




Analysis of the Effect of Knowledge and Behavioral Attitude on Green University Awareness

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Abstract. The objective of this study is to examine the impact of students' knowledge and behavioral attitudes towards Green University Awareness in Batam City. The study encompassed a population of five universities located in Batam, from which a sample of 370 individuals was selected utilizing the Slovin algorithm. The researchers employed purposive sampling as the sampling method for this study. The data for this study was gathered through the utilization of a questionnaire designed using Google Forms, which was subsequently sent to the participants. This inquiry employed multiple linear regression, classical assumptions, t-test, f-test, and the coefficient of determination, with a significance threshold set at 0.05. The results of this study indicate that there is a significant relationship between Knowledge and Behavioral Attitude, and their influence on Green University Awareness. The variables of knowledge and behavioral attitude exert an impact on the awareness of Green University.

Keywords: Knowledge, Behavioral Attitude, Green University Awareness

1 Introduction

Habitat is a collection of physical elements, such as those found in natural resources including soil, water, sunlight, minerals, plants, and animals that can thrive both on land and in the air. Human creativity is incorporated into institutions through choices on how to live that take advantage of the natural world. The saying "cleanliness is part of faith" is one we hear a lot. Therefore, we must always maintain cleanliness anytime, anywhere. Cleanliness is also very important for our health, because a healthy body has a strong soul. Similar to our classroom environment, the classroom where we study [1].

Green campuses have become a trend and have also become an important factor for higher education providers in their efforts to create a conducive learning experience for students. The green campus concept seeks to expand learning beyond campus learning settings to develop environmentally responsible attitudes and commitments, both at home and in the wider community [2].

As we all know, the comfort of seeking knowledge cannot be separated from the elements of a clean and healthy environment. The comfort of learning really determines our focus in absorbing lessons. This problem is related to students' self-confidence, there are still many students who are indifferent to the cleanliness of their surrounding environment, and most students even throw rubbish out of place [3].

Academic sustainability in this case depends on the concern of the campus residents themselves, whether they are able to maintain and preserve it for prospective students or whether they only use all the buildings and other facilities which are academic facilities.

Environmentally friendly programs are being promoted by several universities in Indonesia today. The environmentally friendly program aims to instill character in every student so that they always maintain their environment with environmentally friendly behavior, it is hoped that students will not only apply it on campus but also in the community. There are still many students who choose to use single-use bottles, excessive use of paper and tissue, the number of students who have to queue for their turn to take the elevator in several buildings, as well as the number of students who use private vehicles/cars on campus. From this phenomenon, it appears that many students lack awareness and environmentally friendly behavior [4].

Students' attitudes without self-awareness can have a negative impact on both the surrounding environment and the students. Apart from that, the cleanliness slogan seems to only be a campus display whose only function is to beautify the campus walls. This habit arises from small activities carried out routinely (continuously).

This raises community members' awareness of the environmental impact of daily activities and encourages them to modify normative behavior. Environmentally conscious individuals adopt resource-conserving, service-producing, and product-production approaches that have the least harmful effects on the environment. By educating students and staff about pertinent topics, one may raise awareness of the university environment and enhance the implementation and execution of green initiatives [5].

Given the above basis, the researcher conducted a study on the analysis of the effect of knowledge and behavioral attitude on green university awareness of students in Batam city.

2 Literature Review

2.1 Knowledge

Environmental knowledge is a process of recognizing values and concepts, developing skills, and is a necessary means for understanding and appreciating the interrelationship between humans and their culture and their physiological environment. This helps create a holistic perspective in which it recognizes the fact that the natural environment and the built environment have an interdependent relationship. This perspective must be able to view the environment as a concept as a whole, and as a continuous process that lasts throughout life. Environmental awareness greatly influenced the future of humanity [6]. Environmental knowledge can be obtained by students not only at school but can also be obtained from various sources that exist today, namely the mass media. With the internet, all information and data can be obtained with one touch. So, it is expected this media can raise students' awareness of the importance of protecting and caring for the environment [7].

2.2 Behavioral Attitude

According to [4] defines environmentally friendly conduct as the manifestation of deliberate concern towards the environment in one's daily activities. The observed behavior can exhibit both repetitive and occasional patterns with respect to the preservation of natural resources and the surrounding environment. This includes the upkeep of specific resources such as water, air, and land, as well as the reduction of energy consumption from sources such as electricity, oil, and gas. Additionally, practices such as recycling of materials like paper and plastics are employed, all aimed at sustaining life forms including plants and animals. Attitude refers to a cognitive and affective response that an individual exhibits in answer to a certain stimulus.

2.3 Green University Awareness

Self-awareness consists of two types, including:

- 1) Personal self-awareness: focus on aspects relative to oneself such as mood, perception and feelings.
- 2) Community self-awareness: is attention directed to an aspect about the visible or visible self-others like looks and actions social.

It can be concluded that Consciousness The self is the state in which one can exist understand themselves thoroughly in particular. A person has self-awareness if they understand the emotions and mood of the moment perceived, critical of information regarding themselves, and realize who they really are [8].

Environmental cleanliness is a thing which is inseparable from human life and is a fundamental element in health science and prevention. What is meant is with environmental cleanliness is create a healthy environment so not easily attacked by various diseases such as dengue fever, diarrhea and others. This can be achieved by creating a clean beautiful and comfortable environment [9].

Environmental awareness refers to the conscious effort or mindset aimed at comprehending the significance of maintaining a robust and uncontaminated environment, among other aspects. The manifestation of environmental awareness can be observed through an individual's behavior and activities in a context where they perceive a lack of external constraints. According to the study conducted by [4].

There exist four distinct components that exert influence on environmental awareness:

- 1) The presence of an ignorance factor can be attributed to the heightened level of interest. The concept of consciousness can be understood as the state of being aware and possessing knowledge, such that individuals lacking awareness are devoid of any understanding of their surroundings. Therefore, it can be inferred that an individual's lack of knowledge significantly impacts their perception and understanding of the surrounding environment.
- 2) Factors Contributing to Poverty; Poverty is a state characterized by the inability of an individual to meet their basic necessities. Population expansion that is not accompanied by corresponding economic and social growth will result in increased strain on the population. Poverty engenders social problems as individuals prioritize fulfilling their basic wants above addressing environmental concerns.

- 3) **Humanitarian Factors:** Humanity refers to the inherent qualities and characteristics of human beings. Human beings possess a high level of cognitive ability, enabling them to exercise agency in discerning and determining moral distinctions between right and wrong. Individuals who possess a strong sense of humanity are inclined to prioritize actions and decisions that contribute to the preservation of human lives and avoid causing harm to others.
- 4) **Lifestyle Factors:** The level of environmental awareness in individuals can be influenced by their lifestyle choices. Individuals who adopt a green lifestyle demonstrate a heightened awareness and conscientiousness towards their environmental impact. The individual's attention is directed towards matters pertaining to environmental sustainability, and their perspective aligns with the objective of preserving the natural

3 Research Methodology

3.1 Population and Sample

The population in this study were students at 5 universities in Batam using a 370-person sample. a general description of the data from respondents totaling 370 students was obtained, which was distributed only to those majoring in business management. There are 113 Batam State Polytechnic students (Applied Business Administration Study Program, Managerial Accounting, Accounting), 92 Batam International University students (Accounting, Management Study Program), 44 University Riau Kepulauan students (Accounting, Management Study Program), Batam University students as many as 9 people (Accounting, Management, Tourism Management Study Program), and Putera Batam University students as many as 112 people (Accounting, Management).

Table 1. Distribution of student respondents

University	Total	Percentage
Batam State Polytechnic	113	30%
Batam International University	92	31%
Riau Kepulauan University	44	2%
Batam Universty	9	12%
Putera Batam University	112	25%
Total	370	100%

Source: Data Processing Results (2021)

3.2 Method

Quantitative research procedures are the employed research strategy. The questionnaire responses that were given out to the sample will be processed and analyzed to provide the test's results. Knowledge and Behavioral Attitude are the (two) independent variables used in this study; the dependent variable is Green University Awareness. The following conditions apply to the numerous direct examinations used in this examination:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e \quad (1)$$

Information:

Y : Green University Awareness

α : Constant

β_1 : Coefficient Knowledge

β_2 : Coefficient Behavioral Attitude

X1 : Variable Knowledge

X2 : Variable Behavioral Attitude

e : Error / Time

4 Result

To ensure that the data obtained is valid and reliable and can be used in the data analysis process, the research instrument is first tested. The instrument tests carried out are as follows:

4.1 Validity Test

Validity and reliability tests are first carried out on the device that will be used as a measurement tool. Reliability and validity tests use the Cronbach Alpha and Product Moment tests. The reliability test produced a Cronbach's alpha coefficient for awareness of 0.607, knowledge of 0.733, and behavioral attitudes of 0.754 which indicates validity. and the validity test states that all variables are valid (Table 1).

Table 2. Results of the validity test

Variable	Question number	Coefficient Correlation	r-Table (n=370)	Note
Knowledge (X1)	1	0.583	0.102	valid
	2	0.609	0.102	valid
	3	0.711	0.102	valid
	4	0.808	0.102	valid
	5	0.805	0.102	valid
Behavioral Attitude (X2)	1	0.665	0.102	valid
	2	0.516	0.102	valid
	3	0.674	0.102	valid
	4	0.848	0.102	valid
	5	0.84	0.102	valid
Awareness (X3)	1	0.672	0.102	valid
	2	0.571	0.102	valid
	3	0.744	0.102	valid
	4	0.726	0.102	valid

Source: SPSS Output (2021)

4.2 Reliability Test

If Cronbach's Alpha value is greater than 0.6, then the research questionnaire is reliable. It is known that the questionnaire is reliable, because Cronbach's Alpha value is greater than 0.6.

Table 3. Results of the reliability test

Variable	Cronbach's Alpha Value
Awareness (Y)	0.607
Knowledge (X1)	0.733
Behavioral Attitude (X2)	0.754

Source: SPSS Output (2021)

4.3 Normality Test

Regularity test for residues using Kolmogorov-Smirnov. The significance level used is = 0.05. The reason for making the choice is to look at the possible number P, with the accompanying conditions. If the probability value of P 0.05, then the assumption of

normality is met. If the probability $P < 0.05$, then the assumption of normality is not met. Fairness is satisfied as the Kolmogorov-Smirnov value is 0.041 and the Asymp.Sig. (2-tailed) value is 0.188 higher than the 0.05 level of significance.

Table 4. Results of the normality test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		370
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.35655808
Most Extreme Differences	Absolute	.041
	Positive	.031
	Negative	-.041
Test Statistic		.041
Asymp. Sig. (2-tailed)		.188^c

- a. Test distribution is Normal.
- b. Calculated from data.
- c. Lilliefors Significance Correction.

Source: SPSS Output (2021)

4.4 Multicollinearity Test

It is quite helpful to check the change swelling factor (VIF) value in order to determine whether multicollinearity is present or absent. Multicollinearity is present when the VIF score is greater than 10, which implies an independent factor. There were no indications of multicollinearity in this investigation because the tolerance value was larger than 0.1 and the VIF value was less than 10 (Table 5).

Table 5. Results of the multicollinearity test

		Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF
1	(Constant)	4.825	.917			
	x1	.143	.036	.180	.992	1.008
	x2	.360	.034	.479	.992	1.008

a. Dependent Variable: y

Source: SPSS Output (2021)

4.5 Heteroscedasticity Test

The heteroscedasticity test in this study uses the Glajser test, by regressing the absolute value of the residual to the independent variable, if the value of t count $<$ t Table and probability $>$ 0.05

Based on the tests that have been carried out, there is no similarity in variance from the residuals of one observation to another in the regression model used. It is known that the Knowledge (X1) variable, Behavioral Attitude (X2), has a sig value $>$ 0.05.

Table 6. Results of the heteroscedasticity test

Variabel	Sig
Knowledge (X1)	0.934
Behavioral Attitude (X2)	0.076

Source: SPSS Output (2021)

4.6 Multiple Linier Test

Table 7. Results of the multiple linier test

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics	
		B	Std. Error	Beta	Tolerance	VIF
1	(Constant)	4.825	.917			
	x1	.143	.036	.180	.992	1.008
	x2	.360	.034	.479	.992	1.008

a. Dependent Variable: y

Source: SPSS Output (2021)

This examination is expected to be able to decide the direction of the relationship between the autonomous variable and the dependent variable, regardless of whether each independent factor has a positive or negative relationship. Very well can be found in the Table below that the results are certain factors.

4.7 T-test

Table 8. Results of the T-test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.825	.917		5.260	.000
Knowledge	.143	.036	.180	3.950	.000
Behavioral Attitude	.360	.034	.479	10.521	.000

Dependent Variable: Green University Awareness

Source: SPSS Output (2021)

Based on the results of the t-test (partial) it was found that the tcount Knowledge (X1) was $3.950 > 1.966$ and the sigi value was $0.00 < 0.05$. It can be stated that the Knowledge variable (X1) has a partially significant effect on the Green University Awareness variable. Based on the results of the t-test (partial) the t- value of Behavioral Attitude (X2) is $10.521 > 1.966$ and the sig value is $0.00 < 0.05$. It can be stated that the Behavioral Attitude (X2) variable has a partial significant effect on the Green University Awareness variable

4.8 F-test

Table 9. Results of the F-test

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	221.856	2	110.928	59.952	.000 ^a
	Residual	679.052	367	1.850		
	Total	900.908	369			

a. Predictors: (Constant), x2, x1

b. Dependent Variable: y

Source: SPSS Output (2021)

This simultaneous hypothesis test's (Test F) goal is to demonstrate whether or not all independent variables together have a substantial impact on the dependent variable's significance. The dependent variable can be predicted if the significance value of F is 0.05. The F test yielded the following findings; the significance value of F is 0,00.

4.9 Model Summary

Explains variations in the dependent variable, where the coefficients range from 0 to 1. The dependent variable's capacity to explain variations in other variables is severely constrained the smaller the coefficient value. When the dependent variable has a value around 1, it almost entirely fills in the information needed to forecast changes in the dependent variable. The coefficient of determination yielded the following outcome.

Table 10. Results of the model summary

Model Summary^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.496 ^a	.246	.242	1.36025

a. Predictors: (Constant), Behavioral Attitude, Knowledge

b. Dependent Variable: Green University Awareness

Source: SPSS Output (2021)

5 Description Variabel

5.1 Knowledge (X¹)

In the knowledge variable in this study there are 5 questions that can present indicators in the Knowledge variable. The response results from the Content Dimension can be seen in the Table 10. Based on the table which shows that the average value interval of 3.55 – 3.65 is included in the criteria of being quite good, thus indicating that knowledge about Green University Awareness is quite good. The question with the highest average value of 3.62 provides information that in general all respondents feel "The impact of soil pollution in daily life makes the land infertile, reduces agricultural production and cannot be used to cultivate the land" so it can be concluded that students understand the impact of soil pollution in general. Meanwhile, the lowest average value of 3.45 provides information that in general all respondents feel "Environmental pollution is the entry of living things, substances, energy, and/or other components into the environment by human activities" so it can be concluded that there are still many students who do not know the exact meaning of environmental pollution.

Table 11. Results of the content dimension

Questions	Skor								Mean	SD
	1		2		3		4			
	F	%	f	%	f	%	f	%		
Environmental pollution is the introduction of living things, substances, energy, and/or other components into the environment by human activities	0	0	23	6	155	42	192	52	3.45	0.6111
Water, air and land pollution are types of environmental pollution	0	0	17	5	139	38	214	58	3.53	0.585
Carbon monoxide, nitrogen oxides, sulfur oxides, hydrocarbons and particulate matter are substances that pollute the air	0	0	17	5	138	37	215	58	3.53	0.584
The impact of land pollution on daily life makes the land infertile, reduces agricultural production and cannot be used for farming	0	0	6	1	129	35	235	63	3.62	0.519
Factory waste can cause water pollution	0	0	6	1	131	35	233	63	3.61	0.520
Mean Total									3.55	

Based on the Table 11 which shows that the average value interval of 3.55 – 3.65 is included in the criteria of being quite good, thus indicating that knowledge about Green University Awareness is quite good. The question with the highest average value of 3.62 provides information that in general all respondents feel "The impact of soil pollution in daily life makes the land infertile, reduces agricultural production and cannot be used to cultivate the land" so it can be concluded that students understand the impact of soil pollution in general. Meanwhile, the lowest average value of 3.45 provides information that in general all respondents feel "Environmental pollution is the entry of living things, substances, energy, and/or other components into the environment by human activities" so it can be concluded that there are still many students who do not know the exact meaning of environmental pollution.

5.2 Behavioral Attitude (X^2)

In the Behavioral Attitude variable in this study there are 5 questions that can present indicators in the Behavioral Attitude variable. The response results from the Content Dimension can be seen in the Table 12.

Table 12. Results of the behavioral attitude variable

Questions	Skor								Mean	SD
	1		2		3		4			
	f	%	f	%	F	%	f	%		
Walking or cycling instead of using a car is a great way to conserve natural resources while saving money too	0	0	17	4	147	39	206	56	3.51	0.586
I don't take advantage of the natural light from the window during the day	0	0	17	4	158	43	195	53	3.48	0.585
Read conservation or environmental magazines, blogs, or newsletters	0	0	13	3	133	36	224	60	3.57	0.562
Bring Your Own Bag to the Supermarket.	0	0	20	5	166	45	184	50	3.44	0.596
Save Water When Brushing Teeth, Washing Hands, Or Washing Dishes	0	0	20	5	165	44	185	50	3.45	0.597
Mean Total									3.49	

Based on what shows that the average value interval from 3.49 – 3.65 is included in the criteria of being quite good, it thus shows that the Behavioral Attitude towards Green University Awareness is quite good. The question with the highest average value, namely 3.57, provides information that generally all respondents feel "I read conservation or environmental magazines, blogs or bulletins." It can be concluded that students still have good habits, namely following the latest environmental phenomena. Meanwhile, the lowest average value is 3.44 which provides information that generally all respondents feel "I bring my own bag to the supermarket." It can be concluded that there are still many students who have not adopted a healthy lifestyle in reducing plastic waste in their daily lives.

5.3 Green Awareness University (Y)

In the Green Awareness University variable in this study there are 4 questions that can present indicators in the Green Awareness University variable. The response results from the Content Dimension can be seen in the Table 13.

Table 13. Results of the Green Awareness University

Questions	Skor								Mean	SD
	1		2		3		4			
	F	%	f	%	F	%	F	%		
Avoid plastic products because they are waste	0	0	14	3.8	183	49.5	173	46.8	3.42	0.477
Plastic has become a lifestyle that cannot be avoided	0	0	18	4.9	167	45	185	50	3.45	0.527
I found a lack of environmental awareness	0	0	21	5.7	183	49.5	166	44.9	3.39	0.599
I use environmentally friendly products because my friends also use them	0	0	14	3.8	205	55.4	151	40.8	3.37	0.556
Mean Total									3,40	

Based on the table which shows that the average value interval of 3.40 – 3.65 is included in the fairly good criteria, this shows that Green University is quite good at campus environmental awareness. The question with the highest average value, namely 3.45, provides information that in general all respondents feel "Plastic has become a lifestyle that cannot be avoided". It can be concluded that students agree that plastic has become a lifestyle and plastic waste needs to be handled. Meanwhile, the lowest average value of 3.39 provides information that in general all respondents felt "I found a lack of environmental awareness". It can be concluded that there are still many students who have not implemented the preservation and maintenance of campus environmental health.

Based on the investigation of the directed information, the following can be obtained:

Based on the results of the t-test (partial) it was found that the count Knowledge (X^1) was $3.950 > 1.966$ and the sig. value was $0.00 < 0.05$. It can be stated that the Knowledge variable (X^1) has a partially significant effect on the Green University Awareness variable.

Based on the results of the t-test (partial) the sig. value for behavioral attitude (X^2) is $0.00 < 0.05$, and the t-value is $10.521 > 1.966$. The Green University Awareness variable can be said to be partially significantly impacted by the Behavioral Attitude (X^2) variable.

6 Conclusion

Based on the investigation of the directed information, the following can be obtained:

- 1) Based on the results of the t-test (partial) it was found that the count Knowledge (X^1) was $3.950 > 1.966$ and the sig value was $0.00 < 0.05$. It can be stated that the Knowledge variable (X^1) has a partially significant effect on the Green University Awareness variable
- 2) The t-value of behavioral attitude (X^2) is $10.521 > 1.966$ and the sig value is $0.00 < 0.05$, according to the partial t-test results. The Green University Awareness variable can be said to be partially significantly impacted by the Behavioral Attitude (X^2) variable.
- 3) Based on the results of the study, the following conclusions can be drawn: Knowledge has a partial effect on Green University Awareness., Behavioral Attitude partially affects Green University Awareness Knowledge, Behavioral Attitude have a simultaneous effect on Green University Awareness. Students think that preventing environmental harm is crucial and need to be incorporated into their everyday lives. Students show their commitment to environmental conservation by participating in environmental activities, turning off computers after use to save energy, and minimizing the use of single-use plastic products. They can also replace plastic with alternatives like paper or plastic bags.

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