

## CHAPTER 3

### RESEARCH METHODOLOGY

This chapter will elaborate the research methodology adopted for the purpose of this research. The chapter will first present the list of hypothesis developed from previous literature. This is followed by the source and development of the construct and research instruments. The sampling technique employed will be delineated along with the data collection technique. Finally, a brief elaboration on the statistical analysis adopted for the data analysis is incorporated towards the end of this chapter.

#### 3.1 List of Hypotheses

**Hypothesis 1:** Chinese are more knowledgeable about environmental issues than Malays and Indians.

**Hypothesis 2:** Chinese display stronger environmental attitudes than Malays and Indians.

**Hypothesis 3:** Malays engage in more environmentally friendly behaviours than Chinese and Indians.


#### 3.2 Measurement of Constructs

The measurement constructs of this study were depicted and adapted based on input from previous studies. The relevant details are described below.

### **3.2.1 Environmental Knowledge (Eco-literacy) Construct**

Previous study done by Laroche et al. (1996) has developed a set of questions (total of 7 items) related to environmental knowledge or eco-literacy in order to measure how one's ability to identify or define a number of ecologically-related symbols, concepts and behaviours. Therefore, the 7 items to operationalize the construct of environmental knowledge (eco-literacy) in this study were depicted from previous literature (Laroche et al., 1996; Laroche et al., 2001; Laroche et al., 2002). Based on Table 3.1, Item number 1, 2, 4 and 5 are open-ended questions which encourage respondents to provide any possible answer that would cross in their minds. On the other hand, item number 3, 6 and 7 are close-multiple-choice questions that respondents could use their very best knowledge to choose from the given answer. Each of the correct answer for every item will be given 1-mark, except for the item number 7. In item number 7, respondents are required to identify the items that could be recycled or not. Thus, each mark will be credited if respondents able to identify those items correctly. Total correct-mark for item number 7 is 5. The answers for this environmental constructs could be obtained in Haron et al. (2005) and Alam Flora (2007). The finalize scores of each respondent will be the eco-literacy score rated from 1 to 11 marks.

Table 3.1: Measuring environmental knowledge (eco-literacy) construct

| Item No. | Statement   | Source   |
|----------|---|--|
| 1        | Can you explain what this  symbol means to you?                | Laroche et al. (1996)<br>Laroche et al. (2001)<br>and<br>Laroche et al. (2002) |
| 2        | Can you explain what the blue bin or green bin is for?  |  |
| 3        | To the best knowledge, what is the single most important source of air pollution on earth?  |  |
| 4        | What does the term "greenhouse effect" mean to you?   |  |
| 5        | One sometimes hears or reads about "greenhouse gases". Please name a "greenhouse gas"?  |  |
| 6        | Taking all things that can be thought of as garbage in a household, what percentage of that garbage would you say can be recycled or composted? |  |
| 7        | Under most recycling programs, which of these items can/ cannot be recycled?  |  |

### 3.2.2 Environmental Attitudes

There all together four environmental attitudes constructs, namely “severity of environmental problems”, “importance of being environmentally friendly”, “level of responsibility of corporations” and “inconvenience of being environmentally friendly”. The details of the measurements for each attitude-construct will be discussed as follow.

#### 3.2.2.1 Severity of Environmental Problems

With reference to the Laroche et al. (2001) and Laroche et al. (2002) measurement constructs, five statements, anchored by “1= Strongly Disagree” to “7= Strongly Agree”, were employed to tap respondents’ degree of perceive “severity of environmental problems”. Table 3.2 shows the five statements in

measuring the “severity of environmental problems” construct. Based on previous studies, the cronbach’s alpha scores for this construct were 0.87 (Laroche et al., 2001) and 0.91(Laroche et al., 2002), reflecting high reliability of the construct.

Table 3.2: Measuring severity of environmental problems construct

| Item No. | Statement   | Source  |
|----------|---|---|
| 1        | Our country has so many trees that there is no need to recycle paper.   | Laroche et al. (2001) and Laroche et al. (2002) |
| 2        | Since we live in such a large country, any pollution that we create is easily spread out and therefore of no concern to me.   |   |
| 3        | In our country, we have so much electricity that we do not have to worry about conservation.                                  |   |
| 4        | With so much water in this country, I don't see why people are worried about leaky faucets and flushing toilets.              |   |
| 5        | The earth is a closed system where everything eventually returns to normal, so I see no need to worry about its present state |   |

### 3.2.2.2 Importance of Being Environmentally Friendly

With reference to McCarty and Shrum (1994) and Roberts (1996), three statements coded by 7-point Likert scales from “1= Strong Disagree” to “7= Strongly Agree” were employed to operationalize the “importance of being environmentally friendly” construct (Table 3.3). The reliability score for this construct was 0.65.

Table 3.3: Measuring importance of being environmentally friendly construct

| Item No. | Statement   | Source                                      |
|----------|---|---|
| 1        | Recycling will reduce pollution.                          | McCarty and Shrum (1994) and Roberts (1996) |
| 2        | Recycling is important to save natural resources.         |   |
| 3        | Recycling will save land that would be used as dumpsites. |   |

### 3.2.2.3 Level of Responsibility of Corporations

With reference to the Laroche et al. (2001) and Laroche et al. (2002) measurement constructs, two statements, coded by “1= Strongly Disagree” to “7= Strongly Agree”, were employed to tap respondents’ perception on the “level of responsibility of corporations” (Table 3.4). The reliability scores for this construct were 0.67 (Laroche et al., 2001) and 0.68 (Laroche et al., 2002).

Table 3.4: Measuring level of responsibility of corporations construct

| Item No. | Statement  | Source  |
|----------|--|---|
| 1        | Packaged food companies are acting responsibly toward the environment. | Laroche et al. (2001) and Laroche et al. (2002) |
| 2        | Paper companies are concerned about the environment.                   |   |

### 3.2.2.4 Inconvenience of Being Environmentally Friendly

With reference to McCarty and Shrum (1994) and Roberts (1996), four statements coded by 7-point Likert scales coded by “1= Strongly Disagree” to “7= Strongly Agree” were employed to operationalize the “inconvenience of being environmentally friendly” construct (Table 3.5). The reliability score for this construct was 0.71.

Table 3.5: Measuring inconvenience of being environmentally friendly construct

| Item No. | Statement  | Source                                      |
|----------|--|---|
| 1        | Keeping separate piles of garbage for recycling is too much trouble. | McCarty and Shrum (1994) and Roberts (1996) |
| 2        | Trying to control pollution is much more trouble than it is worth.   |   |
| 3        | Recycling is too much of trouble.                                    |   |
| 4        | I hate to wash out bottles for recycling.                            |   |

### 3.2.3 Environmental Behaviours

There all together four environmental behaviours constructs, namely “willingness to pay more for environmentally friendly products”, “recycling”, “considering environmental issues when making a purchase” and ”buying environmental harmful products”. The details of the measurements for each behaviour-construct will be discussed as follow.

#### 3.2.3.1 Willingness to Pay More for Environmentally Friendly Products

According to Table 3.6, three statements were used to measure respondents’ willingness to pay more for environmentally friendly products, coded in 7-point Likert scale from “1=Strongly Disagree” to “7=Strongly Agree” (Laroche et al., 2001 and Laroche et al., 2002). The cronbach’s alpha scores were 0.84 (Laroche et al., 2001) and 0.88 (Laroche et al., 2002).

Table 3.6: Measuring willingness to pay more for environmentally friendly products construct

| Item No. | Statement   | Source  |
|----------|---|---|
| 1        | It is acceptable to pay 10% more for groceries that are produced, processed, and packaged in an environmentally friendly way. | Laroche et al. (2001) and Laroche et al. (2002) |
| 2        | I would be willing to spend an extra RM10 a week in order to buy less environmentally harmful products.                       |   |
| 3        | I would accept paying 10% more taxes to pay for an environmental cleanup program.   |   |

#### 3.2.3.2 Recycling

With reference to the Laroche et al. (2001) and Laroche et al. (2002), only one statement, coded by “1= Never” to “7= Always”, were employed to tap respondents’ frequency on engaging recycling activity (Table 3.7).

Table 3.7: Measuring recycling construct

| Item No. | Statement  | Source  |
|----------|--|---|
| 1        | Using the blue or green box (bin) for recycling. | Laroche et al. (2001) and Laroche et al. (2002) |

### 3.2.3.3 Considering Environmental Issues when Making a Purchase

With reference to Laroche et al. (2001) and Laroche et al. (2002), two statements coded by 7-point Likert scales from “1= Never” to “7=Always” were employed to operationalize the “considering environmental issues when making a purchase” construct (Table 3.8). The reliability scores for this construct were 0.68 (Laroche et al., 2001) and 0.73 (Laroche et al., 2002).

Table 3.8: Measuring considering environmental issues when making a purchase construct

| Item No. | Statement   | Source  |
|----------|---|---|
| 1        | When buying something wrapped, check that it is wrapped in paper or cardboard made of recycled material | Laroche et al. (2001) and Laroche et al. (2002) |
| 2        | Refusing to buy products from companies accused of being polluters.                                     |   |

### 3.2.3.4 Buying Environmental Harmful Products

With reference to Laroche et al. (2001) and Laroche et al. (2002), two statements coded by 7-point Likert scales from “1= Never” to “7=Always” were employed to operationalize the “buying environmental harmful products”

construct (Table 3.9). The reliability scores for this construct were 0.70 (Laroche et al., 2001) and 0.73 (Laroche et al., 2002).

Table 3.9: Measuring buying environmental harmful products construct

| Item No. | Statement                                      | Source  |
|----------|--|---|
| 1        | Buying/ Using plastic knives, forks, or spoons | Laroche et al. (2001) and Laroche et al. (2002) |
| 2        | Buying/ Using Styrofoam cups.                  |   |

### 3.3 Research Instrument

The survey instrument consisted of an eight-page questionnaire (Appendix A) which was used to collect the required data from the respondents. It was originally prepared in English and later translated to Bahasa Malaysia (Malaysia's national language) by using the back-to-back translation technique (Zikmund, 2000). The undertaking of the back-to-back translation was carried out to prevent any foreseeable ambiguities of statements and possible language incompatibility across diverse ethnic groups.

The questionnaire was organized into four parts: Part A, Part B, Part C and Part D. Part A measured the environmental knowledge objectivity with seven open-ended or multiple-choice questions. For example, respondents were requested to identify or define a number of ecological related symbols (e.g., the recycling symbol), concepts (e.g., the greenhouse effect and gases), and concern for local and global environmental issues (e.g., the important source of



air pollution on the earth, the percentage of households' garbage could be recycled and items that could be recycled). The answers given by the respondents were intended to create an "eco-literacy" score, indicating how much a respondent knew about environmental issues.

In Part B, four environmental attitudes of respondents were measured, namely: "severity of environmentally friendly", "importance of being environmentally friendly", "level of responsibility of corporations", and "inconvenience of being environmentally friendly". Most of these questions sought to measure the respondents' attitudes to the environment in general, but some attempted to measure attitudes towards specific environmental act such as "Recycling". In addition, this part also measured the respondents' related environmental behavioural intention: "willingness to pay more for ecologically favourable products". Respondents were asked to read 17 statements and specify on a seven-point Likert Scale, whether they strongly disagree (1) to strongly agree (7) with each statement.

Part C, on the other hand, measured three environmental behaviours (recycling, considering environmental issues when making a purchase, and buying or using ecologically friendly products). A total of 5 statements, in which the respondents were required to specify how often they engaged in particular environmental friendly or unfriendly behaviours on seven-point Likert Scale, ranging from 1 (Never) to 7 (Always). Minor adaptations have been made on the

original questions (items), as to better reflect with actual local Malaysian scenario. The details are as follows:

Behaviour Sub-scale

Question 14: “\$10” was changed to “RM10”

Question 21: ““Buying plastic knives, forks, or spoons” was changed to ““Buying / Using plastic knives, forks, or spoons”

Question 22: “Buying Styrofoam cups” was changed to “Buying / Using Styrofoam cups”,

Finally, Part D was designed to collect demographic data of the respondents participating in the study. The demographic data gathered were: ethnicity, gender, monthly household income, age, education level, marital status, number of children and employment status. These variables were measured using a close-ended multiple choice format. This part was intentionally placed at the last part of the questionnaire so as to minimize resistance from respondents in participating in the survey. This arrangement is crucial as majority of respondents view demographic data as sensitive data and would prefer them to be kept private and confidential.

### **3.3.1 Pilot Test**

The initial completed questionnaire was tested on 20 respondents from the same target population: Malaysian residents in the Klang Valley. Pilot test is

an important step to refine prior questionnaire in order to ensure respondents will have no problem in understanding the questions, following all instructions, and providing the answers. After the pilot test was conducted, the questionnaire was refined based on constructive comments and feedbacks from the respondents to enhance the efficiency in subsequent data collection stage. For example, in Part A, the instruction “to choose one answer only” in Question 3 and 6 had been highlighted to prevent the respondents from giving more than one answer. Thereafter, data collected was properly coded and analysed to ensure its relevancy to the research objectives and questions.

### **3.4 Sampling Technique**

As this research is exploratory in nature, a quota-convenience-sampling was adopted to ensure that the three major ethnic groups: Malays, Chinese and Indians were adequately represented. A total of 300 respondents were targeted with the ethnicity breakdown as follows: Malay, n=150 (50 per cent); Chinese, n=100 (33.3 per cent) and Indian, n=50 (16.7 per cent). Klang Valley has been chosen as the base for the research because it has the highest population in Malaysia and most of the environmental marketing programmes (e.g., Earth Hour Global event) were in place and mostly advertised in this area. Thus, the population in this area will be exposed to reasonable amount of information on environment issues, and marketing of environment friendly events and products. This was important and necessary to ensure targeted respondents understand

the objectives and questions of the research without providing unrealistic answers.

### **3.5 Data Collection Technique**

Data were collected using self-administered questionnaire survey. Concerted efforts were made to obtain a diverse sample from various locations in the Klang Valley such as hospitals, shopping malls, recreational parks, university and business centres. At each site, potential respondents were intercepted and approached if they were willing to participate in a research conducted by University of Malaya's business school. Upon their agreement, participants were asked to complete self-administered questionnaires about their environmental knowledge, attitudes and behaviours. Respondents were required to complete the questionnaire in 15 minutes and questionnaires were collected back on the spot. After completion of the questionnaire, each respondent was given small token of appreciation (pen) for their participation in the study. Completed questionnaires were collected in two months within the period of September to October 2010. Since this is an environmental study, questionnaires have been strictly and carefully distributed to participants who expressed their willingness to participate in it so as to reduce incomplete or non-usable data. With this measure, a total of 308 questionnaires have been distributed, and 300 sets of data were subsequently retained after deleting those with incomplete information.

### **3.6 Data Analysis Technique**

The survey data was analysed using the Statistical Package for Social Sciences (SPSS) version 16.0 software program. The analysis comprised of four major parts as follows:

- Summary of respondent demographic profile and “eco-literacy” score were tabulated using frequency and percentage counts.
- One-way Between-Groups ANOVA was used to compare the variance between the three ethnic groups mainly: Malay, Chinese and Indian.
- Correlation test was conducted to examine the relationship between willingness to spend more for environmental friendly products and “eco-literacy”, attitudes and other environmental behaviour constructs.
- Multiple Regression Analysis to determine the most important factor(s) in affecting respondents’ willingness to pay more for environmental friendly products.