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## **MEASURING CONSUMERS' ENVIRONMENTAL AWARENESS: DEVELOPMENT OF CONSTRUCTS AND MEASUREMENT SCALE ITEMS**

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### **Abstract**

The global conversation on environmental concerns, and its direct relationship with individual consumption patterns, has spawned a new area of research to explore consumer awareness of environmental responsibility and its influence on consumption. A suitable, accepted and quantifiable measuring model for measuring consumer environmental awareness remained a significant gap in the research designing and measuring the effectiveness of regulatory initiatives for environmental protection. Hence, the study seeks to redefine consumer environmental awareness in connection to consumer purchasing patterns. The Theory of Planned Behavior was used as the theoretical basis for the study. Thus, the main three dimensions of consumer environmental awareness were identified: attitude, subjective norms, and perceived behavioural controls. Furthermore, a pool of questions was developed and experiences to measure consumer environmental awareness, and primary data collected based on the structured questionnaire using identified items were used to validate the measuring



scale for consumer environmental awareness. Thus, factor analysis was employed, as well as reliability and validity measures, to evaluate the appropriateness of the scale. Accordingly, the study suggests a twelve-item scale to assess consumer environmental awareness across three dimensions.

**Key Words:** Attitude, Consumer Environmental Awareness, Environment Responsibility, Perceived Behavioral Controls, Subjective Norms.

## 1. Introduction

Marketing management focuses on knowing the consumer and meeting their expectations with a comprehensive view of marketing management. Recent philosophical view on marketing management has taken a holistic understanding of the concept of sustainability. Although marketing as a discipline has updated the scope of the definition of marketing with its recent innovations by involving many other stakeholders in addition to the customers. Thus, environmental concerns from both the business (Fiala, Freyer and Bingen, 2021) and consumer perspectives (Morrison and Beer, 2017) became vital. Similarly, system thinking has emerged in the context of the marketing (Bailey, 2005). This makes the attention of consumer researchers focus on understanding the consumers with environmental concerns (Morrison and Beer, 2017; Kencanasari, Surahman and Permana, 2019; Yang, Tang and Cheung, 2020). Crucially, environmental issues have been commonly considered in the marketing management process. With the extended scope of marketing management, organizations have become more suitable than becoming customer-oriented. As a consequence, marketers have recognized their role in sustainable development while retaining consumer satisfaction (Laheri, Dangi and Vohra, 2014).

In endorsing ever more environmental-oriented organizational initiatives, the engagement of the community in the process was established. Matter of fact, society's environmental consciousness is the major contributor to community engagement. In addition, scientific research has been carried out based on understanding the phenomenon from the perspectives of a multidisciplinary (Fisman, 2005). In contrast to the development, the



illusion of defining and conceptualizing community environmental awareness was observed. It was one of the main challenges that even scholars and practitioners faced, even with the latest updates on the field (Ham, Horvat and Mrčela, 2016). Especially because understanding behaviour is a factor that depends on the rationale for the change. The scientific concept of community environmental awareness is therefore a subject for debate in various forums.

One fact that needs to be taken into account is that even several stakeholders are trying to strengthen the community's commitment to environmental conservation in order to assess the current level of understanding of the community's climate in taking steps to improve it (Morrison and Beer, 2017). The academic emphasis on the development of conceptualization for the concept of community environmental awareness was built based on the need. Accordingly, the study focuses on the creation and validation of the measurement model for community environmental awareness, while recognizing the significance of the definition and the necessity of developing the correct scale to assess the level of community environmental awareness. Importantly, even though the literature continues to emphasise the fact that environmentally friendly behaviours have been backed by consumer environmental awareness it is equally important to understand the measuring criteria for the construct. Even though there is a diverse range of approaches to measuring environmental awareness it is observed to have a vague nature. Thus, the study attempt to address the existing research gap to develop suitable measurement criteria for environmental awareness.

## **2. Literature review**

### **2.1 Role of Consumers in Environmental Protection**

Consumption, as a straightforward measure of individual well-being and economic progress, has been highlighted as a significant indicator of the quality of life (Taufique *et al.*, 2014). As a result, the lack of effective management of sustainable production and consumption practices has become a major cause of environmental concerns around the world (Laheri, Dangi and Vohra, 2014). Furthermore, consumption drives production, which has a huge impact on companies; hence, the transformation process for environmentally friendly



production and consumption is always generated based on customer preferences for environmental protection (Ham, Horvat and Mrčela, 2016). Numerous researches have shown that excessive consuming habits are accountable for a large portion of environmental degradation. Nevertheless, Hatipoğlu et al., (2013) have emphasized that people's thoughtless consuming patterns and unthinking use of natural resources for human needs have resulted in permanent ecological damage.

## **2.2 Environmentally Friendly Consumer Behaviour**

Researchers continue on to claim that increased energy-intensive human activities aimed at fulfilling human civilization, and living standards have caused the progressive exhaustion of energy supplies (Taufique *et al.*, 2014). The exploitation of natural resources for human interests, as well as the long-term negative consequences, helped individuals to acknowledge the human duty to the ecosystem. One manifestation of this understanding is the emergence of environmentally-friendly consumption practices among individuals (Samarasinghe, 2013).

Indeed, it is clearly established and widely accepted that consumption and consumer behaviour at the home level is, for the most part, to account for environmental pollution and related problems. As a result, in order for an economy to develop “greener” consumers, along with other governing authorities, must be active on the road to ecologically sustainable purchasing behaviour (Laheri, Dangi and Vohra, 2014). The beginning point for such an understanding of customers is to identify their current state of awareness of the issue and how ecologically responsible their purchase behaviour is. Because the problem is so latent, conducting an investigation of this type is not an easy task. The need for such research necessitates an all-inclusive approach.

Depending on an awareness of the customer's capacity to influence environmental conservation concentration, the need for individual accountability for their own activities develops. Furthermore, the idea of consumer environmental responsibility has been studied from several angles in order to explain the reason for ecologically beneficial actions.



### **2.3 Environmental Responsible Consumer Behaviour**

“Environmental responsibility of consumers refers to consuming actions that benefit or do less damage to the environment than substitutable activities” (Taufique *et al.*, 2014). Thus, (Samarasinghe, 2013) described environmental concern as a strong favourable attitude towards environmental preservation. Based on the findings of Yang *et al.*, (2020), it was characterized that environmental concern is a broad or global attitude with indirect impacts on actions through behavioural intentions. Hence the environmental responsibility created self-regulation within the consumers on protecting the environment than maximizing their own economic objectives (Taufique *et al.*, 2014). This interpretation was confirmed by Naveed *et al.*, (2020), who defined concern for the environment as “a broad term that may relate to sentiments about many diverse green policies.”

As a consequence, comprehending the cognitive component of protecting the environment has become increasingly important. Nonetheless, it was believed that individual environmental responsibility was generated through environmental awareness, and many academics proposed increasing the degree of consumer environmental awareness in order to enable consumer environmental responsibility.

### **2.4 Consumer Environmental Awareness**

While scholarly understanding of the notion of environmental awareness, it is reasonable to conclude that there is no widely recognized definition of the construct (Ham, Horvat and Mrčela, 2016). In certain situations, the distinction between attitude and awareness is unclear (Samarasinghe, 2013), and the aforementioned criteria are equivalent to applications such as environmental responsibility and environmental behaviour (Laheri, Dangi and Vohra, 2014). Environmental awareness may be described generally as a positive attitude toward the environmental implications of human activities (Ham, Horvat and Mrčela, 2016). To begin with a broad definition, environmental awareness is the proclivity to respond in some way to environmental concerns (Samarasinghe, 2013). It is a component of one's own set of values and ideas, as well as societal awareness.



Kencanasari et al. (2019) suggest a two-dimensional approach to understand viral awareness which was developed based of the initial contract definition by Wesley Schultz & Zelezny (1999). According to them, there are two motives or reasons for people to be concerned about the natural environment. Some Eco-centered people value nature for their purposes and therefore believe that it should be protected because of its innate value. In stark contrast to them, human-centred people think that nature must be protected for its value to maintain and improve the quality of human life. These are the basic sources of Eco-psychological awareness as an attitude (Samarasinghe, 2013).

Awareness of environmental issues may underline positive conduct on environmental protection. Even if individuals are environmentally conscious, they do not have to act in ecologically good ways (Ham, Horvat and Mrčela, 2016). Moreover, an Eco-conscious buyer is not always a green consumer; to be a green developer, one needs to act in some ways. Being environmentally conscious is the first step to becoming a green customer. Environmental awareness can be defined as environmental motivation or pro-environmental conduct. In comprehension, an individual with environmental awareness always would not be a green consumer (Taufique *et al.*, 2014).

Community environmental awareness studies, as well as the termination and connection variables that influence it, do not usually provide consistent findings (Laheri, Dangi and Vohra, 2014). One of the most difficult issues that researchers have is determining if researchers and their respondents interpret the notion of environmental awareness in the same manner as explained by Taufique *et al.*, (2014). Conflicting study findings have led to the idea that a vast number of important variables, as well as researchers, do not always share the same conscious concept (Ham, Horvat and Mrčela, 2016).

## **2.5 Measuring Consumer Environmental Awareness**

Establishing a measuring model for consumer environmental awareness based on behaviour, academics have produced many models aiming at understanding what



environmental awareness is, what the intrinsic variables are, and how those factors interact. The "Theory Of Planned Behavior (TPB)" is frequently used as a starting point for a popular hypothesis (Samarasinghe, 2013; Laheri, Dangi and Vohra, 2014; Ham, Horvat and Mrčela, 2016).

The "Theory of Rational Action" (TRA) is the foundation of the TPB (Ahmed *et al.*, 2021). The goal of TRA is to anticipate human behaviour by implying that an individual's conduct is affected by behavioural motivations, which are largely impacted by attitudes and subjective standards towards the actions (Ellen and Ajzen, 1992). Thus, TRA has two components: the function of beliefs about the significance of reality, the influence of positive effects, and the attitude towards action, which is the function of subjective norms and motivation to act in line with those standards (Samarasinghe, 2013). Nevertheless, the extension of TRA and TPB mainly suggested the three dimensions of one behaviour. Hence, the study attempt to use the same theoretical underpinning for the development of a measuring model for consumer environmental awareness. Similarly, even though there are several empirical pieces of evidence, for the occasions the studies have used the same theoretical underpinning for measuring the environmental awareness (Samarasinghe, 2013; Laheri, Dangi and Vohra, 2014; Ham, Horvat and Mrčela, 2016).

#### **2.5.1.1 Attitude**

In studies of consumer psychology, an attitude has always been considered a key component of behavioural motivation and actual behaviour (Laheri, Dangi and Vohra, 2014). Thus, the person's attitude drives them towards certain behavioural patterns which are dominated by environmental protection and green consumption habitats (Taufique *et al.*, 2014; Ham, Horvat and Mrčela, 2016). Attitudes are general and specific words that consumers like and dislike when making a product or service decisions (Samarasinghe, 2013). Islam (2013) defines memory interaction as the interaction of memory between a given item and a brief appraisal of that thing, this emphasizes the strong association between memory and attitudes. Thus, the attitudes can indicate psychological evaluations of consumers on their purchases and related decision-making (Ham, Horvat and Mrčela, 2016). Nevertheless, an environmentally friendly attitude demonstrates an in-depth understanding of the environment

and the consequences of environmental damages which basically drives the consumers to greener consumption habits in their day-to-day decision-making process (Taufique *et al.*, 2014). Accordingly, defining consumer environmental awareness and consumer attitude toward the environment is considered one dimension of the consumer environmental awareness (Samarasinghe, 2013). Thus, the consumer attitude toward environmental responsibility has been identified as one aspect of the consumer environmental awareness (Laheri, Dangi and Vohra, 2014).

Therefore, based on the TBP and the empirical pieces of evidence the study attempt of developing a validated measuring model by identifying the attitude toward environmental protection as the one dimension of consumer environmental awareness.

#### **2.5.1.2 Subjective Norms**

Subjective norms, according to (Ellen and Ajzen, 1992), are the social stress you experience from those around you and those who are important in your life. However, the attitude toward environmental protection will be highly influenced by the social resistance (Naveed *et al.*, 2020). Therefore, many scholarly works on environmental protection initiatives suggest having a society-wide engagement rather than having an individualized effort in protecting the environment (Samarasinghe, 2013). Hence, the social resistance to the effort will be significantly reduced and the level of awareness level will be significantly increased (Laheri, Dangi and Vohra, 2014). Empirical pieces of evidence on the subjective criteria have a significant impact on young customers' intents and purchasing intentions for green products (Naveed *et al.*, 2020). Several research, however, has challenged the usage of this cultural superstructure (Gil Roig, Gracia Royoz and Sánchez García, 2000). According to (Ham, Horvat and Mrčela, 2016), one of the most important and relevant forms of social influence on organic food consumption and choice comes mostly from relatives and coworkers, with minimal influence on cattle owners. Accordingly, the individuals' understanding of their environmental responsibility is significantly determined by subjective norms. Further, a review of empirical shreds of evidence on the subjective norms identified by many scholars (Ahmed *et al.*, 2021) and revealed that subjective norms had a larger relevance





and positive influence on purchasing intent based on TPB-based and green food purchase intent.

According, to the empirical pieces of evidence and based on the TPB it was identified that, subjective norms as another dimension of consumer environmental awareness.

### **2.5.1.3 Perceived Behavioral Controls**

Defining the term Perceived Behavioral Controls (PBC) with the underpinning by the TPB was explaining the consumer preferences over certain behaviours (Ellen and Ajzen, 1992). However, scholarly explanations of the content highlight the PCB as a choice on whether or not a person can engage in specific behaviours. Naveed et al. (2020), defined the PBC in terms of environmentally responsible behaviours as "public knowledge of available resources such as the ability to purchase environmentally friendly products at a higher price than non-environmentally friendly products." Therefore, it is the emphasis on the fact of importance which was derived from the knowledge component to convert it into a behavioural action to make the individuals motivated to meet the environmentally responsible behaviour based on the knowledge (Laheri, Dangi and Vohra, 2014). Furthermore, the PCB bridge the attitude and subjective norms on environmental protection behaviour by the consumers which are key to ensuring the consumers' behavioural intention (Taufique *et al.*, 2014; Ham, Horvat and Mrčela, 2016). On the other hand, Ahmed et al. (2021) has explained that PBC is one of the primary cryptocurrencies that impact the choice of organic meals, as well as attitudes and subjective standards, in addition to the other two items in the TPB. Thus, in defining consumer awareness it was determined that the PCB is the dimension of consumer environmental awareness whereas the TBP and the empirical pieces of evidence on the same support the argument (Ellen and Ajzen, 1992; Samarasinghe, 2013; Laheri, Dangi and Vohra, 2014; Taufique *et al.*, 2014).

## **3. Methodology**

Researchers have developed a pool of questions using several resources: personal experience on environmental protection and environmentally friendly behaviours, existing

knowledge and scales developed and used for measuring consumer environmental awareness from the existing publications, empirical validations of the TPB-based measuring models on the community environmental awareness. Moreover, the developed initial measurement model consists of 14 questions after the content validity was performed using expert opinions. Accordingly, the following table demonstrates the initial measuring items.

Table 3-1: Initial scale

<b>Items</b>	
Attitude	Attitude toward air pollution
	Attitude toward pollution
	Attitude toward soil pollution
	Attitude toward global warming
	Attitude toward climate change
Subjective Norms	Reduction of CO2 emission
	energy efficiency
	Reduction of the usage of fossil-based fuels
	reduce number of plastics and polyethene disposals
	Reduction of the greenhouse gas emission
Perceived behavioural controls	Respectfulness and politeness
	Self-control
	Clean and tidy environment
	hardworking and aspiring

Source: Developed by Author, 2021

Based on the study context the researchers were considered the regulatory representatives of environmental protection and academics as experts. Accordingly, using the identified resources the researcher has developed the questions and distributed the developed questionnaire among the Sri Lankan consumers using a convenient sampling method. Considering the population size the questionnaire was distributed among 250 consumers. Furthermore, as per Johanson and Brooks, (2010) justification for designing the sample size with the number of items in the scale researchers determine the suitability of the sample size. Based on the responses received, the researchers have conducted a factor analysis to present the validated scale for measuring consumer environmental awareness.



### 3.1 Scale Development

Item reduction analysis is used in scale development to guarantee that only ridiculous, functional, and internally stable elements are finally included. As a result, the goal of this step is to discover things that are not linked to, or are very loosely related to, the domain under consideration for elimination or alteration (Mokkink *et al.*, 2010).

Accordingly, Scale creation is aided by main two theoretical frameworks: Classical Test Theory (CTT) and Item Response Theory (IRT). CTT is regarded as the classic test theory, whereas IRT is regarded as the modern test theory. Both are involved in the creation of measuring tools. Each theory can be utilized alone or in tandem to complement the strengths of the others. Regardless of whether the researcher uses CTT or IRT, the fundamental aim is to obtain functioning items (i.e., interrelated items, differentiating between individual cases, emphasizing a single or multidimensional domain, and making a significant contribution to construction) (Terwee *et al.*, 2007). Considering the nature of the study design the study has utilized the CTT in the scale development process for consumer environmental awareness.

### 4. Findings

Researchers have described the level of reliability and validity of the created measuring scale for consumer environmental awareness in this part. Accordingly, the study used two sequential methods for the validation as Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). The purpose of conducting EFA is to explore the number of factors consisting of consumer environmental awareness and then the CFA is to confirm the factors identified using the EFA.

To test scale validity, the 250 students were given structured questions that included the established indications. Furthermore, the sample adequacy was determined using KMO and Bartlett's Test, which yielded a result of 0.772. The benchmark for KMO value is suggested to be more than 0.5 (Austen, 2009), however, the study determined that the sample

was enough for the analysis. Moreover, the sample composition for the study, which was used to validate the measurement model mainly consists of undergraduates of the Rajarata University of Sri Lanka who have considerable educational background and the age between 20 to 25. In other wordings, the study used educated young individuals in Sri Lanka for the validation process of the study.

The following table demonstrates the validity and reliability statistics of the validated measuring scale for measuring consumer environmental awareness.

Table 0-1: Reliability and Validity Statistics

<i>Factor</i>	<i>(Latent Item</i>			<i>EFA Factor</i>	<i>CFA Factor</i>	<i>Cronbach's</i>
<i>Factor Loading)</i>				<i>Loading</i>	<i>Loading</i>	<i>Alpha value</i>
<i>Attitude</i> .704	Attitude on air pollution	on	air	.981	.980	.885
	Attitude on water pollution	on	water	.977	.977	
	Attitude on soil pollution	on	soil	.967	.967	
	Attitude on global warming	on	global	.957	.957	
	Attitude on climate change	on	climate	.944	.935	
<i>Subjective Norms</i> .908	Reduction of CO2 emission	of	CO2	.893	.868	.879
	Energy efficiency			.870	.837	
	Reduction of fossil base			.810	.797	

<i>Perceived Behavioral Controls</i>		fuels			
		Reduction of plastics and polythene disposals	.724	.715	
		Reduction of greenhouse gas emission	.603	.655	
		Self-control	.888	.905	.816
		Hardworking and aspiring	.883	.895	
<i>.821</i>					

Source: Survey Data, 2021

Based on the analysis among the 14 items developed two items were removed considering factor loading and validated the 12-item scale for measuring consumer environmental awareness. Thus, the data set's reliability was tested by taking internal consistency into account, and Cronbach's alpha was computed independently for items containing the three components using data gathered for scale validation. As a result, the data set produced a Cronbach's alpha value of more than 0.7, suggesting good internal consistency. Moreover, the factor loading for both EFA as well as CFA remains higher than 0.6 is considered to be an acceptable (Taufique *et al.*, 2014).

## 5. Conclusion

This study defines the customer's or his or her subjective point of view, considering it as a single characteristic, constructing a scale to actively assess consumer environmental awareness, analyzing the scale's reliability and validity, and demonstrating its applicability. In environmental protection behaviours, predicting consumer engagement that based on their awareness levels. Mainly, the study made three contributions. To begin, the researchers give a more current knowledge of consumer environmental awareness. In contrast to earlier studies that defined consumer environmental awareness objectively, the researchers construct it



objectively and consider it as a personality attribute. Secondly, this study creates a scale of consumer environmental awareness that is broadly applicable in the purchase process. As previously stated, this scale possesses good and consistent subjective characteristics, including the prediction of consumer intervention in environmentally beneficial activities. Thirdly, it contributes to the field of consumer environmental awareness research and provides a new avenue for the study of consumer analysis behaviour in terms of environmental protection.

There are several drawbacks to this study as well. Researchers have not included the decision-making processes to address consumer environmental awareness. To alter the present scale, researchers must choose specific agent goods and conduct empirical experiments. Furthermore, all of the samples included in this study have high mean education levels, which may cause some data discrepancies. Follow-up research might include additional individuals with lower levels of education. Finally, researchers have demonstrated that, as consumer environmental awareness is contextualized, national and cultural contexts can be key contributors to influencing consumer environmental awareness. A cross-cultural comparison study would be an excellent area for future research.

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