

Measuring Consumers' Environmental Responsibility: A Synthesis of Constructs and Measurement Scale Items

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ABSTRACT

It is universal that central to all production is consumption. Without proper management, production along with consumption is likely to be the main sources of environmental problems. This very reality calls for consumers to be environmentally responsible in their consumption behavior. The objective of this paper is to prepare a synthesis of all the possible factors and measurement scale items to be used for assessing consumers' environmental responsibility. For making such synthesis, all major works done on the field have been thoroughly reviewed. The paper comes up with a total of six parameters that include knowledge & awareness, attitude, green consumer value, emotional affinity toward nature, willingness to act and environment related past behavior. These tentative, yet inclusive set of parameters are thought to be useful for guiding the designing of large scale future empirical researches for developing a dependable inclusive set of parameters to test consumer' environmental responsibility. A conceptual model and possible measurement items are proposed for further empirical research.

Key words: Consumer, Environmental responsibility, Parameters, Measurement, Review, Conceptual model.

INTRODUCTION

Consumption is considered to be central to all production. It is used as an indicator to measure the well-being of individuals and household and to improve the quality of life (Magrabi, 1991). However, without proper management, production along with consumption is the main sources of environmental problems (Haron *et al.*, 2005). The reason for this is that the by-products of most consumption are pollution and a fall in the usefulness of energy materials for future consumption (Trott, 1997). Conclusions of many studies have argued that irresponsible consumption behavior is responsible for a significant part of environmental deterioration. Tuna and Özkoçak (2012) suggest that unconscious usage of natural resources for the requirements of humanity and inconsiderate consumption habits of the people

have led to irreversible environmental destructions. They further argue that more energy-consuming human activities aiming at satisfying the so-called "well-being" and "comfort" of humanity have contributed to the gradual depletion of energy resources. Miran *et al.* (2008) claim that it is likely that our planet and all its inhabitants are today threatened by a potential global ecological crisis.

The overuse of nature resources for human purposes and its long term adverse impact made us recognize the human responsibility towards nature. One facet of this recognition is evidenced in the development of eco-friendly consumption patterns among consumers. One study (Grunert, 1993) reported that about 40 percent of environmental degradation has been accounted for by the consumption activities of private household level.

It is thus well evidenced and believed that consumption and consumer behavior at household level are, by and large, responsible for environmental degradation. Accordingly, along with other governing bodies, consumers need to be involved in the journey to environmentally sustainable consumption behavior in order for an economy to grow "green". The starting point for such journey with consumers is to know their present status regarding their understanding of the issue and how environmentally responsible they are in their consumption behavior. Investigation of this kind is not a straightforward work since the issue is very much latent in nature. The prerequisite for such study calls for an all inclusive set of parameters generated from a comprehensive literature survey.

MATERIALS AND METHODS

The study is solely based on a comprehensive and systematic review of literature. Several steps have been gone through in searching and selecting the literature for being reviewed. First a very general and broad search was conducted in Google using the key phrases reflecting the topic of the study. Databases such as EBSCO, Emerald, ScienceDirect, SCOPUS etc. were accessed to search for the relevant research papers. Finally as suggested by Randolph (2009), the references of the retrieved articles were repeatedly searched until a point of saturation was reached. After that the inclusion of the articles was narrowed down to match the focus of this paper following the review guidelines of Hart (1998).

Table 1: Summary of the Constructs for Assessing Consumers' Environmental Responsibility

Construct	Reference	Key Argument
Knowledge and Awareness	Stone et al. (1995); Maloney and Ward (1973); Hines, Hungerford, and Tomera (1986)	Environmentally responsible consumers must have knowledge and awareness of the environment.
Attitude	Dunlap & Van Liere(1978); Jackson (1985); Kinnear, Taylor, & Ahmed (1974); Maloney & Ward (1973); Thompson &Gasteigner (1985).	Attitude is one of the key elements of an individual's environmental responsibility.
Green Consumer Value	Haws, Winterich, and Naylor (2010)	Environmentally sustainable consumption behavior is associated with the degree of consumers' green values.
Emotional Affinity toward Nature	Kals, Schumacher,& Montada, 1999; Müller, Kals, &Pansa, 2009; Stern, 2000	The extent to which a person has an emotiona connection to his or her natural environment has impact on individual's commitment to be responsible for the protection of environment.
Willingness to Act	Maloney & Ward (1973); Hines et al. (1986); Berkowitz and Daniels (1964)	Verbal commitment is a measure for individual's willingness to act. Personality factors and social responsibility are also associated with one's willingness to act.
Action Taken/ Environment Related Past Behavior	Bennet (1974); Dunlap & Van Liere (1978)	The engagement in certain behaviors is a must for environmentally responsible consumers

Consumers' Environmental Responsibility

Consumers' environmental responsibility refers to consumption activities that benefit, or result in less damage to the environment than substitutable activities (Ebreo, Hershey and Vining, 1999; Pieters, 1991).

Crosby, Gill, and Taylor (1981) defined environmental concern tentatively as a strong positive attitude toward preserving the environment. Later, they defined environmental concern as a general or global attitude with indirect effects on behaviors through behavioral intentions (Gill, Crosby, and Taylor, 1986), based on the work of Van Liere and Dunlap (1981). Zimmer, Stafford and Stafford (1994) supported this definition describing environmental concern as "a general concept that can refer to feelings about many different green issues."

Consumer Environmental Responsibility is formally defined as "a state in which a person expresses an intention to take action directed toward remediation of environmental problems, acting not as an individual consumer with his/her own economic interests, but through a citizen consumer concept of societal-environmental well-being. Further, this action will be characterized by awareness of environmental problems, knowledge of remedial alternatives best suited for alleviation of the problem, skill in pursuing his or her own chosen action, and possession of a genuine desire to act after having weighed his/her own locus of control and determining that these actions can be meaningful in alleviation of the problem" (Stone *et al.*, 1995, p. 601).

RESULT AND DISCUSSION

After conducting a comprehensive and systematic review of literature, a total of six constructs have been confirmed. The following table (Table 1) summarizes the major constructs for assessing consumers' environmental responsibility followed by the detailed discussion and argument supported by corresponding literature.

Knowledge and Awareness

Environmentally responsible consumers must have knowledge and awareness of the

environment (Stone *et al.*, 1995; Maloney and Ward, 1973). Level of awareness may not always reflect the amount of information exposed to the individuals. For instance, Arcury (1990) mentions that Americans have been exposed to a plethora of environmental information for years, yet researchers have very little information about how much the public actually knows about the environment. Using a meta-analysis of 128 environmental studies, Hines, Hungerford and Tomera (1986) identified knowledge to be a must among some other variables that are reportedly associated with environmentally responsible behavior.

Hines *et al.* (1986) further propose an environmental behavior model in which the intention to take action is determined to be a combination of other factors including cognitive knowledge, cognitive skills, and personality variables. Cognitive knowledge, in this model, relates to an individual's awareness of existing environmental problems. Therefore, it can be hypothesized that consumers' level of knowledge and awareness of environmental issues have impact on their degree of responsibility in consumption behavior.

Attitude

A number of authors argued that attitude to be one of the elements that must be present in individuals who put on view of environmental responsibility (Dunlap and Van Liere, 1978; Kinnear, Taylor and Ahmed, 1974; Maloney and Ward, 1973; Thompson and Gasteigner, 1985).

A new environmental paradigm consisting of an attitude and certain behaviors that would be engaged in by the environmentally concerned individual is necessary (Dunlap and Van Liere, 1978). These authors recognized that ecological problems stemmed in large part from more traditional attitudes and beliefs common in society. They further recommended that man should live in harmony with nature and limits should be imposed on economic growth.

Kinnear *et al.* (1974) posited that ecological concern was similar in context to environmental responsibility and is composed of

Table 2: Measurement Items for Consumers' Environmental Responsibility

Constructs	Measurement items	Source & Justification
Knowledge & awareness	1.The amount of energy I use does not affect the environment to any significant degree. 2The country needs more restrictions on residential development (construction of a new mall on farmland, new subdivisions, etc.). 3.If I were a hunter or fisherman, I would kill or catch more if there were no limits. 4.I know very well what the term 'global warming' means. 5.I know very well what the term 'organic product' means. 6.I know very well what the term 'climate change' means. 7.I know very well what the term 'greenhouse gas' means.	Three (items 1-3) out of four items in measuring awareness dimension of environmentally responsible consumers (Stone et al., 1995) , has been selected. For examining the knowledge dimension four items (items 4-7) are proposed to explore. The rationale for proposing these items is that they are extensively referred to most studies on today's environmental and ecological issues.
Attitude	1. There is nothing the average citizen can do to help stop environmental pollution. * 2. My involvement in environmental activities today will help save the environment for future generations. 3. I would not car pool unless I was forced to. It is too inconvenient. * 4. It is essential to promote green living in my country. 5. Environmental protection works are simply a waste of money and resources. * 6. I strongly support that more environmental protection works are needed in my country. 7. Environmental protection issues are none of my business. * 8. I think environmental protection is meaningless. * 9. It is unwise for my country to spend a vast of money on promoting environmental protection. * 10. It is very important to raise environmental concern among the citizens.	A total of ten items are proposed to be used in examining consumers' attitudes toward environmental issues. Items 1-3 are taken from ECOSCALE (Stone et al., 1995) and items 4-10 were used by Lee (2011) in measuring the same issue.
Green consumer value	1. It is important to me that the products I use do not harm the environment. 2. I consider the potential environmental impact of my actions when making many of my decisions. 3. My purchase habits are affected by my concern for our environment. 4. I am concerned about wasting the resources of our planet. 5. I would describe myself as	This 6-item scale is adapted from Bearden et al. (2010, pp. 172-173) where the original scale was referred to Haws, Winterich, and Naylor (2010) who titled the scale as 'GREEN scale'. One of the reasons for using this scale is because it has a high level of reported

Table. 2 Continues..

Emotional affinity toward nature	<p>environmentally responsible.</p> <p>6. I am willing to be inconvenienced in order to take actions that are more environmentally friendly.</p> <p>1 When I spend time in nature I feel free and easy.</p> <p>2. When surrounded by nature I get calmer and I feel at home.</p> <p>3. I feel relaxed and have a pleasant feeling of intimacy when spending time in nature.</p> <p>4. Whenever I spend time in nature I do not experience a close connection to it</p> <p>5. Sometimes when I feel unhappy I find solace in nature.</p>	<p>internal consistency with alpha value of over .85.</p> <p>The scale (items 1-5) has been taken from Müller, Kals, and Pansa (2009) which was originally used by Kals, Schumacher, and Montada (1999) with satisfying results concerning reliability (alpha= .86).</p>
Willingness to act	<p>1. I want to be a member of an environmental group.</p> <p>2. I will provide financial support to clean up the environment.</p> <p>3. I want to attend a rally or a demonstration on an environmental issue.</p> <p>4. I will keep my garbage in separate piles of glass, plastic, paper, newspapers, and metal for recycling when they are available.</p> <p>5. I'd be willing to ride a bicycle or use public transportation to go to work/school to reduce air pollution.</p> <p>6. I would be willing to donate a day's worth of pay to a foundation to help them improve the environment.</p> <p>7. I strive to learn as much as possible about environmental issues.</p> <p>8. I would pay extra on my electricity bill each month to ensure that all of the electricity I use comes from 'green' sources</p>	<p>Items 1-4 were used by Ramly et al. (2012) with a Cronbach's alpha of 0.90 and items 5-8 were used by Tuna and Özkoçak (2012) where Cronbach's alpha value was 0.85.</p>
Environment related past behavior	<p>1.I have switched products for ecological reasons.</p> <p>2.I have convinced members of my family or friends not to buy some products that are harmful to the environment.</p> <p>3. I have tried very hard to reduce the amount of electricity I use.</p> <p>4. I have purchased a household appliance because it used less electricity than other brands.</p> <p>5. I have replaced light bulbs in my home with those of smaller wattage so that I will conserve on the electricity I use</p> <p>6. I have purchased light bulbs that were more expensive but saved energy.</p>	<p>These six items reflecting consumers' past behavior regarding environmental issues have been taken from ECCB (ecologically conscious consumer behavior) scales used by Roberts (1996a) and Straughan and Roberts (1999).</p>
Environmentally responsible consumer (behavior)	<p>1.I normally make a conscious effort to limit my use of products that are made of or use scarce resources.</p> <p>2. I always try to use electric appliances (e.g., dishwasher, washer, and dryer) before</p>	<p>The original ECCB (environmentally conscious consumer behavior) scale consists of 30 items used by Roberts (1996a) and</p>

Table. 2 Continues..

<p>10 P.M. and after 10 P.M.</p> <p>3. When there is a choice, I always choose the product that contributes to the least amount of pollution.</p> <p>4. If I understand the potential damage to the environment that some products can cause, I do not purchase these products.</p> <p>5. I use a recycling center or in some way recycle some of my household trash.</p> <p>6. I make every effort to buy paper products made from recycled paper.</p> <p>7. I use a low-phosphate detergent (or soap) for my laundry.</p> <p>8. I do not buy products in aerosol containers.</p> <p>9. Whenever possible, I buy products packaged in reusable containers.</p> <p>10. I will not buy a product if the company that sells it is ecologically irresponsible.</p> <p>11. I buy toilet paper made from recycled paper.</p> <p>12. I try only to buy products that can be recycled.</p> <p>13. I do not buy household products that harm the environment.</p> <p>14. To save energy, I drive my car as little as possible.</p> <p>15. I try to buy energy efficient household appliances.</p> <p>16. I usually purchase the lowest priced product, regardless of its impact on society. *</p> <p>17. I use my own bag when shopping.</p> <p>18. I refuse plastic bags when shopping.</p> <p>19. I consume foods that are produced using organic farming methods.</p> <p>20. I take printed copy of my bank statement only if needed to submit for official purpose.</p> <p>21. I take printed copy any transaction at ATM booth. *</p> <p>22. I use only one side of the paper. *</p>	<p>Straughan and Roberts (1999). A total of 16 items that are considered to reflect much "concrete" forms of environmentally responsible behavior from the original ECCB scale are used for this study with acceptable coefficient Alpha value. Items 17 & 18 are used from the study of Gadenne (2011). Items 19-22 have been proposed by the authors.</p>
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*Reversed scaled items.

two dimensions: (a) an attitude that must express concern for the environment, and (b) a purchasing behavior that must be consistent with maintenance of the environment. They further indicate that the level of ecological concern is a function of both attitudes and behavior. Here attitude refers to attitude towards environmental protection and accordingly the assumption is that consumers who

have positive attitude towards environmental protection show more responsibility in their consumption behavior.

Green Consumer Value

Green consumers are defined as those who have a tendency to consider the environmental impact of their purchase and consumption

behaviors. As such, consumers with stronger GREEN values (Haws, Winterich and Naylor 2010) will tend to make decisions consistent with environmentally sustainable consumption.

Emotional Affinity toward Nature

Some researchers have begun to explore the individual's affective influences on environmental concern and behavior (Stern, 2000) that incorporates emotional affinity toward nature (Kals, Schumacher and Montada, 1999; Müller, Kals and Pansa, 2009). The authors refer Emotional Affinity toward Nature (EAN) as the extent to which a person has an emotional connection to his or her natural environment. The studies confirmed that EAN explains individual's commitment to environment to a considerable extent.

Willingness to Act

Environmentally responsible consumers are said to be willing to act for environmental betterment. One measure of the individual's probable future actions is 'verbal commitment' (Maloney and Ward, 1973). A desire to act is further claimed to be closely associated with personality factors such as the individual's locus of control, his or her attitude, and exhibited personal responsibility (Hines *et al.*, 1986).

Berkowitz and Daniels (1964) found that individuals who scored high in social responsibility were more active in church and community affairs and were more willing to contribute their time, money, and energy to these types of activities. This is similar to having a willingness to act. Therefore, it is assumed that consumers' willingness to act and their environmental responsibility towards consumption behavior are positively correlated.

Action Taken/Environment Related Past Behavior

In addition to having attitude and knowledge, the engagement in certain behaviors is a must for environmentally responsible consumers (Bennet, 1974; Dunlap and Van Liere, 1978). Maloney and Ward (1973) argued that both attitude and knowledge determine the environmentally relevant behaviors that encompass actions that individuals presently pursuing or would be willing to pursue. Hines *et al.* (1986) emphasized the necessity of 'actual commitment' as a measure

of an individual's present behavior. Apparently consumers' environmental responsibility is said to be reflected in their environment related past behavior.

Consumer Demography

Several studies in the past have attempted to investigate and found that some demographic variables of consumers correlate with environmentally conscious consumption behavior. A review of these studies and their findings in accordance to the select demographic variables are outlined in the following section. This summary is mainly referred to the work of Straughan and Roberts (1999).

Age

Age has been explored by a number of early studies of ecology and green marketing (e.g. Roberts, 1995; 1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). One general consensus regarding age is that the younger people are likely to be more sensitive to ecological issues. The most common argument for this general consensus is that the people, who grew up in the time of growing concern of environmental issues at some level, are more likely to be sensitive to these issues (Straughan and Roberts, 1999). Ironically, this trend has been found to be reversed in several studies over the last two decades (D'Souza *et al.*, 2007; Jain and Kaur, 2006; Roberts, 1996a, 1996b; Samdahl and Robertson, 1989).

In fact, like other demographic variables, the findings of the relationship with age and green consumer behavior are not identical. Some studies explored that the relationship between age and green behavior is non-significant (e.g. Roper, 1990; 1992) whereas others revealed the relationship to be significant and negatively correlated (e.g. Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). Yet some studies found the relationship to be significant, but positively correlated (e.g. Roberts, 1996a; Samdahl and Robertson, 1989).

Sex

As is the case of age, the studies on the impact of gender on green behavior have not come to be conclusive yet. Straughan and Roberts (1999)

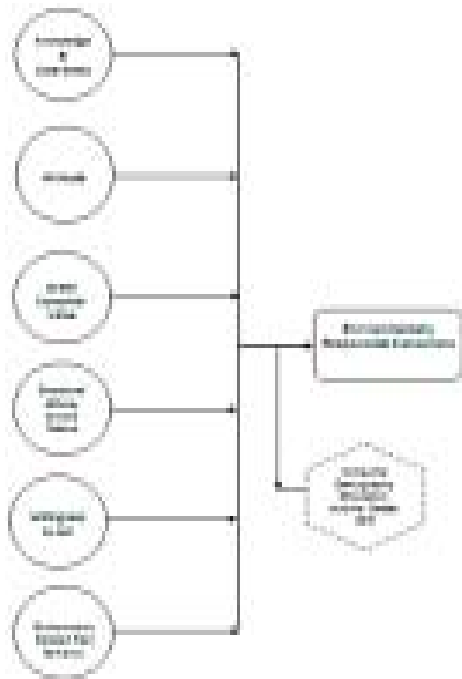


Fig. 1: Conceptual Model for Environmentally Responsible Consumers

argue that women are more likely than men to hold attitudes consistent with the green movement due to the development of unique sex roles, skills, and attitudes. Eagly (1987) justifies this inclination of women as their careful consideration of the impact of their actions on others which result from social development and sex role differences. Arcury (1990) suggested that an individual's gender may be a factor in the amount of environmental knowledge he or she possesses as well as the amount of concern the individual displays for the environment.

Income

Environmental sensitivity is generally believed to be positively related to income (Straughan and Roberts, 1999). The authors argue that generally people with higher income can afford the green products which are usually higher in price than the price of conventional products. Income has been considered as one of the predictors of ecologically conscious behavior in several early studies (e.g. Newell and Green, 1997; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Van Liere and Dunlap, 1981; Zimmer *et al.*, 1994). However, few

studies found the negative relationship between income and environmental concern (e.g. Roberts, 1996a; Samdahl and Robertson, 1989).

Education

Level of education is considered to be linked to environmental attitude and behavior (e.g. Newell and Green, 1997; Roberts, 1995; 1996b; Roberts and Bacon, 1997; Roper, 1990; 1992; Samdahl and Robertson, 1989; Schwartz and Miller, 1991; Zimmer *et al.*, 1994). Most of the studies agreed that education is expected to be positively correlated with environmental concerns and behavior (Straughan and Roberts, 1999). While most of the studies come up with positive correlation between education and environmental issues, Samdahl and Robertson (1989) found the opposite, that education was negatively correlated with environmental attitudes.

Proposed Conceptual Model for Environmentally Responsible Consumers

The following figure (Figure1) displays the proposed conceptual framework representing the possible constructs for measuring consumers' environmental responsibility. In addition to the selected six constructs, selected consumer demographics are proposed to be incorporated in the model to investigate any mediating or moderating impact on consumers' environmental responsibility.

Items for Measuring the Constructs

A comprehensive literature review has been conducted for compiling a reliable set of scale items for measuring the constructs and testing the proposed model. The following table summarizes the scale items with their corresponding constructs and references.

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