEB? How intensely do individuals recycle? Getting accurate information about PEB is a daunting task for researchers. By and large, the objects of conduct estimation lie on a continuum that is the context of dependent responses and general characteristics of a person (Yoder et al., 2018; Whitmarsh, 2009). The definition of some researchers' PEB involves positive consequences for

the environment, which vary significantly from one another (Truelove & Gillis, 2018; Stern, 2000). For instance, numerous pro-environment arrangements conduct contrast, seen from personal expression and practice in the public sector (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). Larson et al. (2015) state that research on PEB is still limited to some extent. Many researchers also lack understanding of approaches to measuring environmental activists by observing activists' real action objectively in the field or laboratory. So, not all conclusions can be generalized to all domains of PEB.

2. Literature Review

2.1. Green Self Image (GSI) and Pro-Environmental Behavior (PEB)

Environmental care and SI change people's intention toward green purchases (Kilbourne & Pickett, 2008). According to Mothersbaugh and Hawkins (2016), Green SI is the totality of musings and sentiments that refer to themselves as objects of the environment. Green SI incorporates four elements: who I am currently (real self-concept), who I want to be (ideal self-concept), how I need to act naturally (self-idea), and how I want to be seen by others (social idea). Long periods of customer research have affirmed the connection between SI and PEB (Weiss & Johar, 2013). SI refers to humans who always think about themselves and how they behave, and what others think about them (White & Argo, 2009). Cerjak et al. (2010) revealed that consumer preferences for product properties are driven by consumers' personal and selfish values, such as health and safety issues, and hedonistic values of pleasure and pleasure in utilizing products. Binder and Blankenberg (2017), from the viewpoint of SI on green buying behavior, exemplifies that green SI increases the intensity of green behavior. Concern for SI in environmental protection has a significant impact on green purchasing behavior (Dagher & Itani, 2014). Lasuin and Ching (2014) investigated the effect of SI on green purchase intentions; the results indicated a significant positive impact of SI on green purchase intentions. Chan and Wong (2012) found that the search for varieties and SIs (dimensions of consumer lifestyles) influences organic products' purchase. Customers buy environmentally friendly products because of their SI, and this has been proven by De Medeiros and Ribeiro (2017).

H1: Green self-image influences environmental attitude.

H2: Green self-image influences pro-environmental behavior.

2.2. Environmental Knowledge (EK)

Environmental knowledge (EK) is the basis for a positive attitude toward nature that serves as a strength or motivation

to engage in responsible ecological lifestyles. EK is defined as a basic understanding of basic ecological concepts (Geiger et al., 2018). Early models of PEB depend on EK that prompts natural mindfulness and concern, which is considered to produce professional condition behavior. According to Sugandini et al. (2019), there are three types of EK, namely, (1) knowledge about the environment, (2) their knowledge of environmental conservation, and (3) knowledge gained from one's involvement in nature and the environment. EK is conceptualized as knowledge of environmental issues and consists of familiar individuals with environmental influences, appreciation, and collective responsibility toward the environment (Mostafa, 2006). According to D'Souza, Taghian, and Lamb (2006), EK can be divided into two forms: (1) knowledge relating to the influence of individuals on nature, and (2) knowledge regarding ways to reduce the impact of natural damage by individuals. Kasier et al. (1999) confirm a positive connection between environmental mentalities and ecological behavior (i.e., the tendency to behave ecologically) and locate a significant correlation between EK and environmental values. According to Kasier et al. (1999), EK and benefits are prerequisites for ecological behavior intentions, which become a prerequisite for pro-ecological behavior. In consumer behavior, higher natural understanding is relied upon to affect higher inspirational mentalities toward ecologically friendly items. This concept is supported by previous research that shows a positive relationship between EK and a positive attitude toward green products (Chan, 1999). Sugandini et al. (2018) delivered the decision to conduct pro-environmental activities by EK and environmental attitudes. Geiger et al. (2018), in the realm of the cognitive orientation of green marketing research, show the significant influence of knowledge and ecological awareness on EA.

H3: Environmental knowledge influences ecological attitude.

H4: Environmental knowledge influences pro-environmental behavior.

2.3. Ecological Attitude (EA) and Pro-Environmental Behavior (PEB)

Behavior to preserve the environment is a definition of PEB, according to Stern (2000). Community people who have a love of the environment have the intention to behave toward high conservation (Sugandini et al., 2018). Pro-environment behavior makes consumers more careful in consuming their products. Pro-environment behavior is a specific action that leads to environmental activities. Pro-environment behavior is a continuously developing topic in the study of consumer behavior and is typical behavior (Nguyen et al., 2016). Pro-environment behavior is conduct

that leads to the consumption of products that protect nature. Pro-environment behavior leads to efforts to preserve the environment while taking into account the benefits that can be obtained now and in a sustainable manner (Kaiser et al., 2005). Usually, pro-environment conduct is, for the most part, identified with the acquisition of green items based on changing consumer behavior and oriented to environmental protection (Sugandini et al., 2018). Huang et al. (2015) concluded that buyers with an elevated level of mentality toward green items would have a solid chance of green buy expectation. Consumers prefer to consume goods that do not damage the environment and are not harmful to their health.

For Chan and Lau (2000), EA reflects an enthusiastic response to various problems, such as food lowered by pesticide, contamination caused by organizational tasks, and government efforts to control contamination. Attitude is an internal element that has a substantial impact on behavior. In general, attitudes with attuned behavior, although other psychological factors are needed to bridge the intention/behavioral intention (Fishbein & Ajzen, 1975). Bamberg and Jonas (2015) show that attitude influences pro-environment caring behavior. Rickinson et al. (2017) highlighted the relationship between EA and PEB in environmental education; the results show that EA influences PEB.

H5: Ecological attitude influences pro-environmental behavior.

3. Research Method

This study aims to examine PEB in students in Yogyakarta and South Sumatra. The survey involved 249 students. The selection procedure utilized was purposive sampling, with the criteria that these students have environmental concerns. By caring about the environment, the justification for PEB will be more appropriate. Questionnaires are used to obtain data. The number of instruments used was 17 items. Kim et al. adopted the survey used in this study (Fiorillo & Senatore, 2016; Kaiser et al., 1999). The data analysis technique is path analysis using PLS-SEM.

4. Results

4.1. Descriptive Analysis

The analysis in this study aims to describe the categories of respondents and research variables (i.e., gender, age, and income received for one month). The respondents are students at several universities in Yogyakarta and South Sumatra. The total number of respondents was 249 people. One respondent did not completely answer, so it was excluded from the data. The number of male respondents was 43% and 57%, female. The respondents' age is limited to

18–22 years because active students in tertiary institutions have maturities ranging from 18–22 years. The allowance received by each respondent per month varies from 1 million to 1.5 million rupiahs. Some 78% of respondents live in boarding houses, and 22% live with their parents. Hypothesis testing proposed in this study uses path analysis with the help of the SEM-PLS version 3.2.8 program.

Figure 1 shows the effect of each variable hypothesized in this research. Figure 1 also indicates that each indicator's loading factor coefficient to each variable analyzed has a value as recommended.

4.2. Result of Inner Models

Hypothesis testing is done by observing the *t*-count value and the significance value of each path. The recommended *t*-test is higher than the *t*-table value (1.96) and has a significance value of ≤ 0.05 . All the paths observed were significant, meaning that all hypotheses were supported. Tests' inner model proposed in this study consisted of the coefficient of determination (R^2) = 0.435 and 0.589, Q^2 predictive relevance = 92.778%, and Goodness of Fit (GoF) = 56.3377%.

5. Discussion

The first hypothesis in this study states that Green SI affects the supported EA (see *p*-value > 0.05). The effect of Green SI on EA is 45.2%. The second hypothesis in this study states that the Green SI effect on PEB is also supported (see *p*-value > 0.05), with a magnitude of influence of 16.9%. The indirect impact of Green SI on PEB mediated by EA was 24.6%. These results indicate that EA can intercede the effect of Green SI on PEB because the magnitude of the direct influence of Green SI on PEB is smaller than its indirect effect. This effect shows that green SI, which is a translation of the totality of thoughts and feelings of someone who refers to himself as an object of the environment, must have feelings of love in advance of his situation with PEB. Without the right attitude toward the background to the environment, a person will not act pro-environmentally in an optimal fashion. The results of this study support Kilbourne and Pickett (2008) to serve pro-environmentally (Mothersbaugh & Hawkins, 2016; Binder & Blankenberg, 2017).

The third hypothesis in this study states that EK influences supported environmental attitudes. The fourth hypothesis in this study indicates that EK influences PEB also is recommended. Respondents showed excellent knowledge about environmental issues. We can recognize the symbols printed on green products and understood behaviors to protect the environment. The outcome of this study demonstrates that the impact of EK on EA is 25.2%. The effect of EK on PEB is 14.2%. The indirect effect of EK

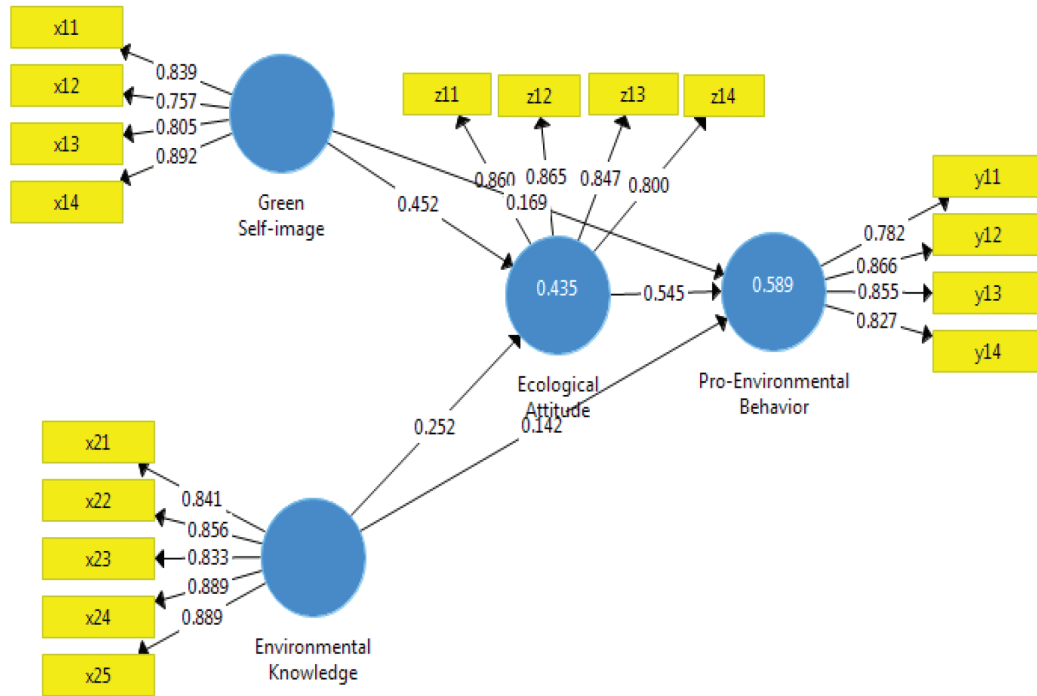


Figure 1: Pro-Environmental Behavior Model

on PEB interceded by EA is 13.7%. The results of this study indicate that EA can mediate, but not as much as the direct impact of EK on PEB.

The findings obtained in this study support Geiger et al. (2018); Sugandini et al. (2019), which states that EK influences PEB. D’Souza, Taghian, and Lamb (2006) also showed that EK could reduce natural damage done by humans (Kasier et al., 1999), and Sugandini et al. (2018) found that people perform PEB determined by their understanding of the environment. Geiger et al. (2018) assert that knowledge is strongly related to EA. This study’s results do not support Frick, Kaiser, and Wilson (2004); Bamberg and Möser (2007) state that EK and PEB have a weak relationship. The outputs of this research also do not bolster the research discoveries reported by Frick et al. (2004); Schahn and Holzer (1990) show that EK is insufficient to be a condition for pro-environmental attitudes and behavior.

The fifth hypothesis states that EA influences supported PEB. The impact of EA on PEB is 54.5%. The effect shows that attitudes form high PEB. This research does not support the opinion (Black, 2010), which states that someone who has a positive attitude toward environmental sustainability cannot show behavior to preserve their environment. Young et al. (2010) also reported that pro-environment consumers do not always show environmentally-friendly purchasing behavior. Consumers who are aware of environmental

sustainability are not always consistent in their green behavior, according to the report of Bamberg and Moser (2007), Carrigan Attalla (2001), Szmigin et al. (2009).

The results of this research support Stern (2000); Sugandini et al. (2018), which states that people who have a fondness for the environment usually have a desire to behave toward a high pro-environment and be more careful in consuming their items. Nguyen et al. (2016); Huang et al. (2015) report that consumers with the right demeanor toward green things have a strong possibility of green buying purpose. Chan and Lau (2000) also commented that attitude is an internal factor that strongly influences behavior (Fishbein & Ajzen, 1975). Bamberg and Jonas (2015); Rickinson et al. (2017) show that EA affects PEB. This research indicates that someone who avoids pollution avoids foods that containing high pesticides, consumes environmentally-friendly products, encourages others to act more ecologically conscious, uses public transport to reduce pollution, and buys products that can be recycled and avoids purchasing products from companies that are not responsible for preserving nature.

6. Conclusion and Limitations

This study showed that the PEB model created in this research has a good fit model test shown from the value

of R^2 , Q^2 , and its GoF. This research also indicates that all hypotheses proposed are supported. PEB can be influenced by green SI, environmental behavior, and EA. All paths offered in the study show the effect of each significant positive variable. This research can generalize previous findings that declare a positive impact of environmental behavior and EA on PEB and do not support research that reports that there is no influence of environmental behavior and EA on PEB.

This research contributes to marketers, campus managers, and the public about the critical role of manners toward the environment in PEB formation. Pro-behavior is very important for the protection of the environment that is beneficial for the sustainability of human life. Education about the environment also needs to be done to increase consumer knowledge about behaving green and protecting the environment. Increasing one's knowledge is expected to improve one's preference for environmentally-friendly behavior, which in turn can become environmentally-friendly behavior. Ecologically-friendly behavior is essential for the survival of humans and nature because climate change in the environment and the destruction of the environment has been very fast in this century. Marketers should be able to make a campaign of social advertising that can persuade people to understand the damage to quality, the benefits of protecting the environment from the pollution of harmful chemicals such as pesticides in food and more intensifying campaigns for people to love the environment. Love for the environment will make someone behave environmentally friendly. Thus, the environmental damage caused by human activity can be eliminated.

This research only uses students as respondents. Even though students represent several communities in Indonesia, such as the arts community, nature lovers community, cultural community, and others, they still have weaknesses because environmental destroyers are not only among the students, especially students. Research on antecedents of PEB is still very much needed. Because some government regulations related to energy transformation usually take decades to change infrastructure. It will be easier and faster to change Behavior in reducing energy emissions and greenhouse effects, such as dependence on private cars with replacing public vehicles, increasing the efficiency of electricity usage, using recyclable products, and so on (Wynes & Nicholas, 2017). Research on adolescents is still necessary because adolescents are the generation affected by environmental damage caused by errors in pro-environment behavior at this time. Adolescents also have the best handling for environmental changes. They also still have the freedom to make future behavioral choices for their lives and become used to lifestyles that are approaching PEB (Girod et al., 2014).

Furthermore, teenagers also act as catalysts for changing household behavior (Maddox et al., 2011). This research has not analyzed the effect of environmental education on PEB. According to Kociszewska (2014), environmental education, which shows human reliance on the earth and shows obligation regarding changes made to the regular habitat, can excite social sensitivity to natural issues.

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