ECONOMICS & Sociology

Carlos Peixeira Marques, Danny Almeida, A Path Model of Attitudinal Antecedents of Green Purchase Behaviour, *Economics & Sociology*, Vol. 6, No 2, 2013, pp. 135-144. **DOI: 10.14254/2071-789X.2013/6-2/12**

A PATH MODEL OF ATTITUDINAL ANTECEDENTS OF GREEN PURCHASE BEHAVIOUR

Prof. Carlos Peixeira Marques
PhD in Management
Department of Economics, Sociology and Management
University of Tras os Montes and Alto Douro, Portugal
E-mail: cmarques@utad.pt

Danny Almeida
MSc in Management
University of Trasos Montes and Alto Douro, Portugal
E-mail: dypa@sapo.pt

Received: March, 2013
1st Revision: June, 2013
Accepted: September, 2013

DOI: 10.14254/2071-789X.2013/6-2/12

ABSTRACT. The focus of this paper is propose and test a model of the effects of specific attitudinal constructs on the frequency of green purchase behaviour (GPB). Consumers' confidence, competence, and effectiveness are operationalized by a path model hypothesizing both direct and mediated effects of these antecedents on GPB. The measures are obtained from a survey of a representative sample of 419 undergraduates and analysed in a structural equations model framework. The frequency of green purchase behaviour depends on subjective knowledge of green issues, which is a direct consequence of consumers' beliefs in the effectiveness of green behaviour, and an indirect consequence of consumers' trust on claims made by green advocates. Results confirm the crucial importance of credibility of green marketing and the concomitant need for strategies to overcome consumers' distrust.

JEL Classification: M3

Keywords: Green Marketing, Green consumers, Consumer behaviour, Consumer distrust, Path models.

Introduction

The principles and practices of marketing that may be considered "green" have evolved markedly in the last four decades (Peattie, 2001). Green consumers were firstly defined as those who tend to avoid products and services with significant negative externalities, thus favouring marketing strategies exploring the opportunity to market environmental friendly products at premium prices. However, in order to be sustainable it self, green marketing must not be dependent on normative claims of green consumerism (Moisander, 2007), it must positioning itself so as to be able to deliver consumer value in such forms as safety, efficiency, convenience or symbolic amenity in ways that meet customers' and other stakeholders' expectations (Ottman *et al.*, 2006). Research on consumer behaviour since green marketing principles began to evolve has emphasized the apparent discrepancy between environmental attitudes and behaviours and increased concern by researchers and marketers with this gap, highlighting the fundamental role in increasing the effectiveness of green marketing that is played by green products' credibility or consumer confidence in them (Mohr *et al.*, 1998, Ottman *et al.*, 2006, Peattie, 2001).

Recognition that the existence of environmental concern alone does not explain much of the variability in green purchasing behaviour (GPB) sparked the need for research on the

more specific antecedents of GPB. After some contradictory results on the effects of some antecedents, researchers began to think of consumer confidence and knowledge as the crucial elements impacting on the perceived value of green products and services (Ottman *et al.*, 2006). According to Cronin *et al.* (2011), further research is required on strategies capable of overcoming consumer distrust of green marketing practices and claims; furthermore, significant opportunities now exist to research the impacts on GPB of consumers' increasing environmental competence and their confidence that their decisions will have green effects (i.e. perceived consumer effectiveness, or PCE).

This paper seeks to more fully operationalize the concepts of confidence, competence, and effectiveness, using measures that have already been widely used in research; this is achieved by combining the effects of these antecedents on GPB, employing a path model which hypothesises both direct and mediated effects. The main contribution of this approach is that it permits the explicit identification of the sequential effects of antecedents on GPB, and therefore suggests ways to increase GPB by increasing the levels of the antecedents. The path model will be tested using a cross-sectional analysis of answers provided by a sample of undergraduate students to a questionnaire.

Antecedents of green purchase behaviour

Some demographic variables have been found to favour GPB. The propensity to engage in general or specific GPB increases with education (Brécard *et al.*, 2009, Paço and Raposo, 2010, Straughan and Roberts, 1999, Thompson *et al.*, 2010), decreases with age (Brécard *et al.*, 2009, Gerpott and Mahmudova, 2010, Thompson *et al.*, 2010) and may vary with race or political affiliation (Ellen *et al.*, 1991). However, there is consistent evidence that psychographic measures have higher predictive power of GPB than do demographic factors (Gerpott and Mahmudova, 2010, Roberts, 1996, Straughan and Roberts, 1999, Thompson *et al.*, 2010).

Among psychographic measures, environmental concern was one of the first variables to have been consistently reported as impacting on some forms of GPB (Ellen *et al.*, 1991) and its role was further confirmed in several studies (Ellen, 1994, Kim and Choi, 2005, Mostafa, 2006, Roberts and Bacon, 1997, Straughan and Roberts, 1999), albeit with different degrees of intensity, depending on other variables included in the explaining models. Environmental knowledge has also been a key focus of green consumer research, with many studies proving it to be significantly correlated with GPB (Brécard *et al.*, 2009, d'Astous and Legendre, 2009, Ellen, 1994, Mostafa, 2007, Pieniak *et al.*, 2010, van Kempen *et al.*, 2009). Importantly, subjective or perceived knowledge is generally found to be more correlated to GPB than objective knowledge on environmental issues or products (Ellen, 1994, Mohr *et al.*, 1998, Pieniak *et al.*, 2010).

The successful introduction of PCE into GPB models demonstrated its high degree of predictive power (Ellen *et al.*, 1991, Kim and Choi, 2005, Straughan and Roberts, 1999, Thompson *et al.*, 2010). A further variable – scepticism toward green claims – has also been included in models to increase the explained variance of GPB (Albayrak *et al.*, 2011, Mohr *et al.*, 1998). Some studies include other psychographics, mainly related to values, such as altruism (Straughan and Roberts, 1999), collectivism and long-term orientation (Leonidou *et al.*, 2010), or orientation toward nature (Mostafa, 2007) as more distal antecedents of GPB.

A path model to evaluate the effects of some antecedents of green purchase behaviour

Since previous research (d'Astous and Legendre, 2009, Ellen, 1994, Pieniak *et al.*, 2010) has found a significant direct effect of PK on GPB, it was decided to design a model

(*Figure 1*) explaining the influence of perceived knowledge of environmental matters on the frequency of the perceived GPB. Furthermore, in order to operationalize the concepts of competence, confidence, and effectiveness mentioned in the Introduction, and since PK may be related to particular attitudes and values, we opted to incorporate scepticism toward green claims and PCE into the model. The relationship between these three antecedents of GPB is not well established in the literature. One may argue that scepticism with regard to marketing claims depends on the degree of consumer knowledge on the subject (Mohr *et al.*, 1998), or, contrariwise, that sceptical consumers are less prone to be exposed to and persuaded by green claims (Obermiller and Spangenberg, 1998). The role of PCE appears equally ambivalent: it may be conceptualised as a behavioural control (Vermeir and Verbeke, 2006) mediating between knowledge and behaviour, or it may be viewed as originating in a value system thereby affecting attitudinal antecedents of GPB (Tan, 2011).

We believe, in line with Obermiller and Spangenberg (1998), that specific scepticism toward green claims is conceptually equivalent to general scepticism toward all types of marketing communication, and therefore dependent on general consumer sentiment toward marketing (Mohr *et al.*, 1998). This leads us to propose such scepticism as an antecedent of both PCE and PK. Since PCE itself is also a general trait related in some way to locus of control, it is a plausible antecedent for PK. Consequently, the model to be tested states that:

- Scepticism negatively influences PCE and PK.
- PCE positively influences PK.
- GPB depends directly on PK and indirectly on PCE and on scepticism.

In testing the model of *Figure 1*, particular attention will be given to verifying the extent to which the effects of scepticism and PCE on GPB may be due to the intervening variables, as well as confirming if the effect of scepticism on PK is explained exclusively by the mediation of PCE.

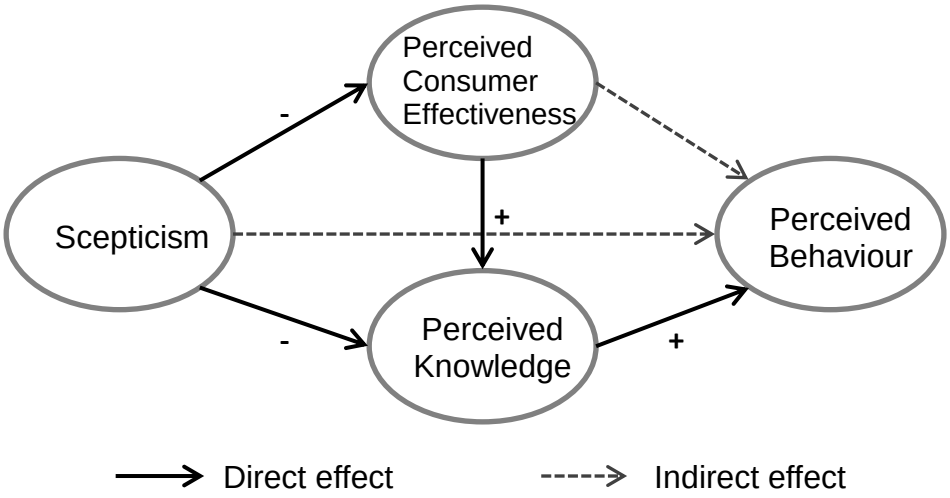

Figure 1. Proposed model

Measures and methods

Since all the latent variables in the proposed path model had already been extensively measured, the items selected for measurement in the study reported on here were taken from the existing literature. Specifically, the items of "scepticism" (4) and PK (6) draw on Mohr *et al.* (1998), while the items of PCE (5) and GPB (5) are taken from Kim and Choi (2005). The measurement instrument was applied online to a cluster sample of undergraduates from a Portuguese University. One class was randomly selected from each of the undergraduate

degrees offered at the University, and an email was sent to each student from the selected class with the invitation to access the web questionnaire. From the 1050 students in the database, a total of 419 valid questionnaires (40%) were collected.

The indicators of the latent variables were measured on a five-point Likert-type symmetric agree-disagree scale, except for GPB, measured on a five-point frequency scale. Agreement and frequency responses may be considered as measures in ordinal categories of latent metric scores of the corresponding item. This being the case, a measurement model of the latent variables may be obtained from a matrix of polychoric correlation coefficients computed from the distributions of the estimated underlying metric items (Drasgow, 1988). The regression coefficients, such as the factor loadings, may be estimated by a least squares method, although an asymptotic covariance matrix obtained from the polychoric coefficients is needed to obtain estimates of standard errors and goodness of fit. It has been shown that these estimates are accurate if the underlying continuous scores are normally distributed (Yang-Wallentin *et al.*, 2010), but they are usually biased when those scores are skewed (Coenders and Saris, 1995). Nonetheless, maximum likelihood (ML) estimation from variance-covariance matrices of Likert-type items offers an acceptable option in confirmatory factor measurement models, particularly in the case of five-point scales (Green *et al.*, 1997, Coenders and Saris, 1995, Revilla and Saris, 2009), and has been adopted here to fit both the measurement and the structural models.

Results

The models were estimated with AMOS 20 software from a valid sample of 397 subjects after list wise deletion of missing observations in any of the 20 measurement items. The model with 20 indicators does not fit the empirical data well (CFI=.881; RMSEA=.065), the lack of fit indicating the presence of some problematic indicators. Although all unstandardized regression weights are significant at the p<0.001 level, *Table 1* identifies several indicators whose values were influenced mainly by measurement error, i.e. were weakly determined by the latent factor, as shown by the low squared standardized regression coefficients (λ^2).

In the absence of any significant regression modification indexes, we opted to remove from the model, one by one, those indicators with lowest λ^2, in order to improve scale validity and reliability (MacKenzie *et al.*, 2011). After removing seven indicators, the measurement model showed a good fit [CFI=.967; RMSEA=.045; p(RMSEA<0,05)=.74]. The removal of those more problematic indicators also lead to a considerable improvement on the average λ^2 (AVE), while producing no significant changes in the construct reliability coefficient (CR) (*Table 1*), here derived from the factor loadings, following Fornell and Larcker (1981):

$$CR = \frac{\left(\sum_{i=1}^{k} \lambda\right)^2}{\left(\sum_{i=1}^{k} \lambda\right)^2 + \sum_{i=1}^{k} 1 - \lambda^2} \qquad (1)$$

Where *k* is the number of items on a particular factor and λ are the *k* standardized regression coefficients (also known as factor loadings) on that factor.

Overall, the λ values found in this study are in line with those reported by scale developers. For instance Kim and Choi (2005) report 0.395 AVE for PCE and 0.478 AVE for GPB. Their ranking of λ values correspond with those presented in *Table 1*. However, while Mohr *et al.* (1998), report a value of 0.495 for the variable "scepticism", as well as λ values for items 3 and 4 well above those of items 1 and 2, they unfortunately do not provide λ

values for PK in their paper. In his research, Mostafa (2007) employed the same scale, but without the 5th item, and reported an AVE value of 0.527. Mostafa also found a weak λ^2 for PK1 (0.23) but opted to keep the indicator, while we decided to remove it from the measurement model. It is worth mentioning that, as a result of our decision, the constructs PCE and "Scepticism" have only two indicators each, which is not an ideal configuration of a measurement model, but is acceptable in the context of a path model with measurement error (Loehlin, 2004). Nevertheless, a word of caution is needed regarding the validity of the measures of PCE and scepticism toward green claims in Portugal, since problems on the reliability of these scales were previously reported in the same country (Paço and Raposo, 2008).

Table 1. Standardized regression weights (λ) and validity statistics

	20 indicators		13 indicators	
Factors	**CR**	**AVE**	**CR**	**AVE**
Scepticism	0.725	0.413	0.770	0.632
PK	0.742	0.328	0.737	0.361
PCE	0.662	0.292	0.667	0.505
GPB	0.864	0.561	0.827	0.546
Indicators	**λ**	**λ^2**	**λ**	**λ^2**
Scep1	0.483	0.233		
Scep2	0.454	0.206		
Scep3	0.748	0.560	0.658	0.433
Scep4	0.807	0.651	0.912	0.832
PCE1	0.370	0.137		
PCE2	0.627	0.393	0.603	0.364
PCE3	0.694	0.482	0.804	0.646
PCE4	0.416	0.173		
PCE5	0.527	0.278		
PK1	0.458	0.210		
PK2	0.589	0.347	0.594	0.353
PK3	0.692	0.479	0.660	0.436
PK4	0.533	0.284	0.582	0.339
PK5	0.518	0.268	0.540	0.292
PK6	0.618	0.382	0.620	0.384
GPB1	0.769	0.591		
GPB2	0.784	0.615	0.764	0.584
GPB3	0.725	0.526	0.756	0.572
GPB4	0.782	0.612	0.768	0.590
GPB5	0.678	0.460	0.663	0.440

λ: standardized regression coefficient; AVE: average variance extracted.
CR: construct reliability computed from Eq. 1

Following Shrout and Bolger's (2002) guidelines to evaluate mediation models, we assessed the direct and indirect effects on the path model through the 90 per cent confidence intervals resulting from 2000 bootstrap samples (*Table 2*). First we considered a baseline model, estimating all the paths leading to GPB. The model has good measures of fit [χ^2/df=1.592; CFI=.976; RMSEA=.039; p(RMSEA<.05)=.899]. However, it can be easily seen in *Table 2* that we cannot reject the hypothesis that the paths from "Scepticism" and PCE to GPB are zero, and the same applies to the path from "scepticism" to PK. With the parameters of these three paths then held at zero, these new three degrees of freedom were

shown to produce less than a one unit increase in the χ^2 discrepancy, thus confirming the superior fit [χ^2/df=1.529; CFI=.977; RMSEA=.037; p(RMSEA<.05)=.939] of the model that considers only the direct effects depicted in *Figure 2*.

Table 2. Bootstrap estimates of standardized path effects

		Bias-corrected 90 % confidence bootstrap estimates					
		All paths			Three-path model		
Path	**Effect**	**Low**	**High**	**Sig.**	**Low**	**High**	**Sig.**
Scep --> PCE	Direct	-0.503	-0.215	0.000	-0.480	-0.211	0.001
PCE --> PK	Direct	0.289	0.585	0.001	0.318	0.568	0.001
PK --> GPB	Direct	0.412	0.652	0.001	0.438	0.621	0.001
Scep --> PK	Direct	-0.125	0.171	0.863			
	Indirect	-0.262	-0.089	0.000	-0.227	-0.095	0.000
Scep --> GPB	Direct	-0.055	0.177	0.422			
	Indirect	-0.165	-0.005	0.083	-0.125	-0.053	0.000
PCE --> GPB	Direct	-0.124	0.160	0.841			
	Indirect	0.152	0.359	0.001	0.169	0.322	0.001

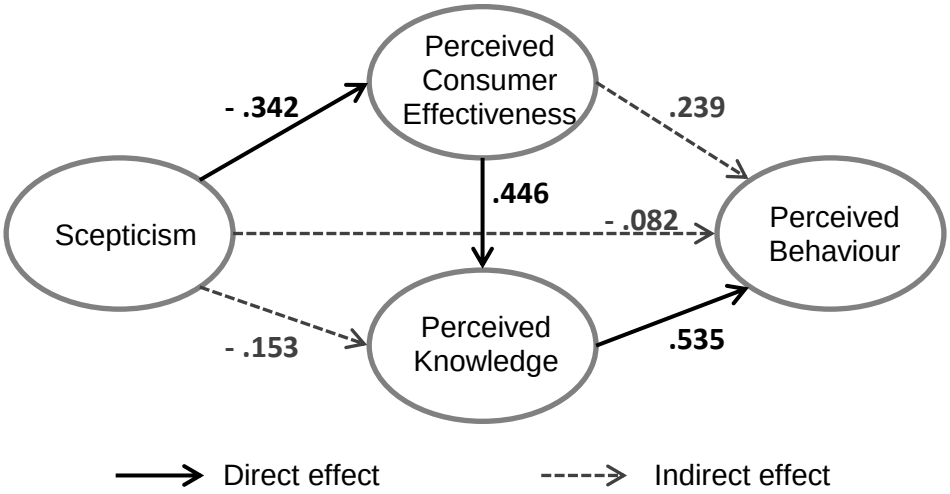

Figure 2. Final model (standardized ML estimates)

From *Figure 2* we may conclude that the variable "perceived knowledge" fully mediates the influence of "scepticism" and PCE on green purchasing behaviour. Furthermore, the relationship between "scepticism" and PK is also fully represented by the mediation of PCE.

Discussion

The mediation effects described in the previous section contribute to the dispute over the relative positions of PK and PCE as antecedents of GPB. In accordance with our expectations (*Figure 1*), the results identify PK as the sole direct antecedent of GPB (*Figure 2*). According to Park and Lessig (1981), perceived knowledge about a product category has an intimate relation with consumer's confidence on the outcomes of the decision process. This idea was further developed by Raju *et al.* (1995), who showed that subjective knowledge is the primary determinant of perceived consumer decision outcomes, suggesting that perceived

knowledge mediates the effects on consumer decisions of their objective knowledge and effective use of the product.

To further understand the effect of PK on GPB, it is important to take into account that the discrepancy between objective and subjective knowledge, and the relative importance of the latter, increase in the case of credence goods (Park *et al.*, 1994). In the field of green marketing, Ellen (1994) suggested that consumers need to have confidence in extrinsic cues (e.g. labelling), if they are to make decisions reflecting GPB, an argument that could help to explain why PK tends to be independent of objective knowledge and to be of greater importance in affecting consumer decisions. In their meta-analysis, Carlson *et al.* (2009) recently attributed Ellen's results to the general tendency for correlations between objective and subjective knowledge to be lower for non-products than products, due to the former's lack of intrinsic attributes, and for societal goods compared to material goods, due to the larger socially-induced bias of PK and to a relatively low variance in the values for objective knowledge.

Having demonstrated the importance of the direct link between PK and GPB, we now focus our attention on the antecedents of PK. Contrary to previous results (Mohr *et al.*, 1998, Mostafa, 2006), we found a significant correlation between "scepticism" and PK, even though the path model proves that the negative effect is fully mediated by PCE (*Figure 2*). The developers of the scepticism scale (Mohr *et al.*, 1998) were surprised by the lack of association with PK and suggested that a non-linear relationship could explain the finding, arguing that lowest levels of scepticism may be observed in consumers with moderate PK. Whilst acknowledging the need to study this kind of relations and possible interaction effects, we suggest there may be some mediators of the indirect effect of "scepticism" on PK. This study identified PCE as a significant mediator of that relationship. The direct effect of PCE on PK was to be expected, because PK has been related to self-confidence regarding consumption issues or situations (Raju *et al.*, 1995) and PCE is itself a measure of confidence or self-evaluation (Berger and Corbin, 1992). Consumers with high PCE not only believe that their personal efforts may have effective green outcomes (Lee and Holden, 1999), but also believe that they are knowledgeable about the issues at stake and about the effects of their GPB.

Conclusions

Unlike the majority of studies, which propose a direct link between perceived effectiveness and perceived behaviour (Ellen *et al.*, 1991), or a moderator role of PCE on the relationship between green attitudes and behaviour (Berger and Corbin, 1992), our study suggests a mediation role of subjective knowledge on green issues. A careful look at *Figure 2* reveals that: (a) the frequency of GPB may be increased if people are more confident in their knowledge of which products and behaviours are green; (b) this confidence may be further increased by the perceived effectiveness of one's green behaviour; and (c) scepticism towards green marketing communication constitutes a barrier to one's belief in the effectiveness of green behaviour.

The main implication of this path for green marketers is that they need to convince consumers of their self-efficacy (Berger and Corbin, 1992). Messages focused on personal responsibility and empowerment should be effective for these purposes. However, since scepticism may undermine PCE, consumers need to trust in commercial, governmental and scientific green claims, something that calls for enhanced social responsibility from these actors (Moisander, 2007). To summarise, the results from this research confirm the crucial importance of credibility of green marketing (Ottman *et al.*, 2006) and the concomitant need for strategies to overcome consumers' distrust (Cronin *et al.*, 2011, Darke and Ritchie, 2007).

One should acknowledge that the conclusions and implications of this study are subject to certain limitations. First, the magnitude of some regression coefficients presented in *Tables 1* and *2* may be biased, due to the sampling procedure. One could expect more variability on the distribution of the observed variables in a national sample of consumers than observed in a convenience sample of undergraduates from a particular University. Second, we cannot ignore that previous research in Portugal (Paço and Raposo, 2008) failed to reproduce valid and reliable measures of PCE and "scepticism" as valid and reliable as those found in the studies from where we took the instrument (Kim and Choi, 2005, Mohr *et al.*, 1998). As an additional precaution, we therefore opted to eliminate three items of the PCE scale so as to increase the validity of the measurement instrument. These results and the low AVE of the PK scale suggest the need to develop scales to measure scepticism, PCE and PK from item-specific response options, instead of the widely-used agree/disagree rating scales (Saris *et al.*, 2010).

References

Albayrak, T., Caber, M., Moutinho, L., Herstein, R. (2011), The influence of skepticism on green purchase behavior, *International Journal of Business & Social Science*, 2, pp. 189-197.

Berger, I. E., Corbin, R. M. (1992), Perceived Consumer Effectiveness and Faith in Others as Moderators of Environmentally Responsible Behaviors, *Journal of Public Policy & Marketing*, 11, pp. 79-89.

Brécard, D., Hlaimi, B., Lucas, S., Perraudeau, Y., Salladarré, F. (2009), Determinants of demand for green products: An application to eco-label demand for fish in Europe, *Ecological Economics*, 69, pp. 115-125.

Carlson, J. P., Vincent, L. H., Hardesty, D. M., Bearden, W. O. (2009), Objective and Subjective Knowledge Relationships: A Quantitative Analysis of Consumer Research Findings, *Journal of Consumer Research*, 35, pp. 864-876.

Coenders, G., Saris, W. E. (1995), Categorization and measurement quality. The choice between Pearson and Polychoric correlations. In: Saris, W.E., Munnich, A. (eds.) *The multitrait-multimethod approach to evaluate measurement instruments*, Budapest: Eotvos University Press, pp. 125-144.

Cronin, J., Smith, J., Gleim, M., Ramirez, E., Martinez, J. (2011), Green marketing strategies: an examination of stakeholders and the opportunities they present, *Journal of the Academy of Marketing Science*, 39, pp. 158-174.

D'astous, A., Legendre, A. (2009), Une étude exploratoire de quelques antécédents de la consommation socialement responsable (CSR), *Revue Française du Marketing*, pp. 39-51.

Darke, P. R., Ritchie, R. J. B. (2007), The Defensive Consumer: Advertising Deception, Defensive Processing, and Distrust, *Journal of Marketing Research*, 44, pp. 114-127.

Drasgow, F. (1988), Polychoric and polyserial correlations. In: Kotz, L., Johnson, N.L. (eds.) *Encyclopedia of statistical sciences*, New York: Wiley, pp. 69-74.

Ellen, P. S. (1994), Do We Know What We Need to Know? Objective and Subjective Knowledge Effects on Pro-Ecological Behaviors, *Journal of Business Research*, 30, pp. 43-52.

Ellen, P. S., Wiener, J. L., Cobb-Walgren, C. (1991), The Role of Perceived Consumer Effectiveness in Motivating Environmentally Conscious Behaviors, *Journal of Public Policy & Marketing*, 10, pp. 102-117.

Fornell, C., Larcker, D. F. (1981), Evaluating Structural Equation Models with Unobservable Variables and Measurement Error, *Journal of Marketing Research*, 18, pp. 39-50.

Gerpott, T. J., Mahmudova, I. (2010), Determinants of price mark-up tolerance for green electricity – lessons for environmental marketing strategies from a study of residential electricity customers in Germany, *Business Strategy & the Environment*, 19, pp. 304-318.

Green, S. B., Akey, T. M., Fleming, K. K., Hershberger, S. L., Marquis, J. G. (1997), Effect of the number of scale points on chi-square fit indices in confirmatory factor analysis, *Structural Equation Modeling*, 4, pp. 108-120.

Kim, Y., Choi, S. M. (2005), Antecedents of green purchase behavior: An examination of collectivism, environmental concern, and PCE. In: Menon, G., Rao, A.R., eds. *Advances in Consumer Research*, Duluth, MN, Association for Consumer Research, pp. 592-599.

Lee, J. A., Holden, S. J. S. (1999), Understanding the Determinants of Environmentally Conscious Behavior, *Psychology & Marketing*, 16, pp. 373-392.

Leonidou, L. C., Leonidou, C. N., Kvasova, O. (2010), Antecedents and outcomes of consumer environmentally friendly attitudes and behaviour, *Journal of Marketing Management*, 26, pp. 1319-1344.

Loehlin, J. C. (2004), *Latent Variable Models: An introduction to factor, path, and structural equation analysis*, Mahwah, Lawrence Erlbaum.

Mackenzie, S. B., Podsakoff, P. M., Podsakoff, N. P. (2011), Construct measurement and validation procedures in MIS and behavioral research: integrating new and existing techniques, *MIS Q.*, 35, pp. 293-334.

Mohr, L. A., Eroglu, D., Ellen, P. S. (1998), The Development and Testing of a Measure of Skepticism Toward Environmental Claims in Marketers' Communications, *Journal of Consumer Affairs*, 32, pp. 30-55.

Moisander, J. (2007), Motivational complexity of green consumerism, *International Journal of Consumer Studies*, 31, pp. 404-409.

Mostafa, M. M. (2006), Antecedents of Egyptian Consumers' Green Purchase Intentions: A Hierarchical Multivariate Regression Model, *Journal of International Consumer Marketing*, 19, pp. 97-126.

Mostafa, M. M. (2007), A hierarchical analysis of the green consciousness of the Egyptian consumer, *Psychology & Marketing*, 24, pp. 445-473.

Obermiller, C., Spangenberg, E. R. (1998), Development of a Scale to Measure Consumer Skepticism Toward Advertising, *Journal of Consumer Psychology*, 7, pp. 159-186.

Ottman, J. A., Stafford, E. R., Hartman, C. L. (2006), Avoiding green marketing myopia, *Environment*, 48, pp. 22-36.

Paço, A., Raposo, M. (2010), Green consumer market segmentation: empirical findings from Portugal, *International Journal of Consumer Studies*, 34, pp. 429-436.

Paço, A. F., Raposo, M. (2008), Determining the characteristics to profile the "green" consumer: an exploratory approach, *International Review on Public and Nonprofit Marketing*, 5, pp. 129-140.

Park, C. W., Lessig, V. P. (1981), Familiarity and Its Impact on Consumer Decision Biases and Heuristics, *Journal of Consumer Research*, 8, pp. 223-230.

Park, C. W., Mothersbaugh, D. L., Feick, L. (1994), Consumer Knowledge Assessment, *Journal of Consumer Research*, 21, pp. 71-82.

Peattie, K. (2001), Towards Sustainability: The Third Age of Green Marketing, *Marketing Review*, 2, pp. 129.

Pieniak, Z., Aertsens, J., Verbeke, W. (2010), Subjective and objective knowledge as determinants of organic vegetables consumption, *Food Quality and Preference*, 21, pp. 581-588.

Raju, P. S., Lonial, S. C., Mangold, W. G. (1995), Differential Effects of Subjective Knowledge, Objective Knowledge, and Usage Experience on Decision Making: An Exploratory Investigation, *Journal of Consumer Psychology*, 4, pp. 153-180.

Revilla, M., Saris, W. E. (2009), Choosing the number of categories in agree-disagree scales, *RECSM Working Paper*, Barcelona: Universitat Pompeu Fabra.

Roberts, J. A. (1996), Green consumers in the 1990s: Profile and implications for advertising, *Journal of Business Research*, 36, pp. 217-231.

Roberts, J. A., Bacon, D. R. (1997), Exploring the Subtle Relationships between Environmental Concern and Ecologically Conscious Consumer Behavior, *Journal of Business Research*, 40, pp. 79-89.

Saris, W. E., Revilla, M., Krosnick, J. A., Shaeffer, E. M. (2010), Comparing Questions with Agree/Disagree Response Options to Questions with Item-Specific Response Options, *Survey Research Methods*, 4, pp. 61-79.

Shrout, P., Bolger, N. (2002), Mediation in experimental and nonexperimental studies: New procedures and recommendations, *Psychological Methods*, 7, pp. 422-445.

Straughan, R. D., Roberts, J. A. (1999), Environmental segmentation alternatives: a look at green consumer behavior in the new millennium, *Journal of Consumer Marketing*, 16, pp. 531-575.

Tan, B.-C. (2011), The Role of Perceived Consumer Effectiveness on Value-Attitude-Behaviour Model in Green Buying Behaviour Context, *Australian Journal of Basic & Applied Sciences*, 5, pp. 1766-1771.

Thompson, D. W., Anderson, R. C., Hansen, E. N., Kahle, L. R. (2010), Green segmentation and environmental certification: insights from forest products, *Business Strategy & the Environment*, 19, pp. 319-334.

Van Kempen, L., Muradian, R., Sandóval, C., Castañeda, J.-P. (2009), Too poor to be green consumers? A field experiment on revealed preferences for firewood in rural Guatemala, *Ecological Economics*, 68, pp. 2160-2167.

Vermeir, I., Verbeke, W. (2006), Sustainable Food Consumption: Exploring the Consumer "Attitude – Behavioral Intention" Gap, *Journal of Agricultural and Environmental Ethics*, 19, pp. 169-194.

Yang-Wallentin, F., Jöreskog, K. G., Luo, H. (2010), Confirmatory Factor Analysis of Ordinal Variables With Misspecified Models, *Structural Equation Modeling*, 17, pp. 392-423.