

Conceptual and operational definitions environmental sciences essay



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INTRODUCTION

Nowadays, the global have a growing concern on environmental issues caused by global energy consumption. The environmental problems such as global warming and climate change were threats to the environment and biodiversity. All countries are spurred efforts to reduce energy consumption. Many researchers pointed out that changing life style is important to reduce the energy consumption (S Kondo, 2007). However, life style has a large variety across region, culture and climate. Domestic energy consumption differs depending on the behaviors after meal, bathing habit, staying or not staying home during daytime etc (Tanaka, 2006). Also, Bertoldi, Ricci, & de Almeida (2000) stated that it should focus on human behaviour to engage energy saving behaviour because it is a cost-effective way to reduce the environment problem and energy use. Hence, it is important to focusing on the household behavior in home activities and is the main reasons for studying energy saving (Gardner & Stern, 2002). The present study will focus on the households who are the main user of energy in the home. According to International Energy Outlook 2011, it claims that households are responsible for approximately 15% of total energy requirements in developing countries. Malaysia, as a developing country, is undergoing a process of rapid urbanization with its residential sector contributes about 19% of the total energy consumption of the country. (R. Saidur et al., 2007; Bari et al., 2011). This percentage is expected to rise rapidly in the near future. Therefore, it is critical to reduce the energy use with investigate the households' intention to save energy in home is the aim of this study.

Problem statement:

This research is undertaken based on the premise that the population and economic growth leads global energy demand and the world is experiencing a rapid increase in its population. (Wee, Matsumoto, Chin, & Yu, 2008)

However, the estimation of International Energy Agency, global energy consumption will increase to 53% by the year 2030, with 70% of the growth in demand coming from developing countries (IEA, 2008). The large number of energy consumption could leads to a serious risk to environmental pollution, climate change and human health (IPCC, 2007a). The energy demand in Malaysia has increased dramatically for the last few years, and has limited to the significant amount of carbon dioxide (CO₂) emissions into environment. Evidence has show that this emission has a great impact on the climate change and the health of human and eco-system (IPCC, 2007a). Besides that, currently households are worried and concerned about rising expenditure on energy use. The average monthly expenditure per household in Malaysia for housing, water, electricity, gas and other fuels RM 495 and for transportation are RM327 for the period 2009/2010 (Department of Statistics, Malaysia, 2010). Another critical issue is the possibilities of energy crisis especially are the energy come from non-renewable energy resources. Malaysia is a country rich in diversity of natural resources, and another sources for energy production. Some of these resources, particularly oil used at a rate higher than resources are decreasing (Saidur, 2007). Therefore, the reduction of energy use in the residential sector is important to help the government reduce the energy consumption usage as a whole.

Research Questions

Are there any relationship between environmental knowledge and households' intention to save energy? Are there any relationship between environmental concern and households' intention to save energy? Are there any relationship between consideration of future consequences and the households' intention to save energy? Are there any relationship between environmental knowledge and environmental concern with regard energy saving? Are there any relationship between environmental knowledge and consideration of future consequences with regard to energy saving?

Research Objectives

General objective: The study aimed to investigate the environmental knowledge, environmental concern and consideration of future consequences with regard to energy saving among Malaysian households in Kuala Lumpur.

Specific objective:

To identify the relationship between environmental knowledge and households' intention to save energy. To identify the relationship between environmental knowledge and environmental concern with regard to energy saving. To identify the relationship between environmental knowledge and consideration of future consequences with regard to energy saving. To determine the relationship between environmental concern and households' intention to save energy. To examine the relationship between consideration of future consequences and intention to save energy.

Hypothesis:

Ho 1: There is no significant relationship between environmental knowledge and intention to save energy. Ho 2: There is no significant relationship between environmental knowledge and environmental concern with regard to energy saving. Ho 3: There is no significant relationship between environmental knowledge and consideration of future consequences with regard to energy saving. Ho 4: There is no significant relationship between environmental concern and intention to save energy. Ho 5: There is no significant relationship between consideration of future consequences and intention to save energy.

Significance of Study

The research findings will contribute to the body knowledge of environmental and behaviour studies in local context. The findings will give indications on environmental concern and behaviour intention of households. It also can help in understanding of households' environmental orientation and future projection of their future behaviour. Besides, the research findings also given benefit to the various stakeholders of the environment, such as: Contribute to knowledge advancement of the environmental behaviour domain by adding new knowledge to the literature; The government will be able to make a better environmental issues policy. Likewise, local authorities like municipal councils can also implement better actions. The manufacturing industry can use this knowledge into their research and development, such as develop or start with energy efficient products for households. Moreover, it also able them to meet the needs and wants of environmentally awareness consumers. Benefit the society as well. For example, non-government

organizations, environmental groups, etc. can plan better educational programs or campaigns to obtain better results for environmental protection purpose.

Limitation of Study

The present study possesses some limitations that must be acknowledged and overcome in future study. Firstly, the size of sample for this study was relatively small (120 samples) to represent the population. Besides that, this paper only focuses exclusively on energy consumption within households (i. e., for lighting, cooking, heating, etc.). Energy use for transportation as well as indirect energy consumption (e. g., energy used in manufacturing of consumer goods) is not covered in this study.

Conceptual and Operational Definitions

1. 8. 1 Environmental Knowledge (EK)

Conceptual definition: Environmental knowledge refers to one's ability to understand and evaluate the impact of ecosystem on the society, and the amount of knowledge he or she has about environmental issues (Chan, 2001; Haron, Paim and Yahaya, 2005; Aini, Nurizan and Fakhru'l-Razi, 2007) Operation definition: The present study will collect the respondent's knowledge of energy and environmental issues such as energy use, global warming issues and others.

1. 8. 2 Environmental Concern (EC)

Conceptual definition: Dunlap and Jones (2002) stated that ' environmental concern refers to the degree to which people are aware of problems regarding the environment and support efforts to solve them or indicate a

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willingness to contribute personally to their solution' (pp. 485) Operation definition: The present study used Dunlop et al.'s (2000) conceptualization of the NEP scale to measure households' environmental concern

1. 8. 3 Consideration of future consequences (CFC)

Conceptual definition: According to Strathman, Gleicher, Boninger & Edwards (1994), CFC defined as " the extent to which people consider the potential distant outcomes of their current behaviours and the extent to which they are influenced by these potential outcomes." Operation definition: The present study used Strathman et al.'s (1994) conceptualization to measure the CFC.

Research Framework

The variables used in this study are shown in Figure 1. The variables are divided into two types which are independent variable and dependent variable. As for the independent variable refer to the environmental knowledge, environmental concern, and considerations of future consequences. For dependent variable is households' intention to save energy. C: UsersACERDesktopUntitled. jpg

CHAPTER II

LITERATURE REVIEW

In environmental literatures, amongst the popular theories used to study human behaviour are Theory of Reasoned Action by Azjen and Fishbein (1980) and Theory of Planned Behaviour by Azjen and Fishbein (1991). The Theory of Reasoned Action generally used to predict behavioural intention. Meanwhile, Theory of Planned Behaviour is used to explain and predict both

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the behavioural intention and actual behaviour. According to the Theory of Reasoned Action, the most important determinant of a person's behaviour is behaviour intent. Gotschi et. al (2010) believed that behaviour is a causal result from behavioural intention, and behavioural intention is a causal result from two causal variables: (1) attitudes and (2) subjective norms and both variables are determined by beliefs. Abdul Wahid et. al (2011) stressed that in order to apply the Theory of Reasoned Action in any study, two assumptions must be met and they are: (1) human being is rational and makes systematic use of information available to them; and (2) human intention to perform or not perform behaviour is the immediate antecedent of the actions that under volitional control. In short, this current study adopted the Theory of Reasoned Action as it can clearly explain the theoretical framework used for this study which comprised of belief (environmental knowledge and environmental concern), consideration of future consequences and behaviour intention components. Furthermore, due to the nature of this study which involved a cross-sectional data, measuring behaviour intention is deemed to be sufficient instead of measuring the actual behaviour of consumers. Moreover, social psychological and environmental psychological theories and models also argue that pro-environmental behaviour is derived from internal values, beliefs, environmental knowledge, and pro-environmental attitudes (Kollmuss and Agyeman, 2002). From the 1980s, a handful of integrative approaches have been published. Van Liere and Dunlap (1980, p. 194) emphasized that ' the most powerful analyses of the social bases of environmental concern will likely be those which consider both its demographic and cognitive determinants'. Psychological processes, such as environmental values and <https://assignbuster.com/conceptual-and-operational-definitions-environmental-sciences-essay/>

attitudes, play key roles in determining how global conditions impinge on individuals' everyday behaviour (Stokols, Misra, Gould, Runnerstrom and Hipp, 2009). An area where global environmental problems are clearly linked to individual behavior is household energy consumption (Brandon & Lewis, 1999; Noorman & Schoot Uiterkamp, 1998). One would expect that in this area, where individual and collective interests are so evidently in conflict, values could play an important role. However, to our knowledge, the relationships between values and household energy use have not yet been examined. Environmental concerns are often measured using the New Ecological Paradigm (Dunlop, Van Liere, Mertig & Jones, 2000). The NEP considers beliefs about the human relationship with nature, whereby endorsement is indicative of concern for environmental quality (Dunlap et al. 2000) and a belief that human survival is dependent on environmental quality (Stern, Dietz, & Guagnano, 1995). Numerous studies have found that NEP endorsement is related to various types of environmental behaviours and behavioural intentions (Stern et al., 1995; Schultz & Oskamp, 1996; Schultz & Zelezny, 1998). Endorsement of the NEP also involves a view that human interference with nature has the potential to be disastrous. That is, nature should be preserved and protected from overuse by humans (Milfont & Duckitt, 2004). Based on the scholars in the field of environment study, such as Borden and Schettino (1979), Schahn and Holzer (1990), Kaiser et al (1999), and Bayard and Jolly (2006) believe that there is a relationship between environmental knowledge and significant environmental behaviour. In environmental psychology, the concept of environmental concern has been shown to have two dimensions: environmental preservation and utilisation, which can be associated with personality traits (Milfont and <https://assignbuster.com/conceptual-and-operational-definitions-environmental-sciences-essay/>

Duckitt, 2004). Schultz (2001: 337) suggests that ' the type of concerns an individual develops is based on the degree to which they perceive an interconnection between themselves and other people (altruistic), or between themselves and nature (biospheric)', or not (egoistic).

Environmental concern and knowledge on environmental issues should not be confused even if they may be positively correlated. Regarding specifically Belgium, such a correlation has been found in a survey involving electricity consumption: neither environmental concern nor knowledge of global warming ' has a significant influence when household income and size are also introduced in the model' (Bartiaux, 2008: 1176). Several sociologists have further investigated our knowledge of climate change. According to Szerszynski (2010: 9), ' an understanding of anthropogenic climate change must be grounded in a biosemiotic analysis of the evolving metabolism between society and nature'. Indeed for him, ' the metabolic relation of humanity and nature has been understood only in narrowly causal terms, obscuring the disseminative drift of meaning and thus tilting us inexorably towards the idea of climate change as a problem that can be solved rather than an opening to be responded to' (p. 19).

CHAPTER III

METHODOLOGY

3. 1 Research Design

For the purpose of this study, a cross-sectional study was the appropriate technique as opposed to a longitudinal study due to time constraints, and furthermore, this study does not attempt to examine trends. A descriptive survey was selected because it provides an accurate portrayal or account of

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the characteristics, for example behaviour, opinions, abilities, beliefs, and knowledge of a particular individual, situation or group. The design was chosen to meet the objectives of the study, namely to examine what extent the environmental knowledge, environmental concern, and CFC are related to households' intention to save energy.

3. 2 Research Respondent

The targeted respondent in the study is Malaysian households. They are an important group for this study because they are major contributors to the emission of greenhouse gases and it is lead to the global warming. (Saidur et al., 2007). Besides, the potential they have in reducing the energy consumption in their daily activities (Benders, Kok, Moll, Wiersma & Noorman, 2006). Due to the nature of this research, quantitative approach is adopted and the sample size for this research is 120 respondents.

3. 3 Research Location

The research location will be in Kuala Lumpur. From previous study, its shown that most significant increase of energy consumptions and CO₂ emissions is taking place in the cities (Fong, Matsumoto, Lun, & Kimur, 2007a & 2007b; IGES, 2004). According to the national census (2010), the total population of KL are 1, 674, 621, and the numbers of living quarters in KL are 468, 325. This is because Kuala Lumpur are one of the most mass populated city in Malaysia with 6, 891 persons per square kilometre.

3. 4 Sampling procedure

The present research will use the probability sampling as this was quantitative research methodology. Systematic sampling method will be

adopted to choose respondent random at the starting point and then picking every nth element in succession from the sampling frame. Every 5th people that come in or come out from the shopping mall will be ask to fill up the questionnaire. It also seems like mall-intercept that is a survey whereby respondents are intercepted in shopping in malls. The process involves stopping the shoppers, screening them for appropriateness, and either administering the survey on the spot or inviting them to a research facility located in the mall to complete the interview.

3. 5 Data Collection

Data was collected with the aid of questionnaire to determine the factors that affects the Malaysia households' intention toward energy savings in Kuala Lumpur. A questionnaire was chosen as data collection instrument because questionnaire is a printed self-reports from designed to elicit information that can be obtained through the written responses of the subjects.

3. 6 Research Instrument

The present study used a structured questionnaire to conduct the survey which the questionnaire consisted of 5 parts. Part A was on respondent's demographic profile such as age, gender, marital status, education level and monthly income. In Part A, the type of question would be closed-ended question. For Part B, it contained 10 questions measure on the respondent's Environmental Knowledge with energy-related issue and environmental issues. The dichotomous question was used to construct the question form, which the respondent will ask for a true/false response to the statements is given. For Part C, the New Ecological Paradigm (NEP) Scale (Dunlap et al., <https://assignbuster.com/conceptual-and-operational-definitions-environmental-sciences-essay/>)

2000) was adopted to measure the environmental concerns which consist of 15 items. Likert scale with measurement scale of five response ranging from "strongly agree" to "strongly disagree", respondents will be asked to indicate their strength of agreement with each statement. For Part D, the Consideration of Future Consequences (CFC) scale (Strathman et al, 1994) was adopted to measure whether individuals consider the future implications of their current actions. The CFC scale contains 12 general statements, where 7 statements reflect concerned with immediate consequences and 5 statements reflect concern with future consequences. Respondents rated how characteristic each statement was of their own behaviour on a scale from 1 (extremely uncharacteristic) to 5 (extremely characteristic). For Part E, the 18 Home energy saving measure by Poortinga, Steg & Vlek (2004) will be adapted to measure the households' intention to save energy on coming future, and also presented with estimations of the energy-saving potential. The respondents were asked to indicate how greater likelihood to perform the home energy saving on five-point scale from 1 (very unlikely) to 5 (very likely).