

## **The Influence of Advertising, Knowledge, and Attitudes towards Electricity-Saving Behavior**

Dyah Sugandini

Faculty of Economics and Business, Universitas Pembangunan,  
Nasional Veteran Yogyakarta

Djawoto

Sekolah Tinggi Ilmu Ekonomi Indonesia Surabaya

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### **ABSTRACT**

This study aims to identify the role of advertising on electricity-saving behavior. The basic theories used in this research are stimulus response theory and the Theory of Reason Action. The research design used is experimental design, which is Statistical Experimental-Completely Randomized. Manipulation of advertising (print) is done along with questionnaires. Each participant was given one random type of manipulation. Randomization is done on manipulation. Participants in this study were household electrical energy users who were divided into two experimental groups. The first group is manipulated with print ads, and the other groups are not exposed to ads. Manipulation is done by using random assignment. The number of participants used refers to the limits of laboratory experiments with strict controls. The number of research subjects in each group is 10-20 people. Further testing of the hypothesis is done by analyzing the test of compare means of two experimental groups using analysis of variance (ANOVA). Hypothesis testing that explains the influence of a variable on other variables is done by linear regression test. There are three objectives of this research. First, expand and test models of marketing communication influences the form of advertising in family decision making. Second, increase of internal validity. Third, the test of advertising influence on electrical energy saving behavior. The theoretical contribution derived is a model of consumer behavior that is influenced by advertising and antecedents associated with electrical energy-saving behavior. The contribution is macroeconomic, providing benefits for the sustainability of energy-efficient electricity program.

Keywords: advertising, knowledge, and electrical saving behavior.

## **1. INTRODUCTION**

The issue of the energy crisis became an early phenomenon of this research. One strategy that can be done by the government is to persuade people to save electricity. Effective advertising strategies are believed to be able to persuade and improve people's knowledge so that people are conscious of saving electricity (Brunel and Nelson, 2003). Knowledge is an important construct in understanding consumer behavior. Knowledge has a role to determine information seeking behavior (Brucks, 1985). Effective communication can increase knowledge (Sugandini et al., 2017a). Communication plays a role to convey information, persuade, remind, and encourage behavior. The important role of communication becomes an important point in advertising effectiveness (Lautman and

Hsieh, 1993) and consumer decision making (Dalmeny et al., 2003). This research is based on Stimulus Response Theory (SRT) and The Theory of Reason Action (TRA). The basic assumption of SRT shows that the mass media can directly lead the reader. Theory of Reason Action (Fishbein and Ajzen, 1980) provides a framework for how attitudes affect behavior.

Here are three objectives of this study. First, this study examines the effect of marketing communication in the form of advertising in decision making. The extension of this model is achieved through the integration of stimulus response theory with the theory of reason action in a model to determine the electricity-saving behavior. Secondly, this study aims to improve the internal validity of each variable observed in the research by using experimental methods. Third, this study specifically aims to examine the effect of advertising on electricity-saving behavior.

## **2. LITERATURE REVIEW**

This study examines the effect of advertising on consumer knowledge and consumer attitudes. This study examines the effect of attitudes on electrical saving behavior. The underlying theory of decision making related to advertising and consumer behavior is Stimulus Response Theory and The Theory of Reason Action.

### **2.1 Advertisement**

Advertisement is a prime alternative that is easy to reach by consumers who will be served. Advertisement is also a source of information. The important role of such communication has been explicitly mentioned in the effectiveness of advertising (Lautman and Hsieh, 1993). Advertising is one form of marketing communication information and it is one of the communication mechanisms to deliver product quality information (Ippolito, 1990). In designing new product advertisements, marketers need to design messages according to the target audience (Beckman, 1967). However, the effectiveness of advertisement is influenced by the suitability of the format with the target audience, media, product category, brand, condition, and message content in the advertisement (Brunel and Nelson, 2003). Thus, creativity is a factor that has an important value in developing the format of delivery of messages to consumers. The advertorial format was developed to reduce consumer perceptions on the interests of producers in advertising, so that advertorials were developed to improve the objectivity of information (Cameron and Haley, 1992), and have high credibility especially in conveying product information or product attributes that cannot be observed directly (Park and Bahr, 1980).

Hypothesis 1: Exposition of advertorial advertising information will give effect to the enhancement of different individual knowledge.

Hypothesis 2: The individual's perceived attitudes are greater in the group that is exposed to advertorial ads.

### **2.2 Knowledge**

Energy knowledge is defined as the stage when individuals are aware of and understand the energy crisis. Knowledge is believed to be able to enhance the ability of consumers to understand and evaluate specific advertising messages (Andrew et al., 1998) and sufficient knowledge to encourage the formation of consumption processes (Miller and Russell 2004). Lack of knowledge can lead to the formation of a negative attitude from consumers (Child and Poryzees, 1998).

Hypothesis 3: Higher levels of knowledge shape attitudes that are perceived to be stronger than low levels of knowledge

### **2.3 Energy-saving attitude and behavior**

The hierarchy of effect model of Lavidge and Steiner, (1961), divided attitudes in three components: cognitive, affective, and conative. (1) Cognitive function means that advertising provides information and facts with the aim of making consumers aware and have knowledge about the advertised brand. There are many innovation literatures that use intention as a proxy for actual behavior and continuity in using an innovation (Sugandini, et al., 2018b). It associated with the mental image, understanding, and interpretation of a person on a particular person, object or issue. (2) Affective function means that advertising creates a preference for the advertised brand that creates a more favorable or unfavorable attitude, likes or dislikes. (3) Conative function means that advertising creates how one acts using this information or to the tendency to treat objects as positive or negative goals. Sugandini, et al. (2017b) shows that, individuals who have a good environmental attitude will have a good effect on their behavior. Individuals who have an attitude toward good natural preservation, will also have an effect on their behavior to preserve nature (Sugandini et al., 2018a). This is in line with the research undertaken in this study.

Hypothesis 4: Attitudes affect electrical-saving behavior.

## **3. RESEARCH METHODS**

The design of laboratory experiments was developed for hypothesis testing in this study. The researcher considers that the experimental design is a technique capable of providing a stronger explanation for the testing of causal relationships (Neuman, 2000). In this study, the experimental design was conducted to examine the role of advertising advertorial information in the knowledge, persuasion, and decision-making process of saving electricity. A laboratory experiment 2x1 between subject factorial designs is done by distinguishing factor is the exposure of advertisement advertorial and not exposed advertisement. The experiments were conducted on the subjects of study which determined by the criteria that individuals play a role in the use of electricity for themselves or families, with a minimum education level of high school. The main experiment was conducted on 200 subjects. The experiment was conducted in Yogyakarta Special Region in August 2017 - October 2017, by visiting the location in accordance with the request of the research subject. The experiments carried out with the number of subjects ranging from individual experiments to the implementation of experiments in groups with a number of subjects 5-20 people. The qualitative measurement is done by using face validity and content validity. Measurements are quantitatively performed using Confirmatory Factor Analysis (CFA). Reliability test is done to find out how far the measurement results remain consistent when repeated measurements of the same symptoms using the same measuring

instrument (Sekaran, 1992) in this research reliability test using Cronbach Alpha. Further experimental testing is done by analyzing the compare means testing of two experimental groups using analysis of variance (ANOVA) at each stage or between stages. Meanwhile, the survey was used to examine the relationship of attitude influence on electricity saving behavior. This research tests the influence of attitude toward electricity saving behavior using regression analysis.

#### 4. RESULTS AND DISCUSSION

##### 4.1 Test Result Validity and Reliability

The test of construct validity is done by observing factor loading value of each research instrument. The validity test results can be seen in Table 1 and show that all instruments are valid.

Table 1. The value of factor loading for construct validity testing

Subjective knowledge without treatment	Subjective knowledge with treatment	Objective knowledge without treatment	Objective knowledge with treatment	Persuasion without treatment	Persuasion witht treatment	Electricity saving behavior
.716	.711	.780	.687	.773	.706	.690
.754	.705	.752	.728	.723	.696	.786
.722	.677	.664	.750	.773	.711	.865
.737	.731	.733	.730	.725	.753	.741
		.776	.738	.724	.744	
		.780	.689	.705	.677	
		.738	.685	.712	.703	
		.790	.766			
		.795	.664			

The reliability test is performed to test internal consistency between research items by using Cronbach's Alpha. Reliability test results show Cronbach's Alpha value greater than 0.70 so it can be said that the instrument used reliably (Sekaran, 1992).

Table 2. Reliability of research variables

Variable	Number of items	Cronbach Alpha
Subjective knowledge without treatment	4	.860
Subjective knowledge with treatment	4	.877
Objective knowledge without treatment	9	.887
Objective knowledge with treatment	9	.893
Persuasion without treatment	7	.903
Persuasion with treatment	7	.935
electricity saving behavior	4	.879

##### 4.2 Participants Characteristics

Table 3 shows that the study subjects involved in this study are consisted of 20.5% of women and men at 79.5%. Based on the age group, the majority subjects consisted of adult age group (25-34 years) as many as 92 people or 46% and mature age group (35-44) i.e. 74 people or 37%. While the remaining 5.0% is the youth age group, 9.0% are in the age oldies group and 0.5% or only 1 person is in the grand age group. Based on the level of

education, 38% of study subjects completed undergraduate education at university and 37% completed postgraduate level and the rest completed diploma and high school education. Aspects of employment status showed 83.4% of the study subjects worked and only 16.6% of the study subjects did not work or full role as a housewife. Based on the aspect level of income 72.0% of the research subjects have income levels in the range of Rp1,000,000, - up to 5,000,000. Based on the number of family members living in the same house as 57.3% of the study subjects had 3-4 family members, while the remaining 22.7% had less than 3-4 family members and 20% had more family members than 3-4 people.

Table 3: Participants Characteristics

Category	Characteristics of participants	Amount	Percentage
Sex	Male	159	79,5
	Female	41	20,5
Education	Senior high school / baccalaureate	52	0.26
	Bachelor	75	0.38
	Postgraduate	73	0.36
Age	Youth (20-24 years)	10	0,05
	Adult (25-34 years)	92	0,46
	Mature (35-44 years)	74	0,37
	Oldies (45-54 years)	23	0,115
	Grand (> 55 years)	1	0,005
Employment Status	Housewife	34	0.17
	Civil servants	47	0.235
	Employees of Government Owned Enterprises	7	0.035
	Private employees	73	0.365
	Entrepreneur	14	0.07
	Others	25	0.125
Marital status	Married	170	0.85
	Single	26	0.13
	Widows /widower	4	0.02
Family income	< IDR. 1000.000,-	24	0.12
	IDR. 1.000.001,- - 2.500.000,-	72	0.36
	IDR. 2.500.001 s/d 5.000.000,-	70	0.35
	IDR. 5.000.001 s/d 7.500.000,-	22	0.11
	> IDR. 7.500.001	12	0.06
Number of families	< 3 people	50	0.25
	3-4 people	106	0.53
	> 4 people	44	0.22

### 4.3 Results of hypotheses 1 and 2 (The role of advertising in shaping knowledge and attitude)

The effect of information on the level of knowledge and persuasion is done by giving stimulus in the form of advertorial advertisement. The source of such communication is advertorial advertising. Hypothesis testing is done by using the analysis of difference test of two average paired samples test on the variable of knowledge measured before and after treatment.

Table 4. Differences in the level of knowledge without exposure to advertise and by getting advertorial advertising exposure. (N = 200)

Information	Differences in level of knowledge without treatment and by receiving advertising advertorial information			
	Average	Standard deviation	t-value	Significance
Subjective knowledge	-0,750	1,505	<b>-11,554</b>	0,000
Objective Knowledge	-0,817	1,741	<b>-6,671</b>	0,000

The results of the test (table 4) show that there is a significant difference in the level of knowledge on the part that is not exposed to the ad and the participant who receives the ad exposition. Table 5 shows unequal testing of knowledge level and by receiving advertising advertorial information. The results of the average difference test in this analysis indicate that the effect of advertorial advertising to increase individual knowledge is limited to subjective knowledge that is the increased knowledge perceived by the research subjects. Conversely, advertorial can increase knowledge significantly including the actual knowledge as well as perceived by the subject.

Table 5. Different tests for the level of knowledge without exposure to advertorial ads and those exposed to advertorial advertising

Information	Different tests for the level of knowledge without exposure to advertorial ads and those exposed to advertorial advertising			
	Average	Standard deviation	T value	Significance
Group without treatment (N = 100)				
Subjective knowledge	-0,918	1,191	<b>-6,677</b>	0,000
Objective knowledge	-0,290	1,351	-1,249	0,201
Group with treatment (N=100)				
Subjective knowledge	-1,766	1,444	<b>-9,392</b>	0,000
Objective knowledge	-1,578	1,687	<b>-7,173</b>	0,000

The number in bold shows a significant difference at  $p \leq 0.01$

#### 4.4 Results of hypothesis 3 (The role of knowledge in shaping perceived persuasion)

High knowledge forms a stronger attitude compared to subjects with lower knowledge levels. The test is performed by Pearson product moment correlation test for the variable of knowledge on the perceived attitudes, whether measured for the individual without getting expositions from advertisement advertorial or individual who got exposition of electricity-saving advertisement.

Table 6: Test the correlation of subjective knowledge variables and perceived persuasion

Information	Attitude after receiving treatment of advertorial ad exposure	
	Correlation	Significance
Subjective knowledge by treatment	<b>0,312</b>	0,001

Table 7. Test the correlation of objective knowledge variables and perceived attitudes

Information	Attitude after receiving treatment of advertorial ad exposure	
	Correlation	Significance
Objective knowledge with treatment	<b>0,048</b>	0,576

The results of statistical tests (Table 7) indicate a significant correlation between subjective knowledge variables and perceived persuasion. The correlation of objective knowledge with perceived persuasion is insignificant. This result shows that the perceived knowledge of the individual has a link in the formation of perceived persuasion. That is, individuals who have good knowledge will be accompanied by the formation of a positive attitude towards a product. Conversely, the high actual knowledge in the individual is not always accompanied by the formation of a positive attitude toward energy-saving behavior.

#### 4.5 Results of hypothesis 4. (Effect of persuasion in the formation of electrical saving behavior).

This test is performed by using simple linear regression analysis. Regression analysis is used to identify the perceived role of persuasion to decision-making variables i.e. electricity-saving behavior. The results of the analysis in Table 8 show that perceived persuasion variables significantly influence the behavior of electricity saving with the perceived ability of variable persuasion to explain the variation in electrical saving behavior of 66.3%

Table 8. Linear regression test of perceived persuasion effect on electrical saving behavior

Information	Adjusted R square	Standardized coefficient	t	Significance
Perceived persuasion effect on electrical saving behavior	<b>0,663*</b>	0,664	13,068	0,000

\*Significant at  $p \leq 0,01$

#### 4.6 Discussion

This study shows that the result is consistent with previous consumer behavior studies, which stated that consumer knowledge influences the decision-making process through the information acquisition process. This study shows that knowledge affects perceived persuasion. Persuasion in this case is a process of forming attitudes toward the product in the form of information search and interpretation of the information. The learning process of information both in the cognitive and affective stages is determined by the advertisements described. The level of perceived persuasion is a factor that determines the next decision-making process that is electricity-saving behavior measured in a laboratory setting. The higher the perceived persuasion then occurs, the higher the positive attitude toward electrical saving behavior.

In general, the results of this study have consistency with the test of the previous decision models (SRT, TRA and adoption of innovation). The similarity of decision model

variable relationship is found in subjective knowledge variables, whereas objective knowledge is found to be unable to predict the process of evaluating further information. Complete and accurate information are important factors in the product evaluation process associated with electricity-saving behavior. The finding in this study indicates that simultaneous marketing communications do not provide an instant effect but become an accumulation of knowledge in a person to be reused when doing information received further.

## 5. CONCLUSION AND RECOMMENDATION

This research was conducted using laboratory experimental design, because the design of laboratory experiments is the most appropriate design used to explain the causality relationship. The focus of this research is on reviewing the effects of marketing communications information (advertorial advertising) with producer information sources. The results show that advertorial advertising can improve perceived persuasion through participant knowledge. Knowledge that plays a role in increasing persuasion is subjective knowledge. Furthermore, perceived persuasion can improve electrical saving behavior. In addition, this study provides results that, advertising that is educating and providing knowledge can make individuals have a better level of knowledge. Thus, further research is necessary in order to assess the effectiveness of advertisements with complete information as required by the government. The object used in this study is limited to electricity-saving behavior, so further studies are needed on other products. Regarding the degree of confidence of the subject to the producer in marketing communication, it is necessary to study a possible certification by the producer association to make a guarantee better to the truth of the information provided. The use of the laboratory experimental design in this study allows researcher to control other variables that can cause confounding effects. This condition on the other hand leads to weakness of naturalness in the conduct of research so that ultimately leads to generalization of low study results. The test of this study results at a broader level of generalization is required by conducting survey designs to enhance the external validity of the research model's testing.

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