

## **Environmental Awareness, Sustainable Consumption and Green Behavior Amongst University Students**

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— *Review of* —  
**Integrative  
Business &  
Economics**  
— *Research* —

### **ABSTRACT**

This study investigates the determinant factors of university student sustainable consumption, green behavior and environmental awareness in Daerah Istimewa Yogyakarta Province, Indonesia. In order to understand more about university student perspectives, a study was held related to how environmental awareness affect sustainable consumption and green behavior of university students. The main focus of this study, in general, is to investigate the influence of environmental awareness among university students and examine sustainable consumption and green behavior among university students during their study time. This study begins with a survey of 185 undergraduate students using an online questionnaire. The multiple linear regression model indicated that environmental awareness influenced significantly sustainable consumption. Furthermore, the findings also indicated the significant impact of environmental awareness on green behavior among university students. This study suggests considering expanding the sample and scope of the study and assessing the linkage of behavior to the individual action for further research.

**Keywords:** Sustainable Consumption, Green Behavior, Environmental Awareness, University Students

### **1. INTRODUCTION**

The definition of sustainable development was initiated by the Brundtland Commission, in 1987. That commission defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987 in Cohen, 2011). Moreover, sustainability is defined as a balance of economic (profit), environmental (planet), and social (people) aspects (Vermier & Verbeke, 2008). The quality of the environment and sustainability have become the most concerning issues recently.

The environment is a medium for the society to live and influence each other, consequently, in order to maintain their existence, they have to always meet their needs from the environment. However, when the interaction between human needs and the environment begins and along with population growth, that need is now increasing rapidly. Based on the various studies, the global environment is undergoing serious changes in recent decades, mainly due to human behavior. Population growth, industrialization, and technological development use and the consumption of natural resources on a large scale are unconsciously cause and environmental damage and pollution (Eren & Yaqub, 2015). The study by Abbas and Singh (2014) showed that the decrease in quality of air, water, soil, increased ocean pollution, wildlife extinction, loss of biodiversity, and increase in frequency and intensity of catastrophic natural disasters resulted in the loss of lives and properties, spread and increased in cancerous diseases. The poor domestic waste management system also becomes one of a negative impact on the environment (Hasibuan, 2016). Similarly, Kandziora et.al (2019) stated that the main causes of unhandled waste are ineffective waste management and inadequate

wastewater treatment, incomplete corporate social responsibility, littering, and illegal dumping of waste. Furthermore, in Indonesia for instance, Purwaningrum (2016) asserted that the waste problem is an unresolved problem for years. The number of waste generated from human activities or organic waste) reached 60-70% and the rest is non-organic waste around 30-40%, unsurprisingly, from the non-organic waste the composition of the second most waste is 14% is plastic waste.

The fact that society very much depends on the environment should be addressed wisely, unfortunately, poor environmental management systems, education, and uncontrolled consumption behavior might impact negatively on the environment. However, by understanding this condition, therefore, it is necessary to raise society's awareness towards sustainable consumption and also green behavior. Accordingly, changing consumer behavior can be able to give a substantial effect on the environment (Stern, 1999). During this pandemic, generally, there were some changes in consumption behavior in Indonesia, which is the increase in online shopping. Shopping online considers an easier way in terms of methods that can be done from everywhere. Consequently, the spending during the pandemic through online and offline has also increased (Fitriyani et.al, 2021). Efrizal (2020) also emphasized that there were some changes in consumption behavior in the younger generation due to activities related to adopting new habits during the pandemic, although, the environmental attitudes of the students are very developed, their behaviors are affected by the economic concerns (Muderrisoglu & Altanlar, 2011).

Considering that environmental awareness is the responsibility of the society, from the smallest social units such as families to the entire community, including educators, local governments, and citizens, the effort to promote this awareness is very essential to implement. As environmental awareness has become more prevalent and also rising of the environmental concern, society, especially university students become more proactive in addressing environmental issues.

This study aims to observe environmental awareness of university students along with their sustainable consumption and green behavior. A previous study by Oguz et.al (2010) asserted that higher education is one of the key actors in environmental education and sustainable development. Higher education can play a pivotal role in turning society toward sustainability (Corcoran & Wals, 2004). Likewise, students have always played an active role in the activities leading to the development of environmental awareness (Muderrisoglu & Altanlar, 2011). This study was conducted to observe the students at the undergraduate level, related to environmental awareness, sustainable consumption and green behavior. For this purpose, a survey was held and focused on undergraduate students from two Universities located in Daerah Istimewa Yogyakarta Province, Indonesia. In addition, according to Muderrisoglu & Altanlar (2011) students will be the ones who will manage and consume the future resources. These findings illustrate that in general consumption behavior patterns will contribute to environmental sustainability in the future. Therefore the objectives of this study are:

- 1) Observing the level of sustainable consumption and green behavior among university students during the study time.
- 2) Examining students' environmental awareness among university students during the study time.
- 3) Proposing recommendations base on the results obtained from the study.

## **2. LITERATURE REVIEW**

### **2.1 Environmental Awareness & Sustainable Consumption**

Environmental awareness refers to psychological factors that determine individuals' propensity towards environmental behaviors (Zelezny & Schultz, 2000) and also the knowledge about the impact of human behavior on the environment (Afsar et al., 2016; Kollmuss & Agyeman, 2002 in Ahmed et al, 2020). Environmental study and awareness as well as induced public participation in environmental protection become predominant to achieving environmental sustainability (Abbas & Singh, 2014). Oguz et.al (2010) believed that the environmental study aims to equip the individuals with some set of knowledge, attitudes, and skills in order to raise concern for the environment and to work towards solutions to the prevention of new problems. According to Lin & Niu (2018) in their studies, environmental awareness is not only pertinent to one's perception and knowledge towards environmental issues but also towards the behavior that one consequently conducts, for instance, some activities related to waste, recycling and energy-saving (Eren & Yaqub, 2015). Moreover, Eren & Yaqub (2015) identified that at this point, the awareness of university students is very relevant, as after they start professional activities in their related fields, that knowledge will help them to make the environment sustainable by monitoring the environment policy. Environmental study also perceived as a multitude of processes and activities, that are concerned with knowledge, emotions, feelings, attitudes, and values. Its aim is to produce informed and responsible citizens capable of playing an active role in all matters concerned with the environment (Maigari, 2002). In addition, according to Chan and Hawkins (2010) awareness about the environment enhances with an individual's increased awareness of the environment and understanding of the system and then applied that understanding to their daily life. Ehrenfeld (2005) asserted that businesses must evaluate critically the core values and mission of their business. Therefore, reducing unsustainability is not the same as creating sustainability. On the other hand, an individual's pattern of consumption is the sum of the moments of consumption that occur in the totality of his or her practices and every individual acquires items from different practices (Warde, 2005). Moreover, sustainable consumption carries meanings that are beyond mere environmental concerns as individual consumption decisions to be "ecological" and "socially responsible" to reduce the unsustainable impacts of one's ecological footprint (Lee, 2014). Even though sustainable consumption is explicitly close to the consumer behavior discipline, Ventamay (2016) argue that implicitly sustainable consumption is also related the consumption which responds to basic needs and brings a better quality of life with the consideration of the carrying capacity of the ecological system, creating a balance between the happiness of being self-sufficient and sharing with others, and continuously preserving the resource base for the production and consumption activities of future generations. Similarly, Jaeger-Erben & Offenberger (2014) discussed that either long-term and enduring aspects, or day-to-day life practices are relevant to each act of consumption. Whereas, Eren & Yaqub (2015) identified that sustainable consumption practices related to conscious consumption and environmental awareness, such as avoiding paper wasting, sending an e-mail rather than taking it to a hard copy, and changing reading habits to e-documents. Given that the relevance of environmental awareness leads to sustainable consumption, the following hypotheses are proposed as follows:

*H1*: Environmental awareness has a significant effect on Sustainable consumption

## **2.2 Environmental Awareness & Green Behavior**

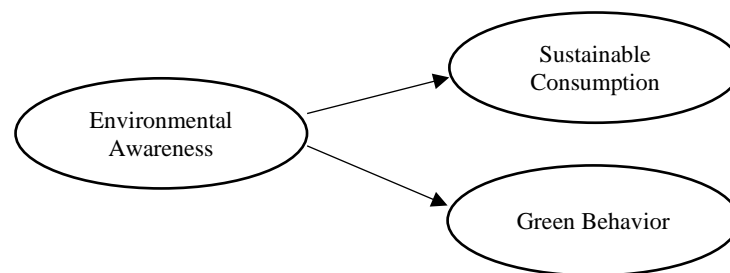
The environmental awareness of consumers poses a positive impact on their values and beliefs with respect to environmental support and practices. This awareness corresponds to the behavior of a consumer aiming to reduce environmental degradation by making eco-friendly purchases, saving energy, and making a selective collection of wastes (Naz, et.al, 2020). According to Eren & Yaqub (2015) in their study, found that respondent awareness and

sensitivity, and environmental issues and conceptual knowledge about the protection of resources were arise.

Green Behavior is associated with pro-environmental behavior that minimizes harm to the environment through minimizing the use of energy, reducing waste, conserving water, refraining from buying goods perceived to be hazardous to the environment, etc. (Mishal et.al, 2017). In order to reduce the unfavorable environmental effects initiated by more products and services, Simo, et.al, (2016) affirmed that green practices are important, along with competitive technologies and competitively valued products. Also, in terms of modifying the individual patterns of consumption, it is essential and crucial to consider that this conduct will be the product of cognitive, emotional, and motivational processes, and that it will be influenced and even conditioned by a number of circumstantial elements that, can be classified into two domains: psychological and environmental (Figueroa-García, et.al, 2018). Therefore, the findings conclude that environmental awareness does have a direct impact on green behavior but if somebody has greater well-being then they will be more likely to participate in green behaviors. (Ahmed et al, 2020). Given that the relevance of environmental awareness leads to green behavior, the following hypotheses are proposed as follows:

*H2: Environmental awareness has a significant effect on Green behavior*

**Figure 2.1**  
**Research Framework**



### 3. RESEARCH METHODS

First, this study begins with a survey on 185 undergraduate students using an online questionnaire, due to the restriction mobility during Covid 19 pandemic. The survey was undertaken from July to September 2021. In this study, the respondents are undergraduate students representing two universities in Daerah Istimewa Yogyakarta, Indonesia. Simple random sampling was used to collect the respondents. The questionnaire used in this research consist of two parts, the first part is the demographic information and the second the question related to the variables of the research. The questionnaire had a total of 28 items adopted from Eren & Yaqub (2015) that consist of five questions on sustainable consumption, nine questions on green behavior, and fourteen questions on the environmental awareness variable. Second, all variables were measured using Likert scale type, 1-5, ranging from “strongly disagree” to “strongly agree” and a pilot study was held to identify the validity and reliability of all observing variables, and the results confirmed that all the items were valid and reliable as presented in table 3.1. The software SPSS were employed to conduct the multiple linear regression and verify the goodness and fit of the framework of this study and measure the impact of each variable. Validity and reliability test were conducted to 30 respondents and all question items are valid and reliable, indicated by the calculated  $r > r$  table. Every part of the question items validity and reliability shown in table 3.1.

**Table 3.1**  
**Validiy & Reliability Results**

<b>Sustainable Consumption</b>	<b>%</b>	<b><math>\alpha</math></b>
I reuse the paper of lecture notes	<b>0,654</b>	<b>0,772</b>
I take print on both side of a paper	<b>0,369</b>	
I did check the preview of document in computer before printing	<b>0,745</b>	
I often sent e-mail instead of hard copy output	<b>0,610</b>	
I prefer to read the document on computer instead of the taking its print on paper	<b>0,538</b>	
<b>Green Behavior</b>	<b>%</b>	<b><math>\alpha</math></b>
I throw the used material in waste collection boxes	<b>0,029</b>	<b>0,718</b>
I use rechargeable batteries instead of disposable batteries	<b>0,013</b>	
I prefer to use long lasting products (rechargeable batteries, cloth bags,mask) for a sustainable environment instead of disposable products	<b>0,077</b>	
I would avoid using plastic bags	<b>0,012</b>	
I prefer to use easily-soluble bags rather than plastic bags	<b>0,000</b>	
I pay attention to water consumption when using the sink and toilet	<b>0,004</b>	
I try to protect the environment by using the least number of paper towels	<b>0,017</b>	
I throw the garbage to dustbins before leaving that place and not leaving any trash	<b>0,047</b>	
I throw the plastic, metal Plastic, metal and paper to separate recycling boxes	<b>0,001</b>	
<b>Environmental Awareness</b>	<b>%</b>	<b><math>\alpha</math></b>
Governmental and non-governmental organizations of our country is respect to environment	<b>0,053</b>	<b>0,768</b>
Adolescent should have a good environmental awareness for sustainable environment	<b>0,024</b>	
I attended any project or seminar to acknowledge the environmental awareness	<b>0,020</b>	
It is necessary for all university students to take subject related to environmental awareness	<b>0,020</b>	
I think the choice of public transport is important for a sustainable environment	<b>0,020</b>	
Promotions of renewable energy resources are necessary for sustainable environment	<b>0,014</b>	
Promotions of energy saving is important for sustainable environment	<b>0,000</b>	
I always show my best efforts to prevent pollution of the environment and show awareness	<b>0,023</b>	
Recycling of waste is important for the protection of the environment and natural resources	<b>0,002</b>	
Collection of waste in separate dustbins is important for a sustainable environment	<b>0,000</b>	
Separate collection dustbins (plastic, metal, etc.) in the buildings of our property is important for a sustainable environment	<b>0,018</b>	
To prevent unnecessary use of energy, I use light and electric devices only when it needs	<b>0,067</b>	
I keep my computer and printer off when I'm not using it to save energy	<b>0,008</b>	
When I am leaving room/place, I check is there anyone to close the lights	<b>0,018</b>	

## 4. RESULTS & DISCUSSION

### 4.1 Demographic Analysis

An online based survey was conducted to 185 undergraduate student in two Universities in Daerah Istimewa Yogyakarta, Indonesia. The demographic summary includes age, gender, and university location. As shown from the table, 87.6% of respondents belongs to the age group of 20-25 years old while 12.4% of respondents belongs to the age group of under 20 years old. In terms of gender, 51.9% of the respondents are female students and 48.1% of the respondents are male students. In terms of university location, 37.8% were located in Yogyakarta and 62.2% were located in Sleman. The details of the respondents are shown in tabe 4.1.

**Tabel 4.1**  
**Respondent Characteristic**

<b>Indicator</b>	<b>Frequency</b>	<b>Presentage</b>
<b>Age</b>		
20-25	162	87.6%
< 20	23	12.4%
<b>Gender</b>		
Female	96	51.9%

Male	89	48.1%
<b>University Location</b>		
Yogyakarta	70	37.8%
Sleman	115	62.2%

#### 4.2 Descriptive Analysis

In this section, the average distribution of sustainable consumption is presented in table 4.2. There was the lowest item on reusing paper of lecture notes with a mean score of 2.92 (medium) and the highest item on sending an e-mail instead of hard copy, with a mean score of 4,11 (high).

**Table 4.2**  
**Sustainable Consumption**

<b>Sustainable Consumption</b>	<b>Mean</b>	<b>Results</b>
I reuse the paper of lecture notes	2,92	Medium
I take print on both side of a paper	2,95	Medium
I did check the preview of document in computer before printing	3,77	High
I often sent e-mail instead of hard copy output	4,11	High
I prefer to read the document on computer instead of the taking its print on paper	3,77	High

The average distribution of green behavior presented in table 4.3 are mostly high to very high with the lowest item on the usage of paper towel with a mean score of 3.34 (high) and the highest item on water consumption, with a mean score of 4,36 (very high).

**Table 4.3**  
**Green Behavior**

<b>Green Behavior</b>	<b>Mean</b>	<b>Results</b>
I throw the used material in waste collection boxes	3,46	High
I use rechargeable batteries instead of disposable batteries	3,44	High
I prefer to use long lasting products (rechargeable batteries, cloth bags,mask) for a sustainable environment instead of disposable products	4,26	Very High
I would avoid using plastic bags	3,63	High
I prefer to use easily-soluble bags rather than plastic bags	4,06	High
I pay attention to water consumption when using the sink and toilet	4,36	Very High
I try to protect the environment by using the least number of paper towels	3,34	Medium
I throw the garbage to dustbins before leaving that place and not leaving any trash	4,31	Very High
I throw the plastic, metal Plastic, metal and paper to separate recycling boxes	3,62	High

In this last section, the average distribution of environmental awareness is presented in table 4.4. There was the lowest item on the perception of adolescent environmental awareness with a mean score of 2.94 (medium) and the highest item on preventing pollution and showing environmental awareness, with a mean score of 4,64 (very high).

**Table 4.4**  
**Environmental Awareness**

<b>Environmental Awareness</b>	<b>Mean</b>	<b>Results</b>
Governmental and non-governmental organizations of our country is respect to environment	3,46	High
Adolescent should have a good environmental awareness for sustainable environment	2,94	Medium
I attended any project or seminar to acknowledge the environmental awareness	3,29	Medium
It is necessary for all university students to take subject related to environmental awareness	4,47	Very High
I think the choice of public transport is important for a sustainable environment	4,29	Very High
Promotions of renewable energy resources are necessary for sustainable environment	4,34	Very High
Promotions of energy saving is important for sustainable environment	4,43	Very High
I always show my best efforts to prevent pollution of the environment and show awareness	4,64	Very High
Recycling of waste is important for the protection of the environment and natural resources	4,63	Very High
Collection of waste in separate dustbins is important for a sustainable environment	4,61	Very High
Separate collection dustbins (plastic, metal, etc.) in the buildings of our property is important for a sustainable environment	4,52	Very High
To prevent unnecessary use of energy, I use light and electric devices only when it needs	4,13	High
I keep my computer and printer off when I'm not using it to save energy	4,30	Very High
When I am leaving room/place, I check is there anyone to close the lights	4,43	Very High

### 4.3 Hypothesis Testing

**Table 4.1**

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,322 <sup>a</sup>	,103	,099	2,732

As seen in the R square test (table 4.1) environmental awareness variable could explain the sustainable consumption variable to 10.3 % and the remaining are explained by other factors. The F test results (table 4.2) also determined that environmental awareness did affect sustainable consumption of the undergraduate students with the level of significance  $0.000 > \alpha 0.05$ .

From the t-test results (table 4.3) can be seen that environmental awareness has a significant influence on sustainable consumption, as discussed in line with previous research which indicated that awareness about the environment increased understanding of the system and then applied to their daily life (Chan and Hawkins, 2010) whereas this study also aligns with Eren & Yaqub (2015) that asserted if environmental awareness is related to conscious consumption behavior.

**Table 4.2**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	157,654	1	157,654	21,124	,000 <sup>b</sup>
	Residual	1365,752	183	7,463		
	Total	1523,405	184			

**Table 4.3**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8,416	1,972		4,268	,000
	Environmental_Awareness	0,154	0,034	0,322	4,596	,000

As seen in the R square test (table 4.4) environmental awareness variable could explain the green behavior variable to 26.1% and the remaining are explained by other factors outside this study. The F test results in table 4.5 also indicated that environmental awareness did affect green behavior of the undergraduate students with the level of significance  $0.000 > \alpha 0.05$ .

**Table 4.4**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,510 <sup>a</sup>	,261	,256	3,786

**Table 4.5**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	924,373	1	924,373	64,472	,000 <sup>b</sup>
	Residual	2623,767	183	14,338		
	Total	3548,141	184			

From the t-test results (table 4.6) can be seen that environmental awareness influenced significantly green behavior and this finding align with Ahmed et.al (2020) that agreed if environmental awareness did have a direct impact on green behavior, also Tudor et.al (2008) supported this finding by affirming that the more individual has environmental awareness, the more the show green behavior.



**Table 4.6**

		Coefficients <sup>a</sup>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12,643	2,733		4,626	0,000
	Environmental_Awareness	0,373	0,047	0,51	8,029	0,000

## 5. CONCLUSION

This research was giving an attempt to examine the influence of environmental awareness of undergraduate students on their sustainable consumption and green behavior, similar to the study by Naz et.al (2020) that showed the environmental awareness of individuals possesses a positive impact on their values and beliefs with respect to supporting environment-saving behavior. The study has specified empirical findings for the fact that environmental awareness variables significantly affect sustainable consumption and green behavior respectively. Furthermore, this study depicted that environmental awareness amongst undergraduate students is generally considered as acceptable as well as their perceptions on sustainable consumption and green behavior. Thus, the results from this study also revealed that respondents agreed that sustainable consumption and green behavior are essential to implement in daily activities especially in educational environment. In terms of promoting environmental awareness amongst undergraduate students, this study suggests improving the role of group or community support, this also aligns with Lee (2014) that stated if the community will become the catalyst for active participation and commitment. Given that universities are educational institutions, the active commitment to educating their stakeholders to participate in creating a sustainable environment is essential. University should design relevant policies and strategies that are particularly based on the green and sustainability principles, integrate the sustainability-based curriculum in the academic field as well as provide supporting facilities. In addition, Oguz et.al (2010) found that the majority of the students think environmental education should be obligatory at every educational level. This also indicated that students are aware of the fact that education is needed to raise awareness of environmental issues.

In spite of the significant impact of the results, this study addressed the limitation that is more about the generalization of the findings. As this study was carried out only in two universities in Daerah Istimewa Yogyakarta Province, Indonesia, thus the results may not be considered as the perception of university students as a whole. In other aspects, the difference between male and female respondents did not assess. Also, the understanding of sustainability or environmental conception may vary due to the differences in individual perception.

Further study could also consider expanding the sample and scope of the study. However, this study is simply focused on understanding the level of influence of environmental awareness on sustainable consumption and green behavior and did not assess the linkage to the individual action. This study also can be further expanded to discuss other factors that might intervene and influence individual behavior such as motivation or green purchase behavior.

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