

THE INFLUENCE OF PERSONAL AND ENVIRONMENTAL FACTORS ON ECOLOGICAL BELIEFS

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Abstract

Social Cognitive Theory posits that a human behaviour is influenced by both personal and environmental factors. However, many current studies in ecological behaviour are focusing on personal factors only. There are also not many studies exploring the direct relationship between ecological values and beliefs. In view of these shortcomings, the present study is to investigate the influence of both personal and environmental factors on ecological beliefs. Data were obtained from a sample of 351 Malaysian consumers. The model was tested by using SPSS multiple linear regression. The findings are threefold. First, both altruistic and egoistic values (personal factors) are found to be positively related to ecological beliefs. Second, both social influences and facilitating conditions (environmental factors) are also positively related to ecological beliefs. Third, personal factors affect ecological beliefs more than environmental factors. These research findings highlight the importance of both personal and environmental factors that influencing the ecological beliefs.

Keywords: Ecological beliefs, value orientations, environmental influences

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Introduction

There are evidences found that there is interdependent relationship between the natural world and people (Johnson et al., 2012). As such, there is a growing behavioural trend that is consciously seeking ways to minimize the negative impacts of our actions or activities towards the natural world. This is refers as “ecological behaviour.” Ecological behaviour is generally refers to those actions or activities which contribute towards environmental preservation and conservation (Axelrod & Lehman, 1993). The rising awareness on the global environmental issues raised our societies’ and even individuals’ willingness as to play a part in contributing to a green planet.

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The importance of the concept of belief in behavioural study has been well established. According to Stern (2000) and Schultz and Zelezny (1999), environmental attitudes or beliefs are found to be related to people's behaviour. Hence, belief can be regarded as the basis that will influence the human behaviour. People are considering the implications of their behavioural choices before their actual behaviour especially for those things that they valued. Pro-environmental behaviour may arise from the people's belief that consider transcend self-interest.

There are many previous studies that shown values or beliefs had contributed to the explanation of various ecological behaviours. Rokeach (1973) developed a value scale that is successfully used for explaining or studying environmental beliefs (Stern, Dietz, Kalof & Guagnano, 1995; Stern & Dietz, 1994). Attitudes or beliefs were significantly correlated to various self-reported behaviours including both environmental or non-environmental behaviours (Karp, 1996). However, researchers are only focus on internal factors in studying the ecological behaviour such as personalities, knowledge and intentions (Fraj & Martinez, 2007). Limited study is focusing on external factors or motivations.

As to date and to our knowledge thus far, there are also not many studies exploring the relationships between ecological values and ecological beliefs directly. In Value-Belief-Norm Theory (VBN), the concept of ecological beliefs were represented by three variables which are ecological world view (NEP), adverse consequences for valued objects (AC) and perceived ability to reduce threat (AR) (Dunlap & Van Liere, 2000). Yet very few study scrutinized the strength of an ecological values-beliefs and thereby evaluated its usefulness as a theoretical model. This lack of empirical data is an obvious shortcoming in the literature.

It is making sense that a human behaviour inevitably requires a multi-dimensional view which incorporates both internal and external elements. Social Cognitive Theory (SCT) posits that a human behaviour is influenced by both personal and environmental factors (Bandura, 1986). While there is a small number of studies have been attempted to explore the ecological values-beliefs directly and empirically. This study is aim to explore the value and environment basis of ecological beliefs. More specifically, it examines whether values and general environmental factors are related to ecological beliefs.

This paper is organized as follows: First, an overview of the research problem. Second, review of existing literatures, third, propose of conceptual framework and hypotheses. Fourth, describe the research methodology. Fifth, discuss research results and findings. Sixth, state the study limitations, managerial implications and suggestions for future research.

Literature Review

a) Ecological Beliefs

Belief is refers to an acceptance that a statement is true or that something exists. If you are having a belief in someone or something, it means that you are having trust, faith or confidence in them. Belief is considered one of the very important factors for understanding

human behaviour in environmental studies. Ecological beliefs are refer to the beliefs about the relationship between human beings and the environment, as well as the consequences of ecological protection or deterioration based on personally valued aspects (Lopez & Arango, 2008). The ecological beliefs that a person hold with regard to the ecological community will influencing how the person will acts or treats against the environment (Lent & Lopez, 2002). Milfont and Duckitt (2004) developed the Environmental Beliefs Scale that is widely used in the research of pro-environmental behaviour. There are two types of beliefs in this scale which are ecocentric and anthropocentric beliefs. Individuals with ecocentric beliefs care about the environment because the interdependence relationship between human being and nature. Those with anthropocentric beliefs care about the environment mainly because of the benefits offer to human being. According to Milfont and Duckitt (2004), such ecological beliefs may indicate how human being relates to the environment and its willingness to act either more or less environmental friendly. Ecological beliefs were found to have relationship to various environmental actions or behaviours (Schultz & Zelezny, 1999; Stern, Dietz, Abel, Guagnano & Kalof, 1999). Table 1 below shown the summary of the recent ecological beliefs related studies in different study contexts.

Table 1: Summary of Ecological Beliefs Related Studies

Author and year of publication	Research objective(s)	Methodology and study context	Findings
Corraliza, Collado and Bethelmy (2016)	This study examines the relationship between children's ecological beliefs and pro-environmental behaviour.	<ul style="list-style-type: none"> • Survey questionnaire • SEM Amos • NEP for children 	Children's environmental beliefs are related to their pro-environmental behaviours.
Raineri and Paille (2016)	This study investigates the social-psychological mechanisms leading individuals in organizations to engage in environmental citizenship behaviours.	<ul style="list-style-type: none"> • Online survey • SEM Amos • Corporate greening 	Ecological beliefs would strengthen the environmental commitment.
Huang (2015)	This study uses a synthetic model to examine the effects of global warming media	<ul style="list-style-type: none"> • Telephone survey • SEM Amos • Global warning issue 	Environmental beliefs have a positive effect on proactive environmental behaviour.

	use on environmental actions.		
Chou (2014)	This study using personal belief variables to explore the contextual and individual variation in hotel employees' environmental behaviour.	<ul style="list-style-type: none"> • Self-administered questionnaire • Hierarchical liner modeling (HLM) • Hotel employees 	The results show that employees' environmental beliefs and behaviour are significantly associated.
Kheiry and Nakhaei (2012)	This main objective of this study is to understand how environmental beliefs, eco-literacy and demographic variables may be related to purchase decision.	<ul style="list-style-type: none"> • Survey questionnaire • Stepwise regression analysis • Eco-friendly products 	Environmental beliefs influenced the consumers' decision in purchasing eco-friendly products.

b) Personal Factors

The altruistic values have been related to environmental attitudes, stated as feelings of moral responsibility to act in a method to advantage other social beings (Lopez & Arango, 2008). Attitudes or beliefs are important determinants of ecological behaviour (Glasman & Albarracin, 2006). Altruistic values measurement involved several dimensions. It is characterized by values that related to fear for the well-being of nature and other human beings such as similarity, a world at amity, mixture helping and defending the environment and testing pollution. The other dimension is protected values relating to personal self-interest such as social control, an inspiring life, prosperity, a mixed life, influences, life enjoyment and interest. An individual context may influence their beliefs regarding human-environment interaction, thereby shaping their behaviour (Dunlap & Van Liere, 2000).

The egoistic values in general refer to a person who has self-centred value with little concern for others (De Groot & Steg, 2008). There are several terms used to describe egoistic values in pro-environmental research such as self-enhancement economic, egocentric value orientation. All these terms show a person that concentrating on consequences that maximize personal benefit instead of the benefit of the society. According to Windschitl, Rose, Stalkfleet and Smith (2008) research, by preoccupation with person's own inner world, egocentrism was categorized. Individual with an egoistic value normally will think through costs and benefits of environmentally behaviour that will affect themselves. When the perceived benefits of an action surpass the perceived costs of an action, individuals will come out with environmentally

intent. There are previous studies in pro-environmental attitudes had already been shown that egoistic value construct explained variance (Kaltenborn & Bjerke, 2002) and behaviour (Siegrist, 1996).

c) Environmental Factors

Social influences are characterized as change in an individual's emotions, states of mind or practices that outcomes from connection with others (Venkatesh, Morris, Davis & Davis, 2003). Social influences are very distinctive from congruity, force and power. It is the procedure by which people roll out genuine improvements to their behaviour as a consequence of cooperation or interaction with other people who are seen to be comparable, attractive or master. Also, individuals may change a supposition affected by another who is seen to be a specialist in that particular matter. A few studies (Cheng, Liu, Qian & Song, 2008; Hartwick & Barki, 1994; Hsu & Lu, 2007) have upheld that social influence have a significant impact on behavioural intention.

Facilitating conditions are refer to the factors in an environment that hinders or makes an act easier to commit (Triandis, 1980). Because of the accessibility and ease of committing the act, individuals would therefore have standards that could be more easily swayed, therefore forming more positive attitudes (Limayem, Khalifa & Chin, 2004). In Cronan and Al-Rafee's (2008) study pertaining to downloading movies and TV series through P2P network illegally, higher intention to pirate is found if a person equipped with the skills and resources to do so. In this instance, facilitating conditions are those skills and necessary equipments that will assist individual in practicing such behaviour.

Conceptual Framework and Hypotheses

SCT is adopted as the basis foundation of the research framework. SCT is centered around the concepts that put more emphasis on the process of learning that humans go through. It posits that people learn and maintain certain behaviours in the context of reciprocal interaction between the person, environment and behaviour (Bandura, 1997). The uniqueness of this theory is the emphasis of the both internal and external social influences in performing the behavior.

The VBN holds that altruistic and egoistic values are influencing how people cognitively structure their beliefs toward environment (Stern et al., 1999). The empirical support for this causal are presented in previous studies: Gardner and Stern, 1996; Stanley, Stern and Elworth, 1985; Stern et al., 1995. In Unified Theory of Acceptance and Use of Technology (UTAUT), social influences and facilitating conditions are found to have direct effects on behavioural intention and use behaviour (Venkatesh et al., 2003). Thus, an individual's characteristics are influence by the environmental models and feedback.

The outcome of the research model is replaced with ecological beliefs instead of ecological behavior. This is aligned with our research objective where to test the direct

relationship between value and belief. There are also empirical studies that proven the belief is an important antecedent or predictor to behavior both in environmental and non-environmental studies (Stern et al., 1995; Stern et al., 1999). As such, the following research model and hypotheses were proposed.

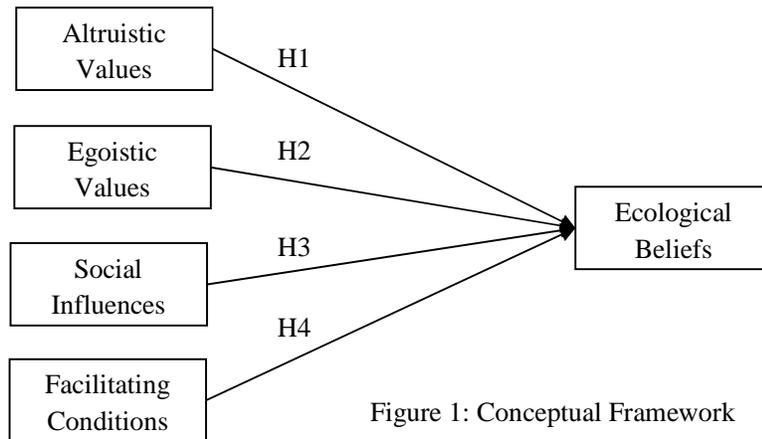


Figure 1: Conceptual Framework

- H1: Altruistic values are positively related to ecological beliefs.
- H2: Egoistic values are positively related to ecological beliefs.
- H3: Social influences are positively related to ecological beliefs.
- H4: Facilitating conditions are positively related to ecological beliefs.

Methodology

All measurement items for the present study are adapted from literature. The items are from these sources (refers to Table 2 below):

Table 2: Adapted Measurement Items

Variable	Item	Source
Ecological Beliefs	6	Singh (2011)
Altruistics Values	5	Kaiser, Michael, Hartig and Bowler (1999)
Egoistic Values	3	Kaiser, Michael, Hartig and Bowler (1999)
Social Influences	3	Venkatesh, Thong and Xu (2012)
Facilitating Conditions	4	Venkatesh, Thong and Xu (2012)

Data was collected over three months in 2016 and 351 usable questionnaires were received from the 500 questionnaires distributed. This yielded 70.2% response rate. Table 3 below illustrated the respondents' demographic information. The majority were male (62.9%) and the modal age was 21-30. 222 (63.2%) respondents are single, 126 (35.9%) are married and the remaining are with other status. In term of education level, 45.6% are with Bachelor Degree qualification, 31.1% are with Diploma qualification, 14.8% are with Master's Degree

qualification and one respondent is having Doctorate Degree qualification. The remaining 29 respondents were completed secondary school study only. Five-point Likert-scale that ranging from 1-strongly disagreed to 5-strongly agreed is used to measure each items. The respondents will indicate to what degree they agreed or disagreed to the given statements.

Table 3: Respondents' Demographic Information

Variable	Item	Frequency	Percent (%)
Gender	Male	221	62.9
	Female	130	37.1
Age	21 – 30	222	63.2
	31 – 40	67	19.1
	41 – 50	38	10.8
	51 and above	24	6.9
Education Background	Secondary School	29	8.2
	Diploma	109	31.1
	Bachelor	160	45.6
	Master	52	14.8
	PhD	1	0.3
Marital Status	Single	222	63.2
	Married	126	35.9
	Divorced/Widowed	3	0.9
Monthly Income	1000 – 2500	103	29.3
	2501 – 3500	109	31.1
	3501 – 4500	70	19.9
	4501 – 5500	41	11.7
	5501 and above	28	8.0

Data Analysis and Findings

SPSS was used to analyze the collected data. The process started with performing several descriptive analyses as to feel and to test the “goodness” of the data. Maximum, minimum and missing values were checked. There were some missing cases identified and it was replaced with the midpoint of scale i.e. 3 as suggested by Hair, Hult, Ringle and Sarstedt (2014). Standardized scores (z-scores) were generated as to check the presence of outliers. The results showed that the scores were less than ± 3.29 and hence the data set can be claimed as free from outliers (Hair et al., 2014).

The reliability of the measures using Cronbach's Alpha were all found to be acceptable: altruistic values ($\alpha=.87$), egoistic values ($\alpha=.83$), social influences ($\alpha=.88$), facilitating conditions ($\alpha=.92$) and ecological beliefs ($\alpha=.82$). According to Lance, Butts and Michels (2006), an alpha value of .6 or higher is considered acceptable.

Exploratory factor analysis (EFA) was conducted by the method of Principal Component Analysis using Varimax rotation for the measures. The Kaiser-Meyer-Olkin (KMO) value is 0.921 and the Bartlett’s test p-value is <0.001 indicated that a significant correlation between the variables and the data is appropriate for factorial analysis (Pallant, 2013).

The hypotheses were tested using multiple linear regression analysis. The results indicated the four predictors explained 36.7% of the variance ($R^2=.367$, $F=21.48$, $p<.001$). It was found that altruistics values ($\beta=.327$, $p<.001$), egoistic values ($\beta=.437$, $p<.001$), social influences ($\beta=.252$, $p<.05$) and facilitating conditions ($\beta=.226$, $p<.01$) significantly predicted ecological beliefs. Table 4 below summarized the results of hypothesis testing.

Table 4: Results of Hypothesis Testing

Hypothesis	Path	Supported
H1	Altruistics Values → Ecological Beliefs	Yes
H2	Egoistic Values → Ecological Beliefs	Yes
H3	Social Influences → Ecological Beliefs	Yes
H4	Facilitating Conditions → Ecological Beliefs	Yes

Conclusion

The main goal of this study was to identify a set of personal and environmental factors and to examine its influence on ecological beliefs. The results empirically developed our insights into the important of personal and environmental factors in influencing ecological beliefs. First, both personal factors (altruistic and egoistic values) are found to be positively related to ecological beliefs. Second, both environmental factors (social influences and facilitating conditions) are also positively related to ecological beliefs. These results were in agreement with Stern et al.’s (1999) and Venkatash et al.’s (2003) arguments where personal values and external social influences are significantly influence a person’s beliefs.

Third, personal factors affect ecological beliefs more than environmental factors. This comes in line with what was previously predicted in non-environmental studies. Personal values help to determine what is meaningful and important. If a person cares the most about the environment, such principle will guide their ecological behaviour (De Groot & Steg, 2008). Government should put more emphasis on pro-environmental education in the school syllabus. This aims to shape or to cultivate pro-environmental value from the very beginning of our learning stage.

Future research can explore the role of personal and environmental factors in developing and influencing specific ecological beliefs. The present study is measuring the

ecological beliefs from a general perspective only. Ecological behaviour consists of a range of human activities including green product purchase, water and energy conservation, recycling the old materials and etc. There are studies both focus on the general ecological behaviour as a whole and only focus on certain aspects such as energy conservation or green product purchase. Lastly, there needs to be more cross-cultural research in this issue to see if the results are generalisable across other countries. Environmental issue is a global issue that are concern by a diverse range of people globally. Thus, it is important to determine whether those factors study in the present study will have similar results with different segments and cultural groupings.

References

- Axelrod, L.J. & Lehman, D.R.Z. (1993). Responding to environmental concern: What factors guide individual action? *Journal of Environmental Psychology*, *13*, 149-159.
- Bandura, A. (1986). *Social foundations of thought and action: A Social Cognitive Theory*. New York: Prentice Hall.
- Bandura, A. (1997). The anatomy of stages of change. *American Journal of Health Promotion*, *12*, 8-10.
- Cheng, D., Liu, G., Qian, C. & Song, Y.F. (2008). Customer acceptance of Internet banking: Integrating trust and quality with UTAUT model. *Service Operations and Logistics and Informatics*, 2008. IEEE/SOLI 2008. IEEE International Conference. 383-388.
- Chou, C.J. (2014). Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes. *Tourism Management*, *40*, 436-446.
- Corraliza, J.A., Collado, S. & Bethelmy, L. (2016). Spanish version of the New Ecological Paradigm scale for children. *The Spanish Journal of Psychology*, *16*, 1-8.
- Cronan, T.P. & Al-Rafee, S. (2008). Factors that influence the intention to pirate software and media. *Journal of Business Ethics*, *78*, 527-545.
- De Groot, J.I.M. & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behaviour: How to measure egoistic, altruistic and biospheric value orientation. *Environment and Behaviour*, *40*, 330-354.
- Dunlap, R.E. & Van Liere, K.D. (2000). New trends in measuring environmental attitudes: Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues*, *56*(3), 425-442.
- Fraj, E. & Martinez, E. (2007). Ecological consumer behaviour: An empirical analysis. *International Journal of Consumer Studies*, *31*, 26-33.
- Gardner, G.T. & Stern, P.C. (1996). *Environmental problems and human behaviour*. Boston: Allyn and Bacon.
- Glasman, L.R. & Albarracin, D. (2006). Forming attitudes that predict future behaviour: A meta analysis of the attitude-behaviour relation. *Psychological Bulletin*, *778*-822.
- Hair, J.F., Hult, G.T.M., Ringle, C.M. & Sarstedt, M. (2014). *A primer on partial least squares structural equation modelling (PLS-SEM)*. USA: SAGE Publications.
- Hartwick, J. & Barki, H. (1994). Explaining the role of user participation in information system use. *Management Science*, *40*(4), 440-465.
- Hsu, C. & Lu, H. (2007). Consumer behaviour in online game community: A motivational factor perspective. *Computers in Human Behaviour*, *23*(3). 1642-1659.

- Huang, H. (2015). Media use, environmental beliefs, self-efficacy and pro-environmental behaviour. *Journal of Business Research*, 69(6), 2206-2212.
- Johnson, K.A., Dana, N.R., Jordan, K.J., Draeger, A., Kapuscinski, L.K., Schmitt, O. & Reich, P.B. (2012). Using participatory scenarios to stimulate social learning for collaborative sustainable development. *Ecology and Society*, 17(2), 9. [Http://dx.doi.org/10.5751/ES-04780-170209](http://dx.doi.org/10.5751/ES-04780-170209).
- Kaiser, F.G., Michael, R., Hartig, T. & Bowler, P.A. (1999). Ecological behaviour, environmental attitude and feelings of responsibility for the environment. *European Psychologist*, 4(2), 59-74.
- Karp, D.G. (1996). Values and their effect on pro-environmental behaviour. *Environment and Behaviour*, 28(1), 111-133.
- Kaltenborn, B.P. & Bjerke, T. (2002). The relationship of general life values to attitudes toward large carnivores. *Human Ecology Review*, 9(1), 55-61.
- Kheiry, B. & Nakhaei, A. (2012). Consumers' green purchase decision: An examination of environmental beliefs, environmental literacy and demographics. *International Journal of Marketing and Technology*, 2(9), 171-183.
- Lance, C.E., Butts, M.M. & Michels, L.C. (2006). The Sources of four commonly reported cutoff criteria: what did they really say? *Organizational Research Methods*, 9(2), 202-220.
- Lent, R.W. & Lopez, F.G. (2002). Cognitive ties that bind: A tripartite view of efficacy beliefs in growth-promoting relationships. *Journal of Social and Clinical Psychology*, 21, 256-286.
- Limayem, M., Khalifa, M. & Chin, W.W. (2004). Factors motivating software piracy: A longitudinal study. *IEEE Transactions on Engineering Management*, 51(4), 414-425.
- Lopez, A.G. & Arango C.M.A. (2008). Relationship among values, beliefs, norms and ecological behaviour. *Psicothema*, 20(4), 623-629.
- Milfont, T.L. & Duckitt, J. (2004). The structure of environmental attitudes: A first- and second- order confirmatory factor analysis. *Journal of Environmental Psychology*, 24, 289-303.
- Pallant, J. (2013). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (5th Edition). New York: Open University Press.
- Rokeach, M. (1973). *The nature of human values*. New York: Free Press.
- Schultz, P.W. & Zelezny, L.C. (1999). Values as predictors of environmental attitudes: Evidence for consistency across cultures. *Journal of Environmental Psychology*, 19, 255-265.
- Siegrist, J. (1996). Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology*, 1, 27-41.
- Singh, D.P. (2011). Indian ecological consumer market profile. *Global Business Review*, 12(3), 447-457.
- Stanley, B.J., Stern, P.C. & Elworth, J.T. (1985). Personal and contextual influences on household energy adaptations. *Journal of Applied Psychology*, 70, 3-21.
- Stern, P.C. (2000). Toward a coherent theory of environmentally significant behaviour. *Journal of Social Issues*, 56(3), 407-424.
- Stern, P.C. & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, 50(3), 65-84.

- Stern, P.C., Dietz, T., Kalof, L. & Guagnano, G.A. (1995). Values, beliefs and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology*, 25, 1611-1636.
- Stern, P.C., Dietz, T., Abel, T., Guagnano, G.A. & Kalof, L. (1999). A Value-Belief-Norm Theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2), 81-97.
- Triandis, H.C. (1980). Values, attitudes and interpersonal behaviour. In Howe, H.E. & Page, M.M. (Eds), *Nebraska Symposium on Motivation 1979*, 195-259. Lincoln: University of Nebraska Press.
- Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Venkatesh, V., Thong, J.Y.L. & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 36(1), 157-178.
- Windschitl, P.D., Rose, J.P., Stalkfleet, M. & Smith, A.R. (2008). Are people excessive of judicious in their egocentrism? A modeling approach to understanding bias and accuracy in people's optimism. *Journal of Personality and Social Psychology*, 95, 253-273.