International Journal of Business and Social Research
Volume 05, Issue 05, 2015

Surveying Data on Consumer Green Purchasing Intention: A Case in New Zealand

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ABSTRACT

Many people have expressed their environmental concerns, and agreed that immediate actions should be taken for the environment. However, only few of them would always make their purchasing decision based on their environmental concerns. Grounded in the theory of Planned Behavior, the aim of this research was to examine the discrepancy between New Zealand consumers' environmental concerns and intentions to purchase energy-saving light bulbs. The study employed a cross-sectional consumer survey (between late 2011 to early 2012) for data collection (N=313), and the structural equation modelling for model testing. Further, the study also took precautions during the questionnaire design stage to minimize potential common method bias, and examined the common method variance in the data before testing the model. All indicators in this research were reflective to their representing constructs. Results of the analysis confirmed that consumers' attitudinal affections and beliefs towards the purchasing behavior, self-identity, and past purchasing behavior had positive influence on their purchasing intentions.

Keywords: Common method variance, green marketing, marketing research.
Available Online: 5th May, 2015.

1.0 INTRODUCTION

Rachel Carson (1999) predicted a future in her book *Silent Spring* in 1962, based on her observation on the environmental deterioration in her time. The predicted future would have no bees humming nor birds singing in the spring time. This possible but unpleasant future raised people's awareness of the influence that human behaviour has on the natural environment (Bekoff & Nystrom, 2004). Various environmental movements have emerged since then, aiming to save the environment from degradation. Entrepreneurs with strong environmental concerns started their business based on environmentally conscious principles (Quarter, 2000); and consumers became aware of their power in influencing business's environmental policy (Crane, 2000). Scholars in the green marketing field predicted that green business

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would be prosperous after the year 2000, based on the observation of which more business had reacted to consumers' environmental concerns (Menon & Menon, 1997; Peattie & Crane, 2005).

Peattie & Crane (2005) suggested that greater numbers of consumers are now expressing concerns regarding the environment. Their suggestion could also be observed in New Zealand. Most New Zealanders were proud of the country's clean and green image, and were willing to maintain its 100% Pure New Zealand impression (Lawton & Lawton, 2003). These mentalities were reflected in Johnson, Fryer and Raggett's report (2008) to the Ministry for the Environment, New Zealand. In their report, Johnson and colleagues found that almost every New Zealander agreed that looking after the environment is everyone's responsibility, and half of them considered that urgent actions were needed for protecting the environment. However, only 3% of their survey respondents would always take their environmental concerns into account when making purchasing decision.

Human behaviour is complex. Sometimes, it can be an automatic response; but other times, it can be an expression of complex internal beliefs. It is argued that most human behaviour, including consumer behaviour, is performed under an individual's control and that all behaviour is an attempt to achieve the individual's goal (Ajzen, 1985; Cialdini & Trost, 1998). Many factors can influence a consumer's buying decision, such as what specific product they want to buy, where they shop, how much they can afford to pay for the product, how much time is available for shopping, how convenient it is to make the purchase, etc. (Solomon et al., 2009). These factors can be both external (e.g. product availability in the market) and psychological (e.g. personal preference towards a specific product). This research focused on the psychological factors affecting people's purchasing decision, attempting to understand what motivate consumers' purchase green products, while controlling the external factors by conducting the study in a single market, i.e. New Zealand.

The main research question of this study is: What factors would make consumers take their environmental concerns into account when making purchasing decisions? More specifically, what are the factors that influence consumers in New Zealand to buy environmentally friendly products?

To examine the gap between consumers' environmental concerns and their purchasing intentions, this study employed two main investigations. The first was to identify the factors through reviewing relevant literature, and to sketch a theoretical model for illustrating the hypothesised relationships between the factors. The second was an empirical consumer survey, which was constructed based on the reviewed literature, to examine the proposed relationships. The valid samples size for data analysis was 313. This article would not only describe how the proposed model was developed from relevant literature and tested via the structural equation modelling; but most importantly, it also addresses the issues relating to potential common method bias which could mislead the results of model testing. According to the data, this research found that New Zealand consumers' intentions to purchase green products (i.e. energy-saving light bulbs in this case) were influenced by their attitudinal affections and beliefs, self-identity, and past behaviour. The main practical contribution of this article is in providing a direction on how to enhance consumers' intention to purchase green products.

The next section focuses on the literature relating to the factors that influence consumers' decision making, which will lead to the hypotheses and the proposed model of this study. The Methodology section addresses issues regarding survey design, common method variance, instrumentation, and data analysis strategies. The Findings section illustrates the results, and provides relevant discussion. The Conclusion and Policy Implication section will conclude the article with implications for practice, limitations and future direction.

2.0 LITERATURE REVIEW

There are two main schools of thoughts regarding what governs behaviour: behaviourism and cognitivism (McGarty & Haslam, 1997; White, 1982). Behaviourists believe that external stimuli condition behaviour, but this perspective cannot explain how consumers make purchasing decisions on new

products when the original external settings (e.g. of the shopping environment) remain the same. Cognitivists believe that consumers make purchasing decisions based on extensive internal considerations and evaluations; however, not all decisions are made after extensive cognitive processing. Hence, assessment of the influences on consumers' purchasing decisions should address both external and internal aspects.

The Elaboration Likelihood Model provides a comprehensive model to illustrate the way people process information when making decisions and interact with the external environment. Attitudinal change is brought about through internal information processing; that is, assessing the information received from the external environment. The response can be to maintain (or reinforce) the original attitude or to change attitude. Any attitudinal change can be either short term (if information was processed through the peripheral route) or long term (if the information was processed through the central route). The Elaboration Likelihood Model (Petty & Cacioppo, 1986) provides a framework to explain the interactions between individuals and their external environment, leading to changes (or no change) in attitude. On the other hand, the literature suggests that attitude may not be the only cognitive variable that influences behaviour. Other factors have been found and confirmed to influence attitudes and behaviour, some processed through the peripheral route, also need further investigation and explanation.

The Theory of Planned Behaviour is an over-arching theory to understand decision making and consumer behaviour from a cognitive perspective. The theory incorporates behavioural factors from various aspects (e.g. attitudinal, normative and perceived controllability) and suggests a way to integrate the factors into a conceptual model with many practical applications. The theory suggests that behaviour is an explicit expression of an individual's intentions. Intentions to do something are influenced by relevant attitude, subjective norm (i.e. injunctive norm, or the perceived expectations of others) and perceived behavioural control. The Theory of Planned Behaviour suggests that behaviour can be predictable from the relevant behavioural intention if the behaviour is under an individual's volitional control. In theory, there are three antecedents of intention: attitude towards the behaviour, subjective norm and perceived behavioural control; they form/predict behavioural intention collectively. Although not every empirical study supported every proposed construct in the Theory of Planned Behaviour, the theory has significant theoretical values (as summarised above). Sutton (1998) states that expecting a model to explain 100% of variances in the real world is not realistic. In practice, an effect size equivalent to explain 10% of variance can be meaningful. According to Sutton's meta-analysis, the Theory of Planned Behaviour could explain up to 38% of the variances observed in behaviour, and up to 50% in intention, on average. Another meta analytic review, by Armitage and Conner (2001), suggested that the Theory of Planned Behaviour explained 27% of variances in behaviour, and 39% in intention, on average, supporting the efficacy of the theory.

Other variables were also found to be influential when incorporated into the original model of the TPB, and applied to study pro-environment behaviour. The descriptive norm (i.e. the perception of the behaviour most people perform in a given situation) can be an effective peripheral cue to influence consumers' purchasing decisions. Self-identity and past behaviour also help decision-making speed. Although these three variables were not included in Ajzen's original model (1991), several studies have integrated the variables into the Theory of Planned Behaviour and found supporting evidence.

2.01 PROPOSED THEORETICAL MODEL

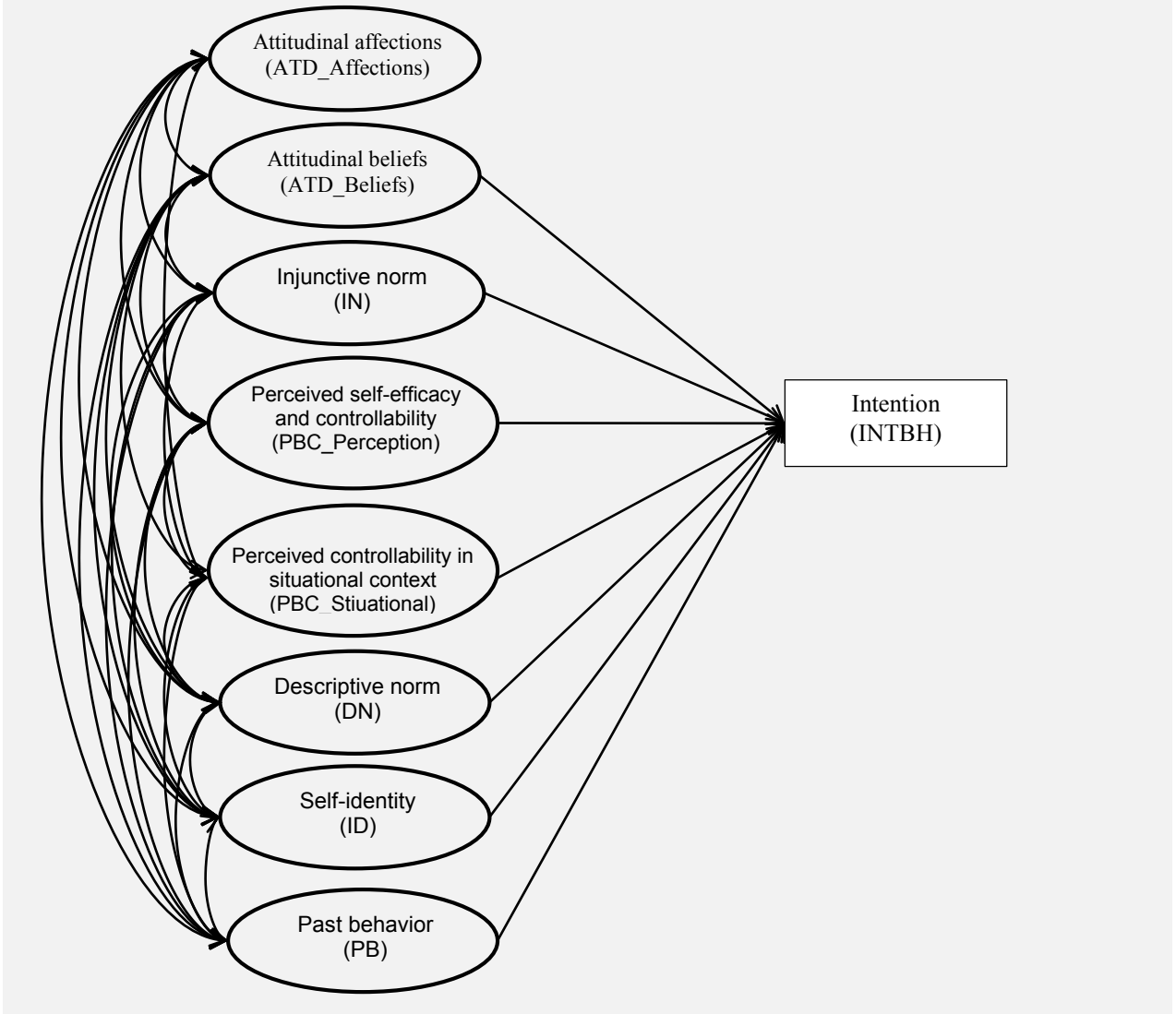
This study adopts the Theory of Planned Behaviour (proposed by Ajzen) as the theoretical foundation and incorporates descriptive norm (i.e. the social norm), self-identity and past behaviour to examine New Zealand consumers' purchase intentions and behaviour of environment-friendly product.

The attitude construct in this study adopts the definition suggested by Ajzen (1991) and Petty et al. (Cacioppo, Harkins, & Petty, 1981; Petty, Ostrom, & Brock, 1981). This conceptual construct is defined as consumers' affective predisposition towards environmentally friendly purchasing behaviour. Consumers make these decisions based on related behavioural beliefs about the target action. It is hypothesised that

both attitudinal affections and beliefs would influence consumers' purchasing intentions; that is, consumers will have stronger intentions to purchase environment-friendly products if their attitudinal affections and beliefs towards the purchasing behaviour are strong. (Hypotheses 1 and 2).

Both injunctive (i.e. what is expected by others) and descriptive (i.e. what is commonly done by the majority) norms are types of social norms; they provide the explicit and implicit rules and standards of a group that guide and constrain social behaviour without the force of laws (Cialdini & Trost, 1998). These two types of norms have different influences on behaviour (Ajzen, 2006). Further, willingness of following the norms can also influence decision making. Therefore, the normative influences in this study were measured as: perceived expectations, willingness to follow the expectations, perceived behaviour of the majority, and willingness to fit into the majority, in the survey. Then, two normative indices (i.e. injunctive and descriptive norms) would be created for model testing; hypothetically, these two indices have their own and positive influences on intention (Hypotheses 3 and 4).

Figure 1: Proposed theoretical model



Perceived behavioural control in the Theory of Planned Behaviour refers to the perceived self ability to carry out the behaviour, i.e. perceived self-efficacy and controllability (Ajzen, 2001, 2002). People who consider they are able to carry out the target behaviour, in theory, will have stronger intention to act. Carrington, Neville and Whitwell (2010) suggested that situational context (i.e. settings in the shopping environment) could act to block or facilitate the translation of purchasing intention into behaviour. For example, consumers may (or may not) be able to afford a specific product normally; but one day they

find that they run out of budget of the day (or the product is on sale), such situaional context could either block or enhance their perceived ability of purchasing the product, which could then influence their purchasing intention. Hence, this study investigate the influences of perceived behavioural control on intention in two key domains: (1) perceived self-efficacy and controllability, and (2) situational context; and hypothesised that the two factors will have positive influence on consumers' green purchasing intention (Hypotheses 5 and 6).

Self-identity refers to the 'me-identification', which includes the meanings, expectations, and activities related to that identity (Rise, Sheeran, & Hukkelberg, 2010). In theory, individuals wil have a stronger intention to buy environmentally friendly products when they identify themselves as a buyer of the products, as hypothesised in this study (Hypothesis 7).

Past behaviour in this study refers to the behaviour individuals have conducted in the past, i.e. their past purchasing behaviour. This factor is presumed to influence consumers' green purchasing intention (Foxall, 1997). People will have a stronger intention to buy environmentally friendly products, if they purhcased such products before (Hypothesis 8).

Figure 1 illustrates the proposed model to examine New Zealand consumers' intention to purchase environmentally friendly products. Next section focuses on the methods used for examine the model proposed in this study.

3.0 METHODOLOGY

3.01 SURVEY RESPONDENTS AND DESIGN

The research was cross-sectional online survey, launched in December 2011 to February 2012, and generated 313 usable data (132 females, 167 males, and 14 did not answer the gender question). The age range of the respondents was from 16 years old to over 65. The green product for this survey was energy-saving light bulbs. Structural Equation modelling was method for examining the proposed model.

3.2 COMMON METHOD VARIANCE

Using a web-based survey gives rise to potential bias and threats. According to Sax, Gilmartin and Bryant (2003), people may (1) treat such survey emails as junk mail, (2) be concerned about their privacy and confidentiality (especially when they know there will be a follow-up questionnaire), (3) not check their email often, (4) not have access to the internet, and/or (5) drop out from the survey due to the survey length. In other words, data collected under the conditions mentioned by Sax et al. may be either invalid for data analysis due to the completion rate is low, or inaccurate in reflecting the respondents' thoughts and feelings.

Inevitably, every measuring instrument used for data collection will not only obtains the construct's variance but also error variance due to the adopted measuring method(s) (Baumgartner & Weijters, 2012; MacKenzie & Podsakoff, 2012; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In other words, data collected will contain not only features of the constructs as intended, but also variances from the measuring instruments, which do not represent the constructs. The latter is called 'common method variance' (CMV), and may cause bias(es) in data analyses and interpretations. The effects of CMV can be on the items (i.e. reliability and/or validity of the measures in representing the constructs) and/or on co-variation between constructs. Hence, it is necessary to address potential problems to minimise possible contaminations of the data.

Measuring methods, in this context, include both the instruments adopted for data collection and data analysis strategies (MacKenzie & Podsakoff, 2012; Podsakoff et al, 2003). Design of the instrument is relatively more important than the data analysis approach, as the instrument determines the quality of

the data, i.e. capabilities of the data in representing the constructs of interest (Baumgartner & Weijters, 2012).

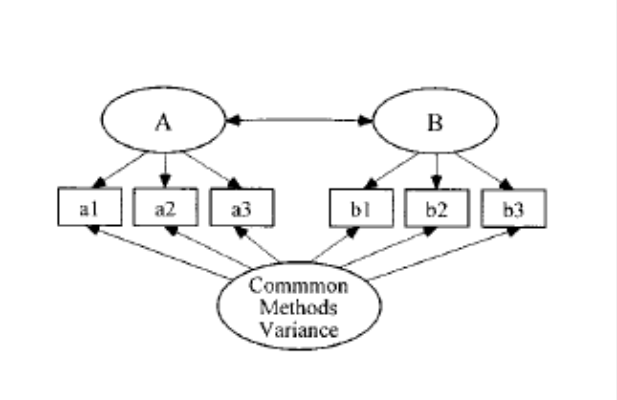
There are various remedies for minimising potential common method bias. Podsakoff et al, (2003, pp. 886-887) suggest researchers should (1) avoid collecting measures of predictor and criterion variables from the same sources; (2) provide temporal separation of measurement; (3) protect respondents' anonymity and assure the respondents that there is no right or wrong answer (to reduce evaluation apprehension); (4) counterbalance the question order (to minimise priming effects); and (5) improve scale items (to enhance clarity and comprehension of question items).

Conway and Lance's view (2010) was also in line with Podsakoff et al. (2003), but argued that the data collected from self-reported surveys are appropriate. After reviewing published works (e.g. Chan 2003, and Skinner, 1957, as cited in Conway & Lance's review; see Conway and Lance's view (2010) for detail), they concluded that self-reported surveys could also provide accurate data but constructing a well-designed questionnaire to reduce CMV is necessary. Baumgartner & Weijters, (2012) suggested that adopting items from prior research and pre-testing survey can be positive approaches to deal with CMV.

The current study employed a cross-sectional and self-administered online quantitative survey for data collection, so good questionnaire design was crucial, as discussed. In the survey design stage, the researchers took the precautions, as suggested by Podsakoff et al. (2003) and Baumgartner & Weijters, (2012), to minimise measurement errors. Most of the items were adopted from prior research and items for counterbalance were included. Before launching the survey, the questionnaire was examined by the experts, and followed by two pre-tests. These two approaches were to ensure that the questions were comprehensible to respondents and the survey was not too lengthy.

In spite of precautions taken during the questionnaire design stages, CMV is still possible and possibly inevitable (Campbell & Fiske, 1959; MacKenzie & Podsakoff, 2012). Nevertheless, Podsakoff et al. (2003) argued that if CMV is not large enough to bias data analysis, then the variance would not be a detrimental problem during data analysis. Podsakoff et al. (2003) suggested the following steps for examining whether or not the CMV would bias the results. Generate an original set of factor loading estimates based on the data collected from the questionnaire (as in Figure 2 but without the CMV variable). Add CMV as a latent factor into the measurement model (as in Figure 2) to reflect potential method related variances in the indicators, and generate a new set of factor loading estimates. Then, compare this new set of factor loadings (i.e. with the presence of the CMV latent factor) with the factor loadings of the original set (i.e. without the CMV latent factor). If the two sets are significantly different, it implies that CMV could have significant influence on the indicators and may lead to biased analyses. If the two sets are not significantly different, then it is likely that the existence of CMV may not bias subsequent analyses and results. After dealing with the CMV issues, the proposed conceptual model can be examined.

Figure 2: Example Example of the *controlling for the effects of an unmeasured latent method factor* technique (Podsakoff et al. 2003, p. 891)



3.03 INSTRUMENTATION: QUESTIONNAIRE

Most items in the questionnaire were measured on a seven-point Likert scale (1=strongly disagree to 7=strongly agree), except the five items for assessing the perceived majority construct. This study measured the constructs through respondents' perceptions: perceptions of their attitudes, intentions, perceived expectations, perceived purchasing behaviour of the majority, etc. These perceptions, in a way, are the manifestations of the to-be-measured constructs, thus more in line with the definition of a reflective measurement model (Bollen & Hoyle, 2012; Fornell & Bookstein, 1982; Jarvis, MacKenzie, & Podsakoff, 2003).

There were nine items collecting data for the intention construct (INT, α=.947). Some items measured the intention consturct by asking resondents if they intend to or will buy (Ajzen, 2006; Dodds, Monroe, & Grewal, 1991; Smith et al., 2008), e.g. 'The likelihood that I will buy energy-saving light bulbs is high' and 'In future, when I buy light bulbs, I will look at product information to see if it saves energy' etc. Some items examined the respondents' purchasing intentions from their motives, i.e. to protect the environment or reduce electricity bills (Ajzen, 2006; Chan & Lau, 2000; EECA 2012), e.g. 'I intend to buy energy-saving light bulbs because they are friendly for the environment' and 'In future, I will buy energy-saving light bulbs to reduce my electricity bills' etc.

There were four items for the attitudinal affections construct (ATD_Affections, α=.902), using suggested adjectives to capture respondents' emotional attitude towards the purchasing behaviour (Ajzen, 1991, 2006). The measure started with a leading statement, 'For me, choosing energy-saving light bulbs would be ___'; and the predefined adjectives are 'pleasant', 'favourable', 'a positive thing to do', and 'a wise decision'. Eight indicators in the attitudinal beliefs construct (ATD_Beliefs, α=.834) were adopted from research that explored consumer beliefs and related attitudes (Antil, 1984; Whitmarsh & O'Neill, 2010), 'Consumers should be made to pay higher prices for light bulbs that consume more energy', 'I trust energy-saving claims made by manufacturers', and 'The higher cost of energy-saving light bulbs encourages people to carry on buying non energy-saving ones' etc.

Four items in the perceived expectations construct (IN_PerceiveInjun, α=.915) were adopted from Smith and colleagues' consumer behaviour research (2008), e.g. 'my family thinks I should purchase energy-saving light bulbs'. Another four items in the willingness to follow perceived expectations construct (IN_InfluentialOthers, α=.899) were adopted from prior research (Bearden, Netemeyer, & Teel, 1989; Whitmarsh & O'Neill, 2010), e.g. 'If other people can see me using a product, I often purchase the brand they expect me to buy'.

Four items were adopted from prior studies to assess people's perceived self-efficacy and controllability (PBC_Perception, α=.706) (Abrahamse & Steg, 2011; Carrington et al., 2010; Cleveland, Kalamas, & Laroche, 2005; Smith et al., 2008), e.g. 'It is easy for me to find energy-saving light bulbs whenever I need to buy them', and 'Energy-saving light bulbs are affordable for me in terms of my purchasing budget' etc. Five items used for assessing the influence from the situational context (i.e. the PBC_Situational construct, α=.776) were constructed according to Carrington and colleagues' suggestion, which started with a statement: 'While purchasing light bulbs, ___ (the factors below) usually affect my purchasing decision' and followed by five predefined options (e.g. 'affordability' and 'availability in store' etc.).

There were five items measuring the percieved majority construct (DN_PerceiveMajor, α=.897), constructed in accordance with the concept illustrate by Cialdini and colleagues (1990). There was a statement in the beginning asking the respondents to recall their perceptions, 'Thinking about the following groups, I assume that about __% of them generally purchase energy-saving light bulbs', and followed by the five predefined options (e.g. 'my neighbours', 'my family members', and 'other shoppers' etc.). These five items were measured on a sliding scale from 0% to 100%. Three items in the tendency to fit in with the perceived majority construct (DN_FitInMajor, α=.711) were adopted from Lennox and Wolfe's study (1984), e.g. 'When I am uncertain which light bulb is better in a store, I look to other

people's product choice for clues'. These three items were measured on a seven-point Likert scale from 1=strongly disagree to 7=strongly agree.

There were six items in the self-identity construct (ID, the α of the six items was .892), adopted from prior research (Bearden, Netemeyer, & Haws, 2011; Smith et al., 2007; Terry, Hogg, & White, 1999). For example, 'I consider myself as an energy saver', 'I see myself as a typical buyer of energy-saving light bulbs', and 'It is important to me that the products I use do not harm the environment' etc.

Three items adopted from prior research for measuring the past behaviour construct (PB, α=.966) (Gardner & Abraham, 2010; Norman, 2011; Smith et al., 2008). They were: 'When I last purchase light bulbs, I deliberately chose one with energy-saving claims', 'During the past 12 months, I generally purchased energy-saving light bulbs, whenever there was this option', and 'During the past 12 months, choosing energy-saving light bulbs is something I do automatically'.

3.04 DATA ANALYSIS STRATEGIES

Data analysis strategies were taken in accordance with the suggestions from Byrne (2010), Kline (2011), and Tabachnick and Fidell (2013). Preliminary data analyses were to identify and resolve issues relating to missing data and data's normality. Next step was to examine the relationships between the variables and their related underlying concepts, and confirm the items' validity in measuring their respective constructs, i.e. the reliability. The next inspection focused on the relationships among the constructs to assess the discriminant validity of the examined variables, and confirmed that the constructs were distinct from each other and the indicators for measuring their representing constructs. The results of the examination for common method variance suggested that the difference between the two sets of factor loading estimates was not statistically significant. In other words, the data were ready for the final step, which was the model testing (i.e. testing hypotheses). Table 1 lists the indices used in this study to inspect the model's fitness.

Table 1: Indices of inspecting model fitness

Index	The desired results	Sources
Chi-square (CMIN), *df* and its *p*-value	A smaller chi-square value with a p-value greater than .05; or the CMIN/DF is less than 3	Byrne (2010)
The root mean square error of approximation (RMSEA) with PCLOSE	RMSEA < .06 indicates good model fit. RMSEA =.08 ~ .10 indicates mediocre fit, PCLOSE > .05	Byrne (2010) Hu and Bentler (1999)
The standardised root mean square residual (SRMR)	A SRMR value of less than .08	Hu and Bentler (1999)
The Tucker-Lewis index (TLI)	A value greater than .95	Byrne (2010)
The comparative fit index (CFI)	A value greater than .95	Byrne (2010)

4.0 FINDINGS

The examination of the model (as illustrated in Figure 3) suggests that the model fits the data well and the discrepancy between the proposed model and the data was acceptable.

The *p* value for the model's chi-square was less than .001 ($x^2_{(174)}$ = 396.329, CMIN/DF=2.278). The CMIN/DF value suggested that the discrepancy between the model and the data was acceptable (the ideal value is less than 5, as illustrated in Table 1); other fit indices indicated that the model was a marginal fit for the data. The SRMR value of the model was well below the cut-off point of .08 and the value was .0409. The model's CFI suggested a good model fit (.961, which met the cut-off point of ≥.95), while its TLI value was just equal to .95 (the ideal is ≥.95, and the model's TLI=.949). The model's RMSEA (.064; a RMSEA ranging

from .060~.100 is considered a fair fit) and PCLOSE (.003, which indicated the significance level of the RMSEA) indicated that the model in **Error! Reference source not found.** was a fair fit for the data, at the significance level of .001.

According to the Figure 3 and Table 2, the proposed model was able to explain about 90% of variance in the *intention* construct (INTBH). Although every proposed antecedent of *intention* (i.e. INTBH) influences *intention*, only the effect from the *attitudinal affections* (ATD_Affections), *attitudinal beliefs* (ATD_Beliefs), *self-identity*, and *past behaviour* are statistically significant. According to the estimates, the effects from these constructs on *intention* are positive. In other words, people who have positive attitudinal affections and beliefs, identify themselves as pro-environmental, and who have purchased energy-saving light bulbs before are more likely to have a positive intention to purchase the bulbs. The normative influences (i.e. the influences from injunctive and descriptive norms), perceived controllability (i.e. the perceived self-efficacy and the situational influence on the perception of the controllability) were not found to have statistically significant influence on *intention*. Table 3 illustrates the correlations among the all independent constructs.

According to the statistical results, this study found empirical support to attitudinal affections, attitudinal beliefs, self-identity, and past behaviour influencing intention respectively. That is, consumers' intention to purchase energy-saving light bulbs was influenced by their attitudinal affections and beliefs, self-identification(s), and prior purchasing experience(s)

Figure 3: Proposed model (standardised regression weights)

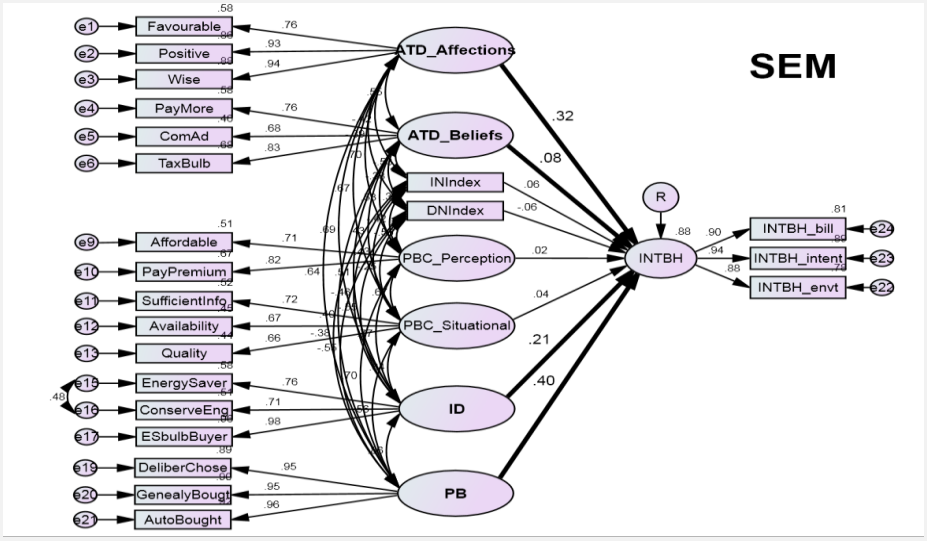


Table 2: Structural model parameter estimates

Construct		Construct	Regression	Standardised Regression	*p* value
INTBH	<---	ATD_Affections	.392	.315	<.001*
INTBH	<---	ATD_Beliefs	.093	.084	.047*
INTBH	<---	PBC_Situational	.062	.042	.469
INTBH	<---	ID	.178	.207	.005*
INTBH	<---	PB	.285	.401	<.001*
INTBH	<---	PBC_Perception	.019	.017	.814
INTBH	<---	INIndex	0	.055	.104
INTBH	<---	DNIndex	0	-.064	.086

*Statistically significant (p<.05)

Table 3: Correlations between independent constructs

Construct		Construct	Estimate
PBC_Perception	<-->	ATD_Beliefs	0.529
ATD_Affections	<-->	ATD_Beliefs	0.555
PBC_Situational	<-->	ATD_Beliefs	0.429
ID	<-->	ATD_Beliefs	0.511
PB	<-->	ATD_Beliefs	0.399
PBC_Perception	<-->	ATD_Affections	0.704
PBC_Perception	<-->	PBC_Situational	0.671
PBC_Perception	<-->	ID	0.768
PBC_Perception	<-->	PB	0.697
ATD_Affections	<-->	PBC_Situational	0.672
ATD_Affections	<-->	ID	0.693
ATD_Affections	<-->	PB	0.641
PBC_Situational	<-->	ID	0.644
PBC_Situational	<-->	PB	0.56
ID	<-->	PB	0.856
ATD_Beliefs	<-->	DNIndex	-0.332
ATD_Beliefs	<-->	INIndex	-0.531
PBC_Perception	<-->	DNIndex	-0.556
PBC_Perception	<-->	INIndex	-0.421
ATD_Affections	<-->	DNIndex	-0.391
ATD_Affections	<-->	INIndex	-0.424
PBC_Situational	<-->	DNIndex	-0.253
PBC_Situational	<-->	INIndex	-0.426
ID	<-->	DNIndex	-0.55
PB	<-->	DNIndex	-0.553
ID	<-->	INIndex	-0.456
PB	<-->	INIndex	-0.378
INIndex	<-->	DNIndex	0.375

Consumer behaviour is complex and often considered a result of complex cognitive processing (Lee et al., 2014; Levine & Craik, 2012; Parker, Wilding, & Bussey, 2002). The relationship between attitude and behaviour has been discussed extensively in the literature (Briñol & Petty, 2012). In general, behaviour is expected to be in line with attitudes. However, what people do does not necessarily match what they prefer to do in most situations. Therefore, Fishbein and Ajzen proposed the Theory of Planned Behaviour to model the indirect influences of attitude on behaviour (Ajzen, 1985, 1991, 2012; Fishbein & Ajzen, 1975). They argued that human behaviour is not only influenced by attitude, but by also perceived social influences and perceived controllability. Furthermore, intention mediates the influences of these three variables on behaviour.

The study adopted Fishbein and Ajzen's theory, and incorporated descriptive norm (Cialdini et al., 1990), self-identity (Nigbur et al., 2010, Stryker and Burke, 2000), and past behaviour (Foxall, 1997) into an extended model to explain consumers decision on buying energy-saving light bulbs. The proposed model fits the data well, supporting some, but not all hypotheses. Attitudinal influences (i.e. attitudinal affections and attitudinal beliefs), self-identity, and past behaviour were confirmed statistically to have influences on New Zealand consumers' intention to purchase energy-saving light bulbs. Study findings confirm most of the predictive relationships specified in the modified Theory of Planned Behaviour, but the results also suggest reconsideration of the operationalization of attitude, injunctive norm, perceived behavioural control, and intention.

This study has contributed to the body of knowledge regarding consumers' green purchasing behaviour by providing empirical support regarding:

- the influence of attitudinal affections, attitudinal beliefs, self-identity and past behaviour on intention (i.e. Hypotheses 1, 2, 7 and 8 were supported); and
- the effects of attitudinal affections and attitudinal beliefs on purchasing intention are different.

Additional evidence was also found that:

- the respondents' attitudinal affections were expressed as believing that the purchasing action was favourable, positive and wise;
- the respondents' attitudinal beliefs were reflected in their agreement with paying more for non-energy-saving light bulbs, commercial advertising being made to mention the disadvantages of non-energy-saving light bulbs, and non-energy-saving light bulbs being taxed more;
- the respondents identified themselves as energy savers and buyers of energy-saving light bulbs; and
- the respondents would have deliberately and/or usually purchased energy-saving light bulbs in the past.

5.0 CONCLUSION AND POLICY IMPLICATION

From a practical perspective, the findings of this research have suggested several factors that should be focused on when marketing green products. One avenue of enhancing consumers' intentions is to address attitudinal influences. These include (1) building an emotional connection between consumers and the product by letting them feel that purchasing green products is a favourable, positive and wise decision, and (2) fostering consumers' beliefs relating to such products by increasing taxes and prices of competing products that are harmful to the environment and by advocating to require these harms be mentioned in advertisements. Another possibility is to help consumers create or strengthen their pro-environment identity, by providing a link between green products and consumers' identity. This approach is supported both by the results of this study and by prior literature (Armitage & Conner, 1999; Fielding, McDonald, & Louis, 2008; Nigbur et al., 2010; Smith et al., 2008; Stryker and Burke, 2000).

The present study employed a self-reported online questionnaire to collect data from New Zealand consumers. The nature of the survey limited the generalisability of the results. To address the limitations of a cross-sectional survey study, further research, such as using experiment and/or longitudinal designs, would be valuable and necessary to understand the phenomena (Andorfer & Liebe, 2012). Furthermore, using different methods for data collection could also help minimise the potential effects of common method variance.

The unstable relationships between intention and its antecedents, as specified in the Theory of Planned Behaviour, could imply that formation of intention is context dependent, as signalled in the UK and Greek studies (Kalafatis, Pollard, East, & Tsogas, 1999). Thus, replicating the study in a different context (e.g. in another country) or using other green products (e.g. hybrid cars) may be worthwhile (Haig, 2013).

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APPENDIX (see the additional internet materials in the website)