Antecedents of Personal Norms and Social Media Information towards Biofuel Purchase Intention in Special Region of Yogyakarta

by Dyah Sugandini

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Abstract

This examination means to re-analyze the effect of the ascription of responsibility, awareness of the consequences, personal norms, and social media information on biofuel purchase intentions in the Special Region of Yogyakarta. This study tries to re-examine the merger of two theories: Theory of Planned Behavior (TPB) and The Norm Activation Model (NAM). The results showed that the ascription of responsibility and awareness of consequences affected personal norms. This study also indicates that personal norms and social media information positively and significantly impact biofuel purchase intentions. The awareness variable is the most dominant variable from the data processing results from the consumer's point of view. Meanwhile, the personal norm variable is the most dominant from the industrial point of view of data processing. This investigation's practical implication is to give industry, the government, and the wider community to jointly promote one of the government programs, switching from non-renewable fuels to renewable fuels.

Keywords: _the ascription of responsibility; awareness of consequences; personal norms; social media information; biofuel purchase intentions_

INTRODUCTION

Increased reliance on excessive use of fossil fuels will seriously destroy the ozone layer and result in greater contamination levels with emissions of carbon, sulfur dioxide, and other harmful gases. Although petroleum derivatives hurt the climate, the world utilizes these non-sustainable force sources for a huge scope (Wang et al., 2020). The gap relationship between energy demand and supply invent barriers to sustainable development, economic growth, development, and prosperity, adversely affecting the environment, human health, water resources, and industrial productivity (Arshad et al., 2018). The government has presented new guidelines and subsidizing occasions to animate ecological activities in response to these problems. This is important so that environmental protection and environmental products are widely accepted by the community (Liu et al., 2017). The Indonesian government has drafted a New and Renewable Energy Bill (RUU EBT). The EBT Bill is a stage to promptly relinquish reliance on fossil energy, which is not environmentally friendly, and switch to new, renewable energy that is environmentally friendly.

Moser (2016) referenced that purchasers have no agreement regarding their ability to pick ecologically neighborly items that tend to be more expensive. In 2016, biofuels only contributed 4% of total world fuel consumption (Letcher, 2019). For this reason, it is important to understand how consumers' attitudes towards biofuels products. Jansson, Nordlund, and Westin (2017) have examined the factors driving the adoption of alternative fuel vehicles. However, there appear to be many deficiencies in research on consumer perspectives regarding biofuel consumption (Jansson, Nordlund, and Westin,

2017). Zailani et al. (2019) said it is extremely uncommon to discover extensive investigations that hypothetically and exactly investigate and depict how willing customers are to consume biofuel products.

LITERATURE REVIEW
Biofuels

Biofuels are one of the most available and abundant sources of renewable energy, which also have a friendly impact on the environment (Taghizadeh-Alisara et al., 2016). Biofuel can meet the increasing energy demand. Bioethanol, Biodiesel, Bioethanol, and bio-oil are examples of biofuels. Bioethanol and Biodiesel are currently considered the two most promising biofuels in transportation as substitutes for conventional fossil fuels. The application of Biodiesel has the advantage without the need for any modification to the engine. Likewise, bioethanol is useful to replace gasoline in a gasoline engine and doesn't need any modification because all vehicles can drive utilizing a mixture of biofuels. However, biofuel production usually requires additional pretreatment steps, which will increase the overall production costs.

Biofuel Purchase Intention

The intention is defined as the likelihood that a person is considered or "a subjective likelihood that he will engage in certain behaviors" (National Institutes of Health, 2018). A person's intention to behave energy-efficient by switching to consuming biofuels is associated with the Theory of Planned Behavior (TPB) model, which measures individual tendencies and evaluates individual perceptions positively and negatively on energy savings. TPB is an exemplary model for investigating or predicting behavior and behavior change (Ajzen, 1991). Intention as a factor of TPB is motivation, an individual's attempt to perform a behavior if they control whether or not to do it. Intention can directly predict behavior achievement in a positive way (Mufidah et al., 2018). The stronger the individual's intention towards the behavior, the more likely they will exhibit that behavior (Ajzen & Madden, 1986).

Norm Activation Model

Schwartz (1977) referenced Norm Activation Model (NAM), which is very well known in social brain research to study pro-environmental behavior or altruistic behavior. As indicated in the norm activation model, personal norms are considered important constructs that encourage emotions or feelings states of personal moral responsibility to behave in certain ways (Schwartz & Howard, 1981). This model contains three variables: personal norms, an ascription of responsibility, and awareness of the consequences. In general, if someone is aware that their behavior has negative consequences on others and the environment (awareness of the consequences), then that person feels responsible for the negative effects that arise, so they believe that behaving responsibly towards the environment will help alleviate environmental problems (ascription of responsibility) and consequently activate/determine the level of activation of the personal norms (de Groot & Steg, 2009).

Ascription of Responsibility

As de Groot & Steg (2009) referenced, the ascription of responsibility is depicted as feeling ascribed to moral responsibility for the harmful effects of not appearing pro-environment. Responsibility alludes to an individual's very own emotions about whether they are responsible for the results of their behavior (de Groot, 2009). Responsibility towards oneself determines personal norms and determines whether

individuals behave altruistically (pro-environmental behavior) or not (Schwartz, 1977). Thus, the hypothesis in this research is:

H1: Ascription of Responsibility has a positive and significant effect on Personal Norms

Awareness of Consequences

Awareness of Consequences reflects if an individual is aware of the unfriendly impacts of their activities on society or is aware of the values, not pro-environment (de Groot & Steg, 2009). Individuals are bound to be involved in environmental problems and show pro-environmental behavior when they realize the bad consequences of their actions for others and themselves (Hansla, 2008). Previous studies have examined the impact of awareness on pro-environmental behavior (Fang et al., 2019). Awareness of one's behavior is one factor that determines personal norms, which in turn determines whether individuals behave altruistically or not (Schwartz, 1977). Individuals are bound to engage in environmental problems and show pro-environmental behavior when they realize the bad consequences of their actions/inaction on themselves and others (Hansla et al., 2008). Thus, the hypothesis in this study

H2: Awareness of Consequences has a positive and significant effect on Personal Norms

Personal Norms

Personal norms are determined as moral responsibility from certain actions, and elements of this norm activation model are worthwhile for outlook pro-environmental behavior. (Schwartz & Howard, 1981). In other words, if a person is aware of a problem that arises as a result of certain behaviors, this awareness is followed by consideration of his contribution to the problem and whether he can help solve the problem or not (Liu et al., 2017). Hence, this moral obligation in one's norm could serve as a driving factor in pro-environmental behavior, particularly in biofuel's purchase intention.

H3: Personal Norms have a positive and significant effect on Biofuel Purchase Intention

Social Media Information

Media is believed to be able to influence pro-environmental behavior by increasing community environmental awareness and environmental information. Past research has focused only on the effect of media information on pro-environmental behavior. However, as the times developed, the internet was then included in the academic sphere. In recent years in the context of social media development, people have started to notice its impact. Many researchers acknowledge the potential effect of social media on pro-environmental behavior (Han & Xu, 2020). Huang's (2016) research on Taiwan's population found that obtaining global warming information from the media individually would influence their pro-environmental behavior. Huang's (2016) research, which mainly focuses on television, newspapers, and the internet, shows that information related to global warming obtained from these three media types greatly influences the intention to behave pro-environmentally.

H4: Social Media Information has a positive and significant effect on Biofuel Purchase Intention

RESEARCH METHOD

This research is a descriptive study with a survey approach. The review approach is completed by gathering data from a sample by asking through a questionnaire or interview to depict different parts of the populace (Faenkel & Wallen, 1990). In light of the exploration goals, this investigation is research for hypothesis testing. The purposive sampling technique was chosen because it did not provide equal

opportunities for every element or member of the population to be selected as samples. The population in this study were all biofuel industries and consumers in the Yogyakarta Special Region.

Characteristics of Respondents

The number of respondents in this study was 170 respondents be composed of industry and potential consumers and biofuels consumers in the Special Region of Yogyakarta. The following characteristics of the respondents in this research are shown in Table 1.

Table 1. Characteristics of respondents

Information	Total	Percentage
Number of Samples	170	100%
Gender:		
Female	105	61.76%
Male	65	38.24%
Age:		
<22 Years	38	22.35%
22-35 Years	36	21.18%
36-60 Years	70	41.18%
> 60 Years	26	15.29%
Latest Education:		
Elementary / Junior	12	7.06%
High School	56	32.94%
STRATA 1	40	23.53%
STRATA 2	39	22.94%
Doctor	23	13 53%
Status Profession:		
Employee (PNS / private / etc)	62	36.47%
Entrepreneurial	38	22.35%
Housewife	23	13.53%
Student	47	27.65%
Income Level:		
<Rp 1.000.000, -		
USD 1,000,000, - up to IDR	21	12.35%
3,000,000, -	63	37.06%
> IDR 3,000,000, -	86	50.59%
Sector:		
Entrepreneur / Industry	34	20%
Non-entrepreneur	136	80%

The research used Partial Least Square (PLS) with the Smart PLS 3.0 program as a method of tools analysis. An outer model or indicator test is worthwhile to assess the reliability and validity of the model. The indicator test on PLS consists of outer loading value (> 0.7), Cronbach's alpha (> 0.7), composite reliability (> 0.6), average variance extracted (> 0.5), and discriminant validity (loading value at the target variable must be greater than the loading value of the other variables).
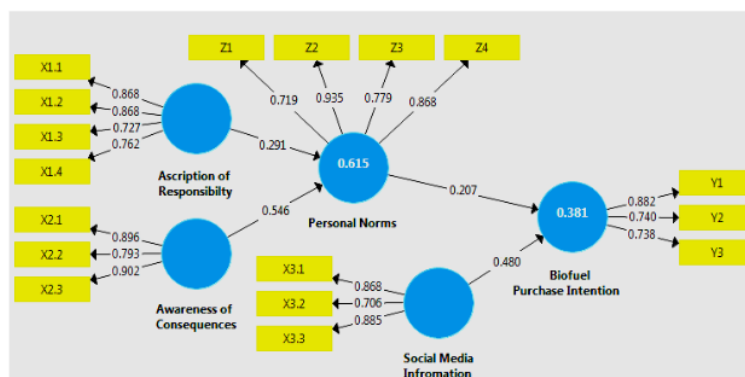
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Figure 1. Algorithm 136 Respondent

Tabel 2. Construct Reliability and Validity

Latent variable	Measurement Item	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
ascription of Responsibility (X1)	X1.1	0.868	0.788	0.865	0.620
	X1.2	0.868			
	X1.3	0.727			
	X1.4	0.762			
Awareness of Consequences (X2)	X2.1	0.896	0.836	0.899	0.748
	X2.2	0.793			
	X2 .3	0.902			
Personal Norm (Z)	Z1	0, 719	0.813	0.881	0.654
	Z2	0.935			
	Z3	0.779			
	Z4	0.868			
Social Media Information (X3)	X3.1	0.868	0.711	0.756	0.543
	X3.2	0.706			
	X3.3	0.885			
Biofuel Purchase Intentions (Y)	Y1	0.882	0.720	0.831	0.623
	Y2	0.740			
	Y3	0.738			

Table 3. Cross Loading 136 Respondents

	Information Social Media	Awareness of Consequences	Biofuel Purchase Intention	Personal Norms	Ascription of Responsibilty
X1.1	0,633	0,546	0,562	0,628	**0,868**
X1.2	0,690	0,671	0,574	0,612	**0,868**
X1.3	0,164	0,467	0,232	0,604	**0,727**
X1.4	0,567	0,620	0,540	0,522	**0,762**

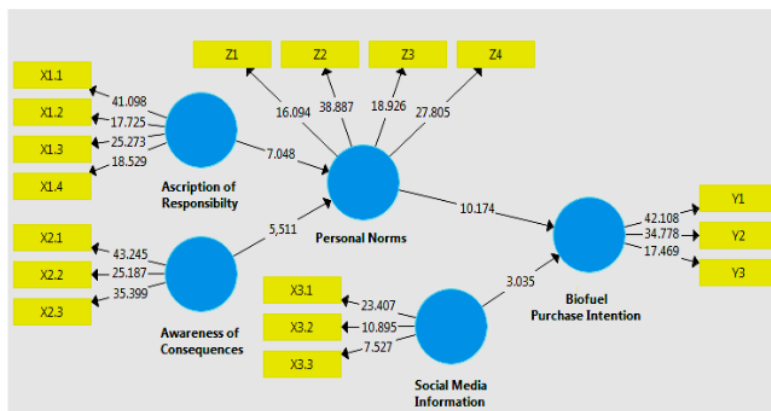|					
X2.1	0,623	**0,896**	0,523	0,663	0,631
X2.2	0,491	**0,793**	0,390	0,397	0,668
X2.3	0,485	**0,902**	0,605	0,670	0,636
X3.1	**0,868**	0,416	0,397	0,339	0,477
X3.2	**0,706**	0,335	0,167	0,509	0,322
X3.3	**0,885**	0,601	0,410	0,463	0,620
Y1	0,652	0,604	**0,882**	0,525	0,590
Y2	0,068	0,395	**0,740**	0,554	0,438
Y3	0,214	0,310	**0,738**	0,160	0,303
Z1	0,510	0,466	0,496	**0,719**	0,523
Z2	0,521	0,657	0,557	**0,935**	0,774
Z3	0,415	0,518	0,397	**0,779**	0,588
Z4	0,275	0,568	0,442	**0,868**	0,522

Figure 2. Bootstrapping 136 Respondents

Hypothesis Testing

Table 3. Boostrapping Results 136 Respondens

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/ STDEV|)	P Values	Description
Ascription of Responsibility ▯ Personal Norms	0.291	0.452	0.064	7.048	0.000	Accepted
Awareness of Consequences ▯ Personal Norms	0.546	0.384	0.069	5,511	0,000	Accepted

PersonalNorms ⮕ Biofuel Purchase Intention	0.207	0.590	0.058	10.174	**0.000** **Accepted**
Social Media Information ⮕ Biofuel Purchase Intention	0.480	0.221	0.072	3.035	**0.003** **Accepted**

The results of quantitative analysis in this study menu show that all hypotheses have a positive and significant effect. The original sample values in H1 (0.291), H2 (0.546), H3 (0.207), H4 (0.480) have a positive value so that it shows a positive relationship. On the other hand, the t-statistics value is >1.960 and p-values >5%. This means the hypothesis H1 (t-value = 7,048 / p-value = 0.000), H2 (t-value = 5,511 / p-value = 0.000), H3 (t-value = 10,174 / p-value = 0.000), H4 (t-value = 3,035 / p-value = 0.003) is supported.

FINDINGS AND DISCUSSION

Based on research hypothesis 1, either from the industry's standpoint (original sample 0.449) and consumers (original sample 0.291), the description of responsibility had a significant positive effect on personal norms. When people become aware of the negative impact of their inappropriate behavior on others, they spontaneously increase their sense of responsibility. Simply put, we can say that responsibility plays an important role in strengthening and developing personal norms. As a result, the industrial and consumer sectors are likely to be increasingly motivated to use biofuels because they feel responsible that excessive non-renewable energy sources can endanger the environment and their health.

Based on research hypothesis 2, both from the industry's standpoint (original sample 0.383) and consumers (original sample 0.546) f, awareness of consequences positively and significantly affect the personal norm. Consciousness is considered the initial phase of responsible behavior (Schwartz, 1977).

The results of this research indicate that consumers are individuals who care about environmental problems. An awareness campaign is a solution to invite the wider community, especially in the Special Region of Yogyakarta. The education campaign must also provide adequate information to the public about the benefits of biofuel itself. This awareness campaign could not be as effective as expected because the substantive behavior, the reduction in vehicle fuel, is more difficult to change than other pro-environmental behaviors, as discussed earlier.

This study's results are consistent with the research of Wang et al. (2020) and Liu et al. (2017), which shows that personal norms affect green products' purchase intention. In this study, bootstrapping results from an industrial point of view is in line with the research of Wang et al. (2020) and Schwartz (1977). They found that personal norms had the most substantial influence with an original sample value of 0.588 compared to responsibility (0.449) and awareness (0.383). They were the most important factors and became a fairly large predictor of biofuel purchase intention environmentally friendly products. Research results consistently find that environmental problems significantly affect personal norms. Therefore, this finding is useful for determining their possible purchase intentions, especially from individuals in the industry consuming biofuel.

In contrast to the findings of Wang et al. (2020) and Schwartz (1977), another interesting finding from a consumer point of view consistent with the results of Liu et al. (2017) is that compared to other variables such as responsibility (0.546) and awareness (0.291) in the Norm Activation Model (NAM), personal norms (0.207) themselves have a weaker relationship with biofuel purchase intentions. This finding is also consistent with the research of Bamberg et al. (2016), who instead found that TPB and NAM

have an insignificant relationship between personal norms and the intention to reduce car use to save fuel. This implies that the intention to behave pro-environment is difficult to implement. Schwartz & Howard (1981) define personal norms as a moral responsibility for specific actions, and elements of this norm activation model are useful for predicting pro-environmental behavior.

CONCLUSION

The research that has been conducted shows that people in the Special Region of Yogyakarta, both from an industrial perspective and a consumer point of view, have the intention to purchase biofuels with an awareness of the consequences, ascription of responsibility, personal norms, and social media information as factors that influence. This research succeeded in combining the NAM and TPB theory. Overall all hypotheses can be said to be positively and significantly related. This research shows that awareness of the consequences and ascription of responsibility positively affected personal norms.

FURTHER RESEARCH

Based on the findings of this study, this study has several limitations, so that researchers can provide suggestions that are expected to be useful for further research. First, this study's sample is limited to certain areas, namely the Special Region of Yogyakarta.

Second, although this study forms a cognitive model of biofuel purchase intention that is consistent with the theoretical basis used, but based on theoretical aspects, studies on biofuel purchase intentions still provide development opportunities to add other factors as antecedents of TPB cognitive models, such as environmental concern, perceived consumer effectiveness, perceived authority support, perceived environmental knowledge, ecolabel, green product advertising, green product trust, and so on.

Third, this study shows that the dominant variables are different from two different points of view. Meanwhile, from the consumer's perspective, awareness of the consequences is the most dominant variable. Both of these variables are variables that makeup NAM. Therefore, education and outreach to the broader community about biofuels' benefits and their social impact on the environment.

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