

FACTORS INFLUENCING BIOFUEL PURCHASE INTENTION

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Abstract

This paper aims at the identification of key factors that influence intention to buy biofuels in order to trigger their repeated purchases. We hereby present results of a quantitative study conducted among 186 French respondents on salient factors of environmental concern, knowledge, perceived consumer effectiveness and subjective norm that influence their purchasing intention and/or real purchasing behavior towards biofuels. We use theoretical frameworks proposed by Ajzen (1991) and Chan & Lau (2000) and analyse our data through non-parametrical statistics tools such as factor analysis, validity and reliability analysis, correlation and regression test, comparing mean test, bias testing and descriptive statistics. Our findings indicate that Subjective Norm and Perceived Consumer Effectiveness are important predictors of Biofuel Purchase Intention and Actual Biofuel Purchase.

Key words: Subjective Norm, Biofuel Purchase Intention, Actual Biofuel Purchase, Consumer perceived effectiveness

JEL Code: M11, M15

Introduction

In the context of climate changes and relating to the Kyoto protocol, many countries worldwide are concerned about the problem of global warming. Increasing fossil energy consumption and corresponding decreasing natural resources require from the global community to act. (Yoo & Kwak, 2009; Bang, Ellinger, Hadjimarcou, & Traichal, 2000).

Biofuel is by definition “a solid, liquid or gaseous fuel produced from non-fossil plant or animal material, also known as biomass”. The liquid form is by far the most widely used because of its ease of use; the gaseous form is also beginning to have significant success. Biofuels can be produced from various feedstock (sugarcane, corn etc.) according to various processing techniques. Bioethanol and biodiesel are the two mainly used as a first biofuel generation. Biofuel production has been widely criticized because it is accused of causing

deforestation, huge amount of water consumption, occupying arable soil and preventing farmers from food production on it and an important production of CO₂.

A recent survey by CREDOC (November 2010) revealed that 56% of French citizens are sensitive to environmental issues and 30% of them are very sensitive. Nevertheless, the biofuel market is considered a niche market compared to conventional fuel consumption. Indeed, biofuel is not a priority in top of the mind of French citizens concerned by the need of sustainability of their energy consumption (CREDOC, 2010).

1 Which individual factors lead consumers to purchase biofuel?

The present study identifies and compares the antecedents of Biofuel Purchase Intention with those of Actual Biofuel Purchase. The Theory of Reasoned Action (further „TRA“) postulates that attitude leads to intention (Gill, L.A., & J.R., 1986) and a specific behavior performance's depends to the intention to perform the behavior, i.e. that an individual will first consider the implications of an action which lead to intentions, before engaging in a behavior (Bang, Ellinger, Hadjimarcou, & Traichal, 2000; Gill, L.A., & J.R., 1986). Bang, Ellinger, Hadjimarcou, & Traichal (2000) cited Fishbein & Ajzen (1975) and concluded there are two independent constructs leading to behavior: Attitudes and Subjective Norms. Each independent construct has two dimensions. With respect to attitudes, there are beliefs about consequences & evaluations about consequences. With respect to subjective norms, there are normative beliefs about other persons and motivation to comply with other persons. Hence, attitude and subjective norms lead to behavioral intention, and subsequently exhibit specific behavior according to Fishbein & Ajzen (1975) referred to by Bang, Ellinger, Hadjimarcou, & Traichal (2000). Rahbar & Abdul Wahid (2010) cited Sheppar, Hartwick and Warshaw (1988) and stated that the TRA helps to determine marketing strategies which may change consumers' behavior. Marketers, organizations, and policy makers who are seeking to identify green marketing strategies refer to this theory in order to influence consumers to purchase green products (Rahbar & Abdul Wahid, 2010).

2 The key constructs¹

The key constructs developed in the present research are presented in the Table 1. hereunder:

¹ The attitude component has not been incorporated into this study.

Table 1: Key constructs

Construct	Label	Definition
Independent Constructs		
Environment Concern	EC	Respondent's amount of knowledge (ecological knowledge) about, the degree of emotionality (ecological affect) toward, and the level of verbal (ecological intention) and actual commitment (ecological behavior) to ecological issues. (Chan & Lau, 2000)
Environment Knowledge	EK	Respondent's general knowledge of facts, concepts and relationship concerning the natural environment and its major ecosystem. (Mostafa, 2007)
Perceived Consumer Effectiveness	PCE	Respondent's beliefs that their actions towards environmental protection can make a difference in solving environmental issues. (Kim & Choi, 2005)
Subjective Norm	SN	Respondent's perception that most people who are important to him think he should or should not purchase the product. (Fishbein & Ajzen, 1975)
Dependent Constructs		
Biofuel Purchase Intention	PI	Respondent's decision planning to buy biofuel, created through a choice or decision process.
Actual Biofuel Purchase	AP	Respondents' purchase behavior toward biofuel.
Demographics		
Household Usage	Engine Type	
	Number of Cars owned	
	Driving Frequency	
	Driving Reason	
Green Product Experience	Green Product Purchase	
	Heard about Biofuel	
Socio-economic characteristics	Gender	
	Age	
	Education	
	Occupation	
	Nationality	

Studies regarding environmental behavior have found a significant and positive relationship between intention and behavior (Chan & Lau, 2000, citing Maloney and Ward 1973; Aertsens, Mondelaers, Verbeke, Buysse, & Van Huylenbroeck, 2011). Chan & Lau

(2000) stated that Hines et al. (1987) found in its meta-analysis that the correlation between attitude and behavior is lower when attitude is used as a general environmental attitude rather than if attitude is operationalized as a specific environmental attitude.

According to the TRA, a specific behavior performance's depends to the intention to perform the behavior (Gill, L.A. & J.R., 1986). In other words, an individual will first consider the implications of its action which lead to intentions, before engaging them into behavior (Bang, Ellinger, Hadjimarcou, & Traichal, 2000; Gill, L.A. & J.R., 1986). Follows & Jobber (2000) reported that low correlation between attitude and behavior can be explained by the absence of intention in the model. Indeed, the TRA claims that attitude leads to intention. Moreover, Gill, L.A. & J.R. (1986) reported that whenever attitudinal and behavioral measures matched up it led to a strong relationship between both constructs. Rahbar & Abdul Wahid (2010) also proved that the most important predictor of green products purchase decision is a positive attitude toward the environment.

3 Methodology and Material

The present study is based on conclusive research design. It is descriptive while using the snowball online survey method. The data gathered from 183 valid questionnaires filled by 63 per cent of female respondents and 37 per cent male, have been analyzed with SPSS v.19 software. Validity and reliability as well as normality tests were conducted prior to analyses through correlation, regression and bias tests.

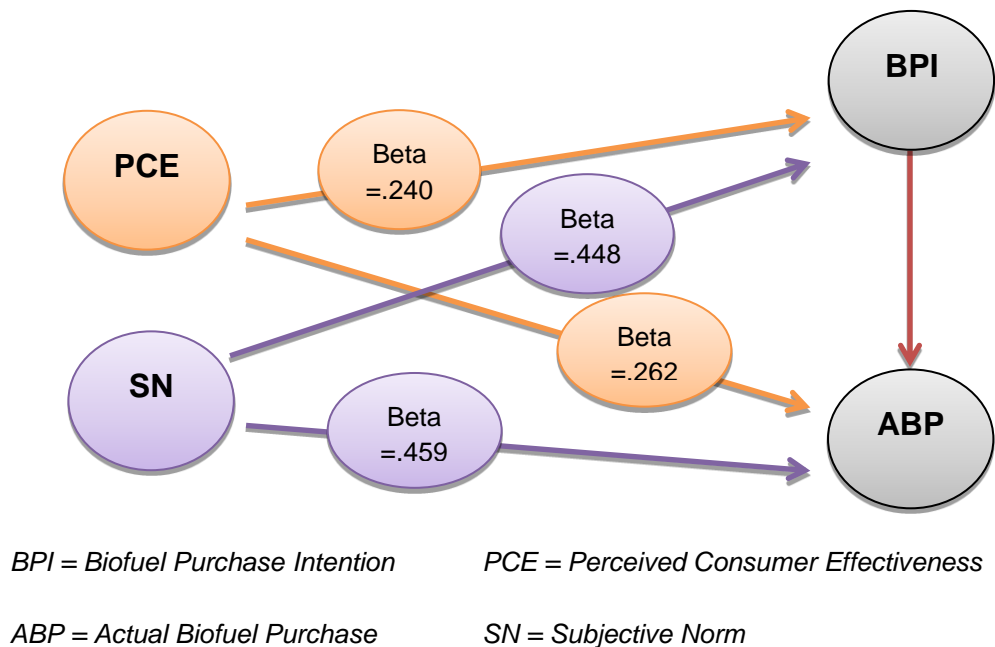
The constructs reliability tests' results are presented hereunder:

Table 2: Constructs reliability

Constructs	Valid cases (N)	Cronbach's Alpha	Number of items	Reliability of scale
Environmental Concern	183	.693	5	Fairly Good
Environmental Knowledge	183	.011	7	Very Weak
Perceived Consumer Effectiveness	183	.659	4	Fairly Good
Subjective Norm	183	.902	2	Very Good
Biofuel Purchase Intention	183	.946	4	Very Good
Actual Biofuel Purchase	183	.910	2	Very Good

3 Findings

Figure 1: Final theoretical model (after two modifications)



Regression test show that SN and PCE are the best predictors of our two dependent constructs BPI and ABP. Furthermore, findings indicate a positive and weak relationship of EC and BPI and ABP. Thus, EC cannot be considered as a strong predictor of BPI and ABP.

There is no relationship between Environmental Knowledge and Biofuel Purchase Intention and there is no relationship between Environmental Knowledge and Actual Biofuel Purchase. Environmental Concern has a positive relationship with Biofuel Purchase Intention as well as with Actual Biofuel Purchase.

Conclusion

Findings of this study highlight the fact that influence of environmental knowledge on actual environmentally friendly behavior is still in controversy. They show as well that respondents have demonstrated a weak relationship between knowledge and biofuel purchase intention and actual biofuel purchase. These results therefore refute Junaedi (2007) and Haron, Paim, & Yahaya (2005) findings that knowledge about environmental issues correlate significantly with the actual environmentally friendly consumer behavior.

This study confirms findings of Maloney and Ward (1973) cited by Junaedy (2007), i.e. there is no relationship between ecological knowledge and ecological behavior. Fraj-Andrés & Martinez-Salinas (2007) also found that environmental knowledge is not an important determinant of environmental friendly behavior. Tilikidou (2007), cited by Chan R. (2001) also reported that knowledge as an important predictor to purchase behavior is still debatable.

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