

Determinants of Sustainable Consumption Behavior: An Examination of Consumption Values, PCE Environmental Concern and Environmental Knowledge

Nosica Rizkalla

Abstract—One of the proposed concept in handling environmental problems by involving consumers' participation is sustainable consumption. It is suggested that consumers as the end users can contribute a significant impact in sustainable development through their choices and behaviors as the purchasers and main end-users. But, they need help to form their consumption habit and behavior. Therefore, this study tries to discover what factors can encourage sustainable consumption behavior of Indonesian young adults. A quantitative research method is administered to investigate this matter. The methods employed to test the proposition in this studies are t-test and regression analysis, processed by SPSS 16. This study concluded that although emotional aspect also plays the part in explaining Indonesian Young Adults' sustainable consumption behavior, rationality and cognition contributes the most in comprehending aforementioned behavior, supported by the result of the study where functional value, epistemic value, environmental knowledge are proven to be statistically significant. This study gives more insight and perspective in comprehending sustainable consumption behavior for Indonesian young adults. This study also tries to explore more about the effect of environmental knowledge by investigating both categories, which are subjective and objective knowledge separate. However further research with more sample size, more diverse consumers group, additional method and more variables is suggested in order to enrich the understanding in sustainable consumption behavior.

Index Terms—Sustainable consumption behavior, consumption values, environmental knowledge, environmental concern.

I. INTRODUCTION

Nowadays, there is an increasing concern towards environmental issues due to the fact that environment is suffering from a lot of challenges, from the problem of emission to the problem of overconsumption [1]. Of all the causes of environmental damage, consumption has been put under the spotlight. Many of today's environmental problem is a direct consequences of human consumption [2]. Especially for developing countries like Indonesia, most of environmental problems is rooted from overconsumption resulted from its rapid economic growth [3]. Overcoming environmental problems in Indonesia is not only government and company task, but also the responsibility of the citizens and households who basically are the main end-users [4]. Since the root of environmental problems is highly associated with human consumption, it is advisable to overcome these environmental problems

starting from the consumer level [5]. One of the proposed concepts in overcoming environmental issues by involving consumers' participation is sustainable consumption [6]. To achieve the sustainability, the role of consumers is very essential. Consumers can contribute a significant impact in sustainable development through their choices and behaviors as the purchasers and main end-users [7]. But, they need help to perform such a behavior. Therefore, this study tries to determine what factors can help in influencing sustainable consumption behaviors of Indonesian Consumers, especially Indonesian young adults. This study incorporated several variables to be further analyzed, namely consumption values, environmental concern, perceived consumer effectiveness and environmental knowledge. The regression analysis, supported by SPSS, was applied to assess empirical strength of the proposed hypotheses. The findings of the study will give insight about sustainable consumption behavior in Indonesia, especially in the context of young adults segment. This insight might give valuable information for Indonesian government and the company or business to comprehend more about the citizen and their behavior towards environmental issue.

II. LITERATURE REVIEW

A. Sustainable Consumption Behavior

Sustainable consumption behavior refers to "the pattern of reduced consumption of natural resources, changing lifestyle and consumption of environment-friendly products in order to meet the present needs and aspirations of the future generations [8] (p. 464). Sustainable consumption behavior is more than purchasing environmentally-friendly products [9]. It covers wide range of issues like meeting needs of the consumers sustainably, enhancing resource efficiency, improving the quality of life, encouraging the use of renewable sources and minimizing the waste [10]. Sustainable consumption behaviors are then categorized into three categories: purchasing, using habitually and recycling behaviors [11].

B. Consumption Values

Consumption value is the degree of fulfillment of consumers' need; it is operationalized as consumers' overall assessment of product's net utility after weighing the benefit of the product and the cost to acquire the product [12]. Consumption values can explain the underlying motivation and reason of purchase decision [13]. The motives or values underlying consumers' decision comprise of 5 categories, namely functional value, social value, emotional value, epistemic value and conditional value [14].

Manuscript received September 4, 2017; revised December 21, 2017.

Nosica Rizkalla is with Universitas Multimedia Nusantara, Tangerang, Indonesia (e-mail: nosicarizkalla@yahoo.com).

C. Functional Value

Functional value is “the perceived quality acquired from an alternative’s capacity for functional, utilitarian or physical performance” ([15] (p.160). As consumers nowadays are becoming more value oriented and willing to pay more for product that is superior to other [16], they will be more inclined to pay higher for green product or sustainable product that are not harmful for the environment [17]. They also will be more interested to buy green product from the company which has interest on sustainable development [18]. Based on these illustrations, the following hypothesis can be drawn for this study:

Hypothesis 1: Sustainable consumption behavior is positively influenced by functional value

D. Social Value

Social value is defined as “the perceived utility acquired from an alternative’s association with one or more specific social groups” [15] (p.161). Social or symbolic value is important for consumers to express themselves in the society as consumers conduct a purchase behavior in accordance with their roles in the society [19]. Thus, product with higher signaling potential, for example environmentally-friendly product, will likely to be consumed by those consumers who desire to obtain certain social value [20]. In this case, consumers may intentionally consume environmentally friendly products in order to portray pro-environmental attitudes. Therefore, this study proposes following hypothesis:

Hypothesis 2: Sustainable consumption behavior is positively influenced by social value

E. Emotional Value

Emotional value is “the perceived utility acquired from an alternative’s capacity to arouse feelings or affective states” [15] (p.161). Consumers are aware that environmentally-friendly products affect their consumption value, specifically emotional value, since they enable the consumers to make choices regarding their consumption, for example preference for product that enable them to live a healthier lifestyle [21]. In this case, the emotion involved is what motivates consumers to behave sustainably and avoid non environmentally-product as they believe that by doing so; they have a role in environmental perseverance and sustainable development [21]. Based on these notions, a following hypothesis is proposed:

Hypothesis 3: Sustainable consumption behavior is positively influenced by emotional value

F. Epistemic Value

Epistemic value is “the perceived utility acquired from an alternative’s capacity to arouse curiosity, provide novelty, and/or satisfy a desire for knowledge” [15] (p. 162). A product or service is considered to have an epistemic value when it creates new experience to the consumers [15]. In the relation with sustainable consumption behavior, such as the consumption of environmentally-friendly product and green product, it has been found that consumers’ behavior towards purchasing environmentally-friendly product is positively influenced by their eagerness to gain knowledge about the product [6]. Their reason of purchase is triggered by curiosity about the product and the eagerness to try the

product [22]. Hence, the following hypothesis is developed:
Hypothesis 4: Sustainable consumption behavior is positively influenced by epistemic value

G. Conditional Value

Conditional value is “the perceived utility acquired by an alternative as the result of the specific situation or set of circumstances facing the choice maker.” [15] (p.162). In the case of sustainable consumption behavior, it has been found that conditional value influenced purchasing behavior in which consumers took account on warnings and notices regarding environmental issues when making their purchase decision [22]. Moreover, Ahmad and Juhdi also stated that consumers’ belief about product safety and environmental perseverance have influenced their pro-environmental behavior [21]. Based on these arguments, this study proposes a following hypothesis:

Hypothesis 5: Sustainable consumption behavior is positively influenced by conditional value

H. Environmental Concern

Environmental concern refers to a general attitude, which centers on the cognitive and affective evaluation of the object environmental protection [23]. It has found that that environment concern is predictors of sustainable behavior, and can be broken down into four attitudes, namely persevering the environment, seriousness of the littering problem, unemployment and higher prices as consequences of environmental legislation [24]. There has been a belief that individual who has more concern to the environment is also having a bigger tendency to exhibit environmentally-friendly behavior [25]. Likewise, it is assumed that people with high levels of environmental concern are more likely to portray environmentally conscious consumer behavior [26]. Based on these illustrations, a following hypothesis is developed:

Hypothesis 6: Sustainable consumption behavior is positively influenced by environmental concern

I. Perceived Consumer Effectiveness

Perceived consumer effectiveness is a “domain-specific belief that the efforts of an individual can make a difference in the solution to a problem” [27]. In the relation with sustainable consumption behavior, it has been proven that consumers will be more likely engaged in particular activity if they feel that their decisions will make a difference [28]. One essential characteristic of perceived consumer effectiveness is that it captures stable beliefs about the effectiveness of consumer choices in general. Influencing this variable can therefore lead to behavioral changes across different domains [29]. Based on these arguments, a following hypothesis is proposed:

Hypothesis 7: Sustainable consumption behavior is positively influenced by perceived consumer effectiveness

J. Environmental Knowledge

Environmental knowledge is a knowledge and awareness about environmental issues and the solutions for these issues [30]. There are two major approaches to evaluate individual’s environmental knowledge; they are objective knowledge and subjective knowledge [31]. Objective knowledge is the degree of how much an individual knows

about a certain issue [31]. On the other hand, subjective or perceived knowledge is the degree of how much an individual thinks that he/she knows about an issue [31]. Environmental knowledge is considered as a distinguishing factor between individual who is more actively involved in environmental action compared to individuals who are less actively involved [32]. A person who possesses higher environmental knowledge would produce a much better sustainable consumption behavior. Hence, environmental knowledge is deemed as one of predictors of sustainable consumption behavior. This study wants to investigate whether the difference in environmental knowledge will also cause a difference in sustainable consumption behavior. This study will elaborate both subjective knowledge and objective knowledge to understand the impact of environmental knowledge towards sustainable consumption behavior. Therefore, these following hypotheses are proposed

Hypothesis 8a: Sustainable consumption behavior is positively influenced by subjective knowledge

Hypothesis 8b: An individual with higher objective environment knowledge will have a higher tendency to conduct sustainable consumption behavior

K. Research Framework

Based on the research hypotheses constructed earlier, it can be summarized that there will be 9 variables proposed as the predictors of sustainable consumption behavior in the context of Indonesian young adults, namely functional value, social value, emotional value, epistemic value, conditional value, environmental concern, perceived consumer effectiveness, subjective knowledge and objective knowledge. Fig. 1 below summarizes the research model proposed for this study.

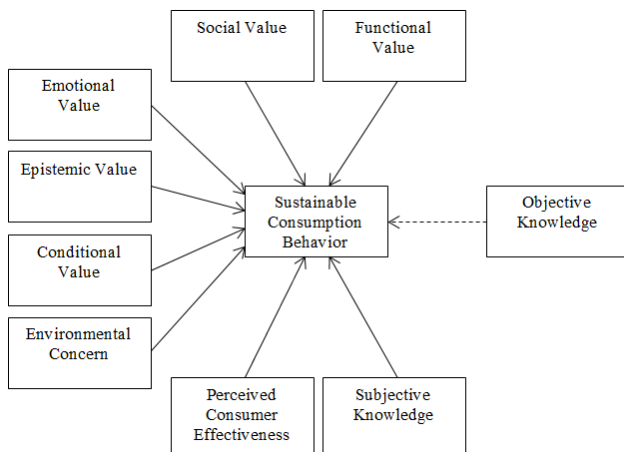


Fig. 1. Research framework.

III. METHOD

A. Research Design and Sample

This study uses conclusive research design, specifically descriptive research design to investigate the relationship between the independent variables and dependent variable proposed in this study. As for the subject of the study, this study uses Indonesian young adults aged 18-25 or millennial because they tend to be more receptive to ethical and environmental issues [33]. Moreover, in terms of buying behavior, young adults have a great influence in family

purchase decision (Sullivan and Heitmeyer, 2008). Young adults are also recognized as the most consumption oriented segment [34]. This study used 206 young adults as samples.

B. Measurement

Standardized questionnaire consists of 50 questions were used as data collection tools for this study. The questionnaires used in the study are distributed using Bahasa Indonesia. As the original measure is in English, this study uses the back-translation method when translating the original questionnaire to target language, which is Bahasa Indonesia.

Measurement used for this study was adopted from several resources. To measure consumption value, this study adopted scale developed by Sweeney and Soutar [35] for functional and social value, Arvola *et al* [36] for emotional value, then Lin and Huang [22] for epistemic and conditional value. To measure environmental value, this study adopted scale used by Mostafa [37] which incorporated 6 out of 12 scales of New Environmental Paradigm to measure environmental concern. As for perceived consumer effectiveness, this study adopted scale developed by Roberts [38]. For sustainable consumption behavior, this study modified the scale originally proposed by Wang *et al* [10]. Finally, environmental knowledge was measured by using scale from Chan [39] for objective knowledge, and Mostafa *et al* [37] for subjective knowledge. This study applied a 7-point Likert scale to measure the indicators, ranging from strongly disagree to strongly agree

C. Data Analysis

The responses collected from the respondents were then analyzed for their validity and reliability using SPSS. The validity were tested using factor analysis, meanwhile the reliability were assessed using Cronbach's alpha. This study then conducted descriptive analysis where respondents are categorized according to their age, monthly expenditure, occupation, employment and exposure to environmental education. This study also conducted regression analysis to examine the causal relationship between independent and dependent variables. T-Test analysis was then employed to check the effect of environmental knowledge on sustainable consumption behavior

IV. RESULT AND DISCUSSION

A. Respondents' Profile

Table I shows respondents profile where the majority of respondents has undergraduate degree, with 79.1% and have monthly expenditure around Rp. 1000.001 – Rp. 2000.000 and Rp. 2000.001 – Rp. 3000.000 with 29.1% and 24.3% respectively.

B. Reliability and Validity

In this study, the validity for each variable was assessed using factor analysis. There are three criteria employed in assessing validity of the variables, which are Kaiser Maiyer Olkin's (KMO), eigenvalue score and factor loading score. The variables would be considered valid if KMO score is ≥ 0.5 [40], eigenvalue is $> 50\%$ [41] and factor loadings > 0.5 [42]. As for reliability, this study used cronbach's alpha as

the criteria. The variables would be considered reliable if the alphas score ≥ 0.6 [4.3]. As can be seen from Table 2, at first perceived consumer effectiveness and environmental concern are not valid and reliable. But after eliminating indicators with the lowest factor loadings score, all variables becomes valid and reliable.

TABLE I: DESCRIPTIVE STATISTICS

		Percentage
Age	18 - 19	2.4%
	20 - 21	6.8%
	22 - 23	36.0%
	24 - 25	54.8%
Education Level	High School	10.10%
	Undergraduate	79.10%
	Postgraduate	9.70%
	Other	0.97%
Occupation	Student	36.4%
	Civil Officer	9.2%
	Private Officer	35.0%
	Entrepreneur	8.3%
	Other	11.2%
Monthly Expenditure	Below Rp 1000.000	8.2%
	Rp 1000.000 - Rp. 2000.000	29.1%
	Rp. 2000.001 - Rp. 3000.000	24.3%
	Rp. 3000.001 - Rp. 4000.000	18.4%
	Rp. 4000.001 - Rp. 5000.000	8.2%
	Above Rp. 5000.000	10.6%
Place of Living	Jakarta	67.7%
	Outside Jakarta	33.3%
Exposure to Environmental Education	Yes	55.8%
	No	44.2%

TABLE II: VALIDITY AND RELIABILITY

Variables	Items	Loadings	KMO	Eigenvalue (%)	Crosbach's Alpha
Functional Value	FV1	0.773	0.824	47.142	0.830
	FV2	0.681			
	FV3	0.657			
	FV4	0.713			
	FV5	0.654			
	FV6	0.713			
	FV7	0.700			
	FV8	0.666			
Social Value	SV1	0.819	0.798	71.134	0.863
	SV2	0.907			
	SV3	0.857			
	SV4	0.787			
Emotional Value	EV1	0.863	0.725	77.347	0.851
	EV2	0.899			
	EV3	0.876			
Epistemic Value	EPV1	0.804	0.753	69.220	0.851
	EPV2	0.886			
	EPV3	0.825			
	EPV4	0.811			
Conditional Value	CV1	0.526	0.600	50.620	0.671
	CV2	0.801			
	CV3	0.824			
	CV4	0.655			
Environmental Concern	CO1	0.815	0.667	64.646	0.667
	CO2	0.837			
	CO3	0.756			
	CO4	0.824			
Perceived Consumer Effectiveness	PCE1	0.824	0.557	56.581	0.615
	PCE2	0.856			
	PCE3	0.535			
	PCE4	0.535			
Subjective Knowledge	SK1	0.550	0.798	57.346	0.813
	SK2	0.804			
	SK3	0.813			
	SK4	0.818			
Sustainable Consumption Behavior	SCB1	0.730	0.760	48.354	0.725
	SCB2	0.546			
	SCB3	0.777			
	SCB4	0.627			
	SCB5	0.765			

C. T-test Analysis

TABLE III: SUMMARY OF MULTIPLE CHOICE QUESTIONS

Number	Questions	Percentage of Correct Answer
1	Soil pollution is generally due to, (C; Poisonous Metals)	50.5%
2	Most smog in our big cities comes from (A; Automobiles)	80.1%
3	Ecology is best described as the study of (B; The relationship between organisms and the environment)	66%
4	Birds and fish are being poisoned by (B; Mercury)	77.2%
5	All but one of the following decomposes in ocean water (D; Plastic Bags)	60.2%
6	Practically all of the lead in the atmosphere is caused by (A; Cars)	21.8%
7	How long does DDT take to deteriorate into harmless chemicals? (C; About 200 years)	28.6%

T-test analysis was undertaken to discover whether the difference in objective knowledge causes the difference in the sustainable consumption behavior of the respondents. In this study, objective knowledge was measured by 7 questions related to several environmental issues, as can be seen on Table III.

The respondents were then categorized into high objective knowledge or low objective knowledge category based on the average of correct answer. The maximum average could be obtained was 1 (7 divided by 7) and the minimum was 0. In this study, the average correct answer of

206 respondents was 0.549. Thus, for the respondents whose averages were above 0.549, they were classified into high objective knowledge category. Meanwhile, for those who scored less than 0.549, they were classified into low objective knowledge category. Based on this rule, 135 respondents were categorized into group high, while the remaining was in the low group.

As can be seen on Table IV, the SCB mean of high group is slightly higher than those from the low group, but the result is not statistically significant (sig = 0.509).

This indicates that there is no significant difference of sustainable consumption behavior between respondents in high objective knowledge and respondents in low objective knowledge.

TABLE IV: SUMMARY OF T-TEST FOR OBJECTIVE KNOWLEDGE

	Objective Knowledge	N	Test of Homogeneity of Variance		T-Test	
			Levene Statistics	Sig.	Mean	Sig
Sustainable Consumption Behavior (SCB)	High	135	2.581	0.110	3.29	0.509
	Low	71			3.24	

D. Regression Analysis

Multiple regression analysis was conducted to test hypotheses used in this study. The summary of regression analysis is reflected on Table V. The results indicate that the model is significant with F-Value of 17.479, significance level of 0.00 and Adjusted R^2 of 0.391 which can be interpreted that 39.1% variance of sustainable consumption behavior can be accounted for by its significant predictors, which are functional value, epistemic value, environmental concern and subjective knowledge.

According to t-values, functional ($\beta = 0.165, p = 0.007$), epistemic ($\beta = 0.109, p = 0.030$) values, environmental concern ($\beta = 0.093, p = 0.046$) and subjective knowledge ($\beta = 0.360, p < 0.001$) have a significant on sustainable consumption behavior of Indonesian young adults. On the contrary, social ($\beta = -0.015, p = 0.738$), emotional ($\beta = 0.057, p = 0.292$), conditional ($\beta = 0.035, p = 0.591$) values, perceived consumer effectiveness ($\beta = 0.050, p = 0.305$) have no significant effect on sustainable consumption behavior.

V. FINDINGS AND DISCUSSION

A. Findings

The result of this study portrays a similar pattern with the opinion from Peattie [44] that sustainable consumption behavior can be more explained by rationality and cognition, such as product attributes and benefits (represented by functional value), environmental information processing (represented by epistemic value) and environmental knowledge. However, this study finds that emotional aspect (represented by environmental concern) also plays the part in influencing sustainable consumption behavior of Indonesian young adults.

In regards of functional value, the result indicates that if

consumers attach higher functional value to environmentally-friendly product, the possibility that they conduct sustainable consumption behavior, in this case buying environmentally product, will also be higher [22]. This can happen as consumers nowadays are becoming more value oriented and willing to pay more for product that is superior to other [16]. And here, environmentally-friendly products are often considered superior compared to conventional product since they are healthier and provide more benefit [45].

As for epistemic value, it is very applicable for environmentally-friendly product as its most significant attributes are the innovativeness and creativeness in providing the solution to preserve the environment and encouraging sustainable consumption behavior [46]. In the context of sustainable consumption behavior, epistemic value is an important predictor of sustainable consumption because it is not only catalyzing the comprehension of environmental issues through product disclosure but also encouraging awareness towards environmental issues through self-realization of environmental responsibility [8].

For environmental concern, the result on environmental concern in this study is similar with the research from Czap and Czap [25] and Roberts and Bacon [26] which concluded that individual with high levels of environmental concern would be more likely to conduct sustainable consumption behavior.

Next, it is widely accepted that knowledge as a whole has an important role in predicting pro-environmental behavior [47]. It is considered as the distinguishing factor between individual who is actively engaged in environmental activity and to individual who is less actively engaged [32].

Specifically for subjective knowledge, it is considered as a result of consumers' direct experience in addressing environmental issues [48]. This direct experience is deemed to have a stronger influence on sustainable behavior compared to indirect experience [49]. As illustrated by Ahmad and Nordin [50], "physically being in Guiyu, China (said to be the world's e-waste capital) would teach students more valuable lessons about hardware recycling and environmental pollution than listening to lectures about the dangers of toxic e-waste" (p.65).

This study finds that environmental knowledge plays a major part in predicting sustainable consumption behavior of Indonesian young adults, as its coefficient beta is the largest (0.360) amongst other significant predictors. This is consistent with the study from Kolmuss and Agyeman [49] which concluded that environmental knowledge is one of internal factors that can influence sustainable consumption behavior. In the context of Indonesian young adults, the significant type of environmental knowledge to influence sustainable consumption behavior is subjective knowledge. Similar with the study from Gambaro et al [51] this study found that subjective knowledge is a stronger predictor of behavior, compared to objective knowledge. Although the objective environmental knowledge of the respondents is quite high and the percentage of knowledgeable respondents is also high (65% these high scores are not reflected on their sustainable consumption behavior. This finding can be explained by the study of Martin and Simintiras [52], which discovered that the number of correct answers about

environmental issues cannot predict the behavior of the consumers. In this sense, to encourage sustainable consumption behavior, experiential learning is more needed than knowledge in the form of information or facts about environmental issues.

To get a deeper understanding of environmental knowledge, this study tries to explore environmental education exposure of Indonesian young adults. As can be seen on Table 1, it has been found that the proportion of respondents who received environmental education is bigger, accounting for 55.8% of the total respondents. Most of them received environmental knowledge during university year (67%). This study then tried to test whether there is a difference in sustainable consumption behavior score between the environmentally-educated respondents and the non-environmentally-educated consumers by conducting a t-test analysis. As shown on Table 6, there is a significant difference between two groups (sig. 0.04) where the score of the environmentally-educated respondents is higher compare to non-environmentally-educated ones (3.35 vs 3.18). It implies that the education about environment is important in encouraging sustainable consumption behavior of Indonesian young adults.

TABLE VI: SUMMARY OF T-TEST FOR ENVIRONMENTAL EDUCATION

	Environmental Education	N	Test of Homogeneity of Variance		T-Test	
			Levene Statistics	Sig.	Mean	Sig
Sustainable Consumption Behavior (SCB)	Educated	115	0.098	0.755	3.35	0.04
	Non-educated	91				

B. Discussion

In regards of consumption value, there are two basic motives underlying consumers' choice behavior: functional needs, and non-functional wants, such as social, epistemic and emotional values [53]. When it comes to environmentally-friendly product, functional value becomes an important aspect and needs to be carefully considered. In this study, the consumers put a high importance on the functional value when they decide to purchase environmentally-friendly products. The companies must then be able to highlight the benefit of the environmentally-friendly product, both in quality and price aspect, as failing to do so can result on the rejection of the product from the consumers. This is due to the fact that the low acceptance on the environmentally-friendly product is mostly caused by the scepticism on the product quality and the high price [54]. Here, what the companies can do is assuring the consumers about the superiority of the product, like its friendly impact towards the environment, its reliable performance and its high quality. By doing this, the perception that environmentally-friendly product is expensive can be offset by the superior quality it can offer to the consumers.

In the relation of epistemic values, the companies should take into account the curiosity, innovativeness and the need of discovering something in designing and promoting the environmentally-friendly product. Here, the information is not only limited on the knowledge about the product, but also on the style and variation of the product [8]. In this sense, the companies should promote not only the

characteristics of the environmentally-friendly product but also the attraction of “green” attributes and the design principles of the product [22]. The companies should also provide sufficient and honest information about the environmental consequences, compliances and after usage disposal [8]. This is an important thing to do, because using false or ambiguous claim when promoting environmentally-friendly can make consumers become skeptical towards the product [44].

TABLE V: SUMMARY OF REGRESSION ANALYSIS

	Beta	t-values	Significance	Adjusted R2	F Ratio	Significance
Functional Value	0.165	2.721	0.007	0.391	17.749	0.000
Social Value	-0.015	-0.335	0.738			
Emotional Value	0.057	1.056	0.292			
Epistemic Value	0.109	2.181	0.030			
Conditional Value	0.035	0.539	0.591			
Environmental Concern	0.093	2.006	0.046			
Perceived Consumer Effectiveness	0.050	-1.028	0.305			
Subjective Knowledge	0.360	6.645	0.000			

The companies can also utilize environmental concern to encourage the consumption of sustainable or environmentally-friendly products because they will especially appeal to consumers with high environmental concern [55]. Thus, highlighting the seriousness of environmental issues and how the environmentally-friendly product can help to resolve these issues may encourage the consumers to switch to environmentally-friendly product.

This study also tries to provide recommendations for the Government as the policy maker in combating environmental problem in Indonesia. This study shows that the environmental knowledge is really important in influencing sustainable consumption behavior. However, the form of education in transferring knowledge about environmental issue also needs to be carefully considered as it turns out subjective knowledge is more important compared to objective knowledge. In this sense, although in-class teaching is also needed to educate the young adults about the environmental facts and information, it is not as effective as experiential teaching in emphasizing the seriousness of environmental issues in Indonesia. Therefore, the education needs to be more focus in providing a real experience to the student (subjective knowledge), rather than only focusing on giving out information and facts about the environment (objective knowledge). For example, when teaching about the process and the importance of recycling, it is better to take the students to “Bantar Gebang” (the biggest waste dump in Jakarta) to show them the importance of recycling and the process of the recycling itself. This type of experiential learning will bring more success in transferring the knowledge and altering attitudes and behaviors [50]. This is also stressed by Sibbel [56] who stated that “the curriculum should include experiences which lead to a greater awareness of social and moral responsibilities”. If the students get a portrayal and experience of how serious the environmental problems are, this will encourage them to help saving the environment by applying the sustainable consumption behavior that they have learned before.

The government should also take account on the importance of environmental concern in inducing sustainable consumption behavior. This study finds that the environmental concern of Indonesian young adults is high, but it has not been fully utilized in encouraging sustainable

consumption behavior. Therefore, the government has to make an effort to fully transform this concern into the sustainable consumption behavior. One of the ways is to be more supportive to environmental organization like Association of Environmental Pollution Control (APPLI Indonesia), The Indonesian Forum for Environment (WALHI) or Greenpeace. Working together with these organizations would make it easier for the government in spreading the campaign about the seriousness of environmental issues. The partnership will also help in promoting the idea of how sustainable consumption behavior, like saving the water, using renewable energy, recycling the product and consuming environmentally-friendly products can be the solution in overcoming environmental issues.

The findings from this study will give additional insights and perspective for comprehending sustainable consumption behavior for Indonesian young adults. For future studies, it is suggested to employ mixed method research, by utilizing both quantitative and qualitative studies to get a better comprehension of sustainable consumption behaviors in the context of Indonesian young adults. Due to the fact that mixed-method approach is not only providing greater internal validity towards the relationship between several variables but also providing further information of why this relationship happens [43]

REFERENCES

- [1] K. Peattie and S. Peattie, “Social marketing: A pathway to consumption reduction?” *Journal of Business Research*, vol. 62, pp. 260-268, Feb 2009.
- [2] C. D. Saunders “The emerging field of conservation psychology,” *Human Ecology Forum*, vol. 10, no. 2, pp.137-149, 2003
- [3] B., Bowonder, “Management of environment in developing countries”, *Environmentalist*, vol. 7, no. 2, pp. 111-122, June 1987
- [4] P. J. M. Oosterveer and G. Spaargaren, “Organizing consumer involvement in the greening of global food flows: the role of environmental NGOs in the case of marine fish,” *Environmental Politics*, vol. 20, no. 1, pp. 97-114, Jan 2011.
- [5] P. Tantawi, N. O’Shaughnessy, K. Gad, and M. A. S. Ragheb, “Green consciousness of consumers in a developing country: A study of egyptian consumers,” *Contemporary Management Research*,” vol. 5, no. 1, pp. 29-50, March 2009.
- [6] C. Tanner and S. W. Kast, “Promoting sustainable consumption: determinants of green purchases by Swiss consumers,” *Psychology and Marketing*, vol. 20, vol. 10, pp. 883-902, September 2003
- [7] D. Southerton, H. Chappells, and B. V. Vliet, *Sustainable Consumption: Implications of Changing Infrastructures of Provision*, Manchester: Edward Elgar, 2004.
- [8] A. Biswas and M. Roy, “Green products: An exploratory study on the consumer behavior in emerging economies of the East,” *Journal of Cleaner Production*, vol. 87, pp.463-468, Jan 2005
- [9] D. Fedrigo and J. Hontelez, “Sustainable consumption and production: An agenda beyond sustainable consumer procurement,” *Journal of Industrial Ecology*, vol. 14, no. 1, pp. 10-12, Jan 2010.
- [10] P. Wang, Q. Liu, and Y. Qi, “Factor influencing sustainable consumption behaviors: A survey of the rural residents in China,” *Journal of Cleaner Production*, vol. 63, pp. 152-165, Jan 2014
- [11] B. Zhang, J. Bi, Z. Yuan, and J. Ge, “Who will be more active in sustainable consumption? Evidence from China,” *International Journal of Environment and Sustainable Development*, vol. 6, no. 4, pp. 389-404, Dec 2007
- [12] V. A. Zeithaml, “Consumers perception of price, quality, and value: A means-end model and synthesis of evidence,” *Journal of Marketing*, vol. 52, no. 3, pp. 2-22, July 1988
- [13] M. M. Long and L. G. Schiffman, “Consumption values and relationships: Segmenting the market for frequency program,” *Journal of Consumer Marketing*, vol. 17, no. 3, pp. 214-232, 2000.
- [14] M. Koller, A. Floh, and A. Zauner, “Further insights into perceived value and consumer loyalty: A green perspective,” *Psychology Marketing*. vol. 28, pp. 1154–1176, Nov 2011

- [15] J. N. Sheth, B. I. Newman, and B. L. Gross, "Why we buy what we buy: A theory of consumption values," *Journal of Business Research*, vol. 22, pp.159-170, 1991
- [16] Y. Y. Tsay, "The impact of economic crisis on green consumption in taiwan," Paper Presented at the PICMET, 2010
- [17] M. Laroche, J. Bergeron, and G. Barbaro-Forleo, "Targeting consumers who are willing to pay more for environmentally-friendly products," *Journal of Consumer Marketing*, vol. 18, no. 6, pp. 503-520, 2001
- [18] Y. Chen and C. Chang, "Enhance green purchase intention," *Management Decision*, vol. 50, no. 3, pp. 502-520, 2012
- [19] T. T. T. Wee and M. H. Ming, "Leveraging on symbolic values and meanings in branding," *Academic Papers Brand Management*, vol. 10, no. 3, pp. 208-218, Oct 2002
- [20] A. Bennett and A. Chakravarti, "The self and social signaling: Explanations for consumption of CSR-associated product," *Advances in Consumer Research*, vol. 36, pp. 49-50, 2009
- [21] N. M. Suki and N. M. Suki, "Consumption values and consumer environmental concern regarding green product," *International Journal of Sustainable Development & World Ecology*, vol. 22, no. 3, pp. 269-278, Feb 2015.
- [22] P. Lin and Y. Huang, "The influence factors on choice behavior regarding green products based on the theory of consumption values," *Journal of Cleaner Production*, vol. 22, pp.11-18, Feb 2012
- [23] S. Bamberg, "How does environmental concern influence specific environmentally related behaviors? A new answer to an old question," *Journal of Environmental Psychology*, vol. 23, pp. 21-32,
- [24] A. P. Minton and R. L. Rose, "The effects of environmental concern on environmentally-friendly consumer behavior: An exploratory study," *Journal of Business Research*, vol. 40, pp. 37-48, Sept 1997
- [25] N. V. Czap and H. J. Czap, "An experimental investigation of revealed environmental concern," *Ecological Economics*, vol. 69, no. 10, pp. 2033-2041, Aug 2010.
- [26] J. A. Roberts and D. R. Bacon, "Exploring the subtle relationships between environmental concern and ecologically conscious consumer behavior," *Journal of Business Research*, vol. 40, pp. 79-89, Sept 1997
- [27] P. Ellen, L. Wiener and C. Cobb-Walgreen, "The role of perceived consumer effectiveness in motivating environmentally conscious behaviors," *Journal of Public Policy and Marketing*, vol. 10, no. 2, pp.102-117, Jan 1991
- [28] G. Rice, "Pro-environmental behavior in egypt: Is there a role for Islamic environmental ethics?," *Journal of Business Ethics*, vol. 65, no. 4, pp. 373-390, June 2006
- [29] P. Antonetti and P. S. Maklan, "Feelings that make a difference: How guilt and pride convince consumers of the effectiveness of sustainable consumption choices," *Journal of Business Ethics*, vol. 124, pp. 117-134, Sept 2014.
- [30] A. Zsoka, Z. M. Szerenyi, A. Szechy, and T. Kocsis, "Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of hungarian high school and university students," *Journal of Cleaner Production*, vol. 48, pp. 126-138, June 2013
- [31] T. Dodd, D. Laverie, J. Wilcox, and D. Duhan, "Differential effects of experience, subjective knowledge, and objective knowledge on sources of information used in consumer wine purchasing," *Journal of Hospitality and Tourism Research*, vol. 29, no. 1, pp. 3-19, Feb 2005
- [32] P. C. Stern, "What psychology knows about energy conservation," *American Psychologist*, vol. 47, no. 10, pp. 1224-1232, Oct 1992.
- [33] T. Bucic, J. Harris, and D. Arli, "Ethical consumers among the Millennials: A cross-national study," *Journal of Business Ethics*, vol. 110, no. 1, pp. 113-131, Sept 2012
- [34] P. Sullivan and J. Heitmeyer, "Looking at gen Y shopping preferences and intentions: Exploring the role of experience and apparel involvement," *International Journal of Consumer Studies*, vol. 32, no. 3, pp. 285-296, April 2008
- [35] J. C. Sweeney and G. N. Soutar, "Consumer-perceived value: The development of a multiple item scale," *Journal of Retailing*, vol. 77, no. 2, pp. 203-220, Summer 2001
- [36] A. Arvola, M. Vassallo, M. Dean, P. Lampila, A. Saba, L. Lahteenmaki, and R. Shepherd, "Predicting intentions to purchase organic food: The role of affective and moral attitudes in the theory of planned behavior," *Appetite*, vol. 50, pp. 443-454, March - May 2008
- [37] M. M. Mostafa, "Shades of green: A psychographic segmentation of the green consumer in kuwait using self-organizing maps," *Expert Systems with Applications*, vol. 36, pp. 11030-11038, Oct 2009.
- [38] J. A. Roberts, "Green consumers in the 1990s: Profile and implications for advertising," *Journal of Business Research*, vol. 36, pp. 217-231, July 1996
- [39] R.Y.K. Chan, "Determinants of chinese consumers' green purchase behavior," *Psychology & Marketing*, vol. 18, no. 4, pp. 389-413,
- [40] H. Kaiser, "An index of factorial simplicity," *Psychometrika*, vol. 39 no. 1, pp. 31-36, March 1974
- [41] A.P. Field, *Discovering Statistics using SPSS*, London: Sage, 2009
- [42] J. Stevens, *Applied Multivariate Statistics for the Social Sciences*, 5th Edition, New York:Routledge, 2009
- [43] N. K. Malhotra, *Marketing Research: An Applied Orientation*, 6th Edition, New Jersey:Prentice Hall, 2010
- [44] K. Peattie, "Towards sustainability: The third age of green marketing," *The Marketing Review*, vol. 2, pp. 129-146, Summer 2001.
- [45] T. Green and J. Peloza, "How does corporate social responsibility create value for customers?," *Journal of Consumer Marketing*, vol. 28, no. 1, pp. 48-56, 2011
- [46] J. Elkington, *The Environmental Audit. A Green Filter for Company Policies, Plants, Processes, and Products*, London, 1990
- [47] F. G. Kaiser and U. Fuhrer, "Ecological behavior's dependency on different forms of knowledge," *Applied Psychology*, vol. 52, no. 4, pp. 598-613, Aug 200
- [48] Z. Pieniak, W. Verbeke, and J. Scholderer, "Health-related beliefs and consumer knowledge as determinants of fish consumption," *Journal of Human Nutrition and Dietetics*, vol. 23, pp. 480-488. May, 2010
- [49] A. Kolmuss and J. Agyeman, "Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior?," *Environmental Education Research*, vol. 8, 3), pp.239-260, July 2010.
- [50] T. Ahmad and M. S. Nordin, "University student's subjective knowledge of green computing and pro-environmental behavior," *International Education Studies*, vol. 7, no. 2, pp. 64-74
- [51] A. Gambaro, A. Ellis, and V. Prieto, "Influence of subjective knowledge, objective knowledge and health consciousness on olive oil consumption: A case study," *Food and Nutrition Sciences*, vol. 4, no. 4, pp. 445-453, April 2013.
- [52] B. Martin and A. C. Simintiras, "The impact of green product lines on the environment: Does what they know affect how they feel?," *Marketing Intelligence & Planning*, vol. 13, no. 4, pp. 16-23, 1995
- [53] O. Turel, A. Serenko, and N. Bontis, "User acceptance of hedonic digital artifacts: A theory of consumption values perspective," *Information & Management*, vol. 47, no. 1, pp. 53-59, Jan 2010
- [54] J. Ottoman, *Green Marketing: Opportunity for Innovation*, New York: McGraw-Hill, 1998
- [55] Y. Kim and S. M. Choi, "Antecedents of green purchase behavior: An examination of collectivism, environmental concern and PCE," *Advances in Consumer Research*, vol. 25, pp.592-599.
- [56] A. Sibbel, "Pathways towards sustainability through higher education," *Journal of Sustainability in Higher Education*, vol. 10, pp. 68-82, 2000



Nosica Rizkalla was born in Jakarta, on 20 August 1990. She graduated from Universitas Indonesia, Depok Indonesia in 2012. For Undergraduate degree she is majoring in marketing management in 2012. In 2014, she continued her study to master's degree at The University of Nottingham, United Kingdom, majoring in marketing.

Currently, she works as the full-time lecturer at Universitas Multimedia Nusantara, Tangerang, Indonesia. Previously, she worked as assistant lecturer at Universitas Indonesia and research executive at the Nielsen Company Indonesia. Her research interests revolve around ethical consumption, sustainable consumption behavior and retail.

Ms Rizkalla was awarded full scholarship from Indonesian Endowment Fund for Education. One of her research, with the title of "The Effect of Store Image and Service Quality on Private Label Brand Image and Purchase Intention: A Case Study of Lotte Mart Gandaria City", was published on Asean Marketing Journal in 2012.