CHAPTER 4

RESEARCH METHODOLOGY

INTRODUCTION

This chapter outlines the considerations and proposed research methodology to be used in this study. The first part of the chapter discussed the research design, the basis used to formulate the theoretical framework of this study, the hypothesis, the key concepts, the dependent variable and the independent variables, the unit of analysis, the research sample and the sampling frames and it also included the explanation of the measurement of the independent variables and the dependent variable. The second part of this chapter focuses on the data collection method issues. The main elements include identifying the source of data, population of the study and the sampling procedures for data collection. This second part also explains the development of the questionnaire, the procedure of data collection, the pilot test and the problems of gathering the secondary data and, finally, the third part addresses the instrumentation issues.

4.1 THE RESEARCH DESIGN

The study utilized primary data. The initial step in the research plan was to generate a general description of environmental ethics and review the related literature. This was to provide a survey of the previous findings and research in the environmental ethics field. Given the research objectives of this study in Chapter 1, it was not difficult to establish that this study was considered as a descriptive research. Descriptive research was carried out to answer the questions who, what, when, where and sometimes how (Cooper and Schindler, 2003) and to understand the characteristics of organizations that follow certain common practices (Sekaran and

Bougie, 2010). According to Cooper and Schindler (2003), a research is categorized as a descriptive study when the researcher attempts to describe or define a subject or when the study may involve the collection of data and the number of times the researcher observes a single event or characteristics that known as research variable. They also emphasized that descriptive study serves a variety of research objectives such as to describe the phenomenon or characteristics associated with a subject population and to discover the association among different variables where discovery of association among different variables is labelled a correlational study. A correlational study is a subset of descriptive study where bivariate relationships between the variables may be even greater interest (Cooper and Schindler, 2003).

This research was also claimed to be relatively brief (Starik and Marcus, 2000), relatively young as a discipline (Starik and Marcus, 1999; Fox, 1996) and considered as a newcomer (Carnegie Mellon, 2003; Patridge, 1980). It fitted into the general category of objectives of descriptive research and it was decided that the research would be in the form of a cross-sectional study. It was designed as cross-sectional study as the data were collected from manufacturing companies in the year 2010 to study corporations' environmental ethical commitment towards the natural environment. The data was only collected once and was not collected before and will not be collected again for the research (Sekaran and Bougie, 2010), representing a snapshot of one point in time (Cooper and Schindler, 2003). As such, a survey of the firm's environmental ethics of manufacturing companies in Malaysia was undertaken. The design of the study was constructed in such a way as to assess the corporation's commitments towards environmental ethics.

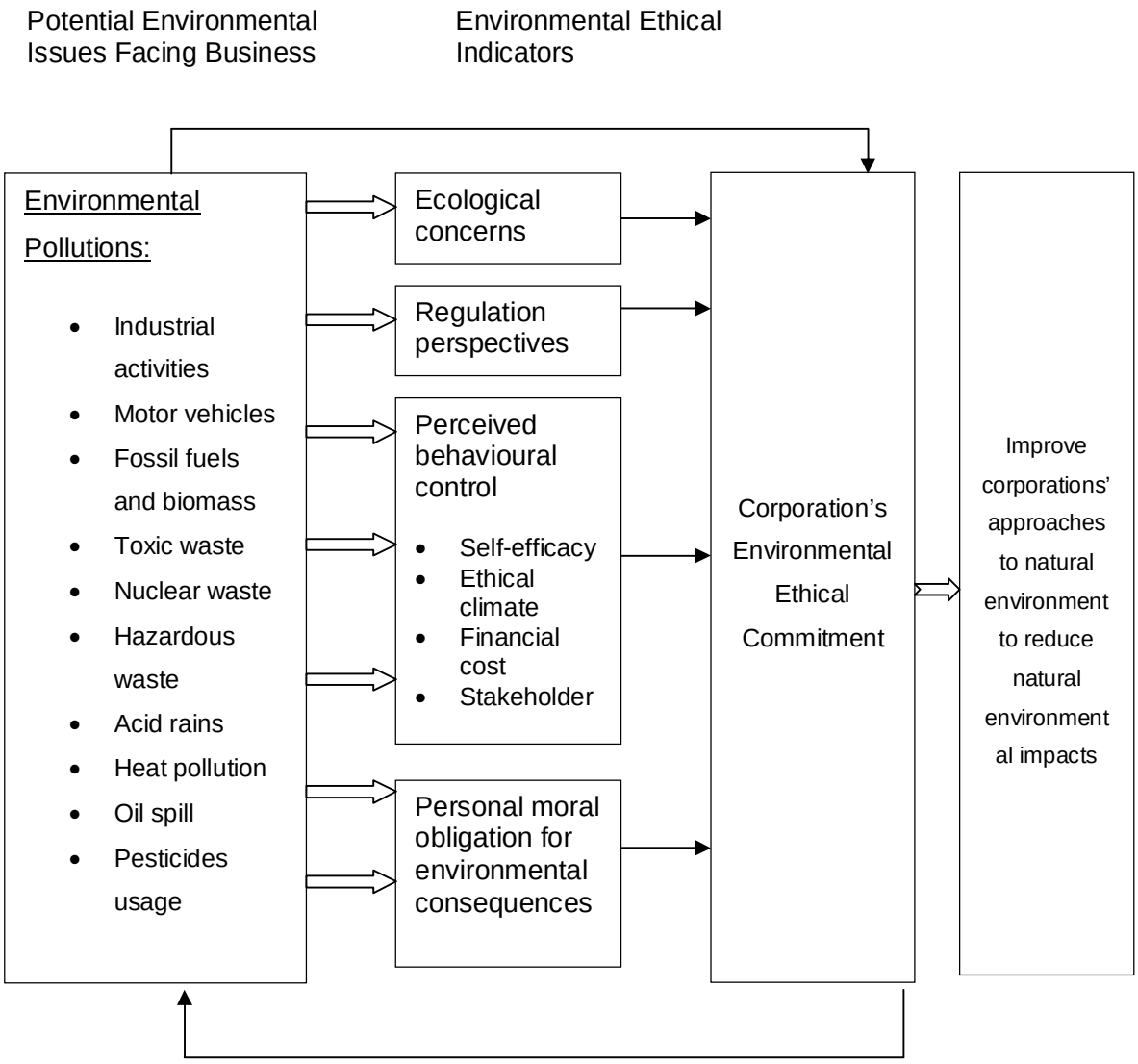
4.1.1 THEORETICAL AND RESEARCH FRAMEWORK

As identified in the previous chapter, first and foremost, the underlying theory of the study is based on the Theory of Planned Behavior (TPB) proposed by Azjen (1991) and was adapted from two prominent researches by Flannery and May (2000) and Cordano and Frieze (2000). In addition, inputs were also gained from several related studies such as Gill et al. (1986), Jones (1986), Victor and Cullen (1988), Henriques and Sadorsky (1999), Andersson and Bateman (2000), Egri and Herman (2000), Ramus and Steger (2000), Christmann (2000), Sharma (2000), King and Lenox (2000) and Bansal and Roth (2000).

Malaysia experiences environmental pollution in the form of industrial activities, motor vehicles, fossil fuels and biomass, toxic waste, nuclear waste, hazardous waste, acid rain, heat pollution, oil spills and usage of pesticides. There is a general agreement that a multitude of environmental ethical considerations would influence the corporation's commitment towards the natural environment, and, thus, improve corporations' approaches to the natural environment and eventually reduce natural environmental impacts. Figure 4.01 represents the suggested theoretical model in this study.

Figure 4.01

Factors Influencing Firm's Environmental Ethical Commitment



The model was created in such a manner because as the creator of economic activity, corporations are often the source of environmental problems and they can also be affected negatively by the decline in environmental quality (Logsdon, 2004). Environment pollution has been outlined by many researchers, as discussed under the corporations' approaches in Chapter 2.

Particularly, the study adopted the list of environmental pollution by the Department of Environment (DOE) of Malaysia.

The Department of Environment has described pollution in terms of air and water pollution that originated from two main sources: natural and man-made sources. The man-made sources include emissions from industrial activities, emissions from motor vehicles and burning of fossil fuels and biomass, while toxic waste, nuclear waste, hazardous waste, acid rain, heat pollution, oil spills and pesticides usage represent the man-made sources of pollution.

Zabid and Alsagoff (1993) indicated that ethical business climate in Malaysia is at a critical stage. Human activities were blamed as being the cause of environmental problems in Malaysia where the nation faced urban air quality, river water quality, deforestation, household waste and hazardous waste (Said et al., 2003). Therefore, there is a call for environmental ethics. With corporations' EEC, it could improve the corporations' approaches to the natural environment, thus, enabling them to reduce the natural environmental impacts.

Based on the literature reviewed, reviews of environmental managers and the underlying theory of planned behaviour (TPB), the factors studied were ecological concern, regulation aspects, self-efficacy, ethical climate, financial cost and stakeholders' perspectives were identified as

environmental ethical indicators for companies to consider in order to be environmentally ethically committed.

Each company differs in their nature of business and, therefore, several approaches were proposed by many scholars in the environment and natural environment literature. The approaches were classified as reactive, defensive, accommodative and proactive by the corporate social responsibility literature (Wartic and Cochran, 1985; Caroll, 1979).

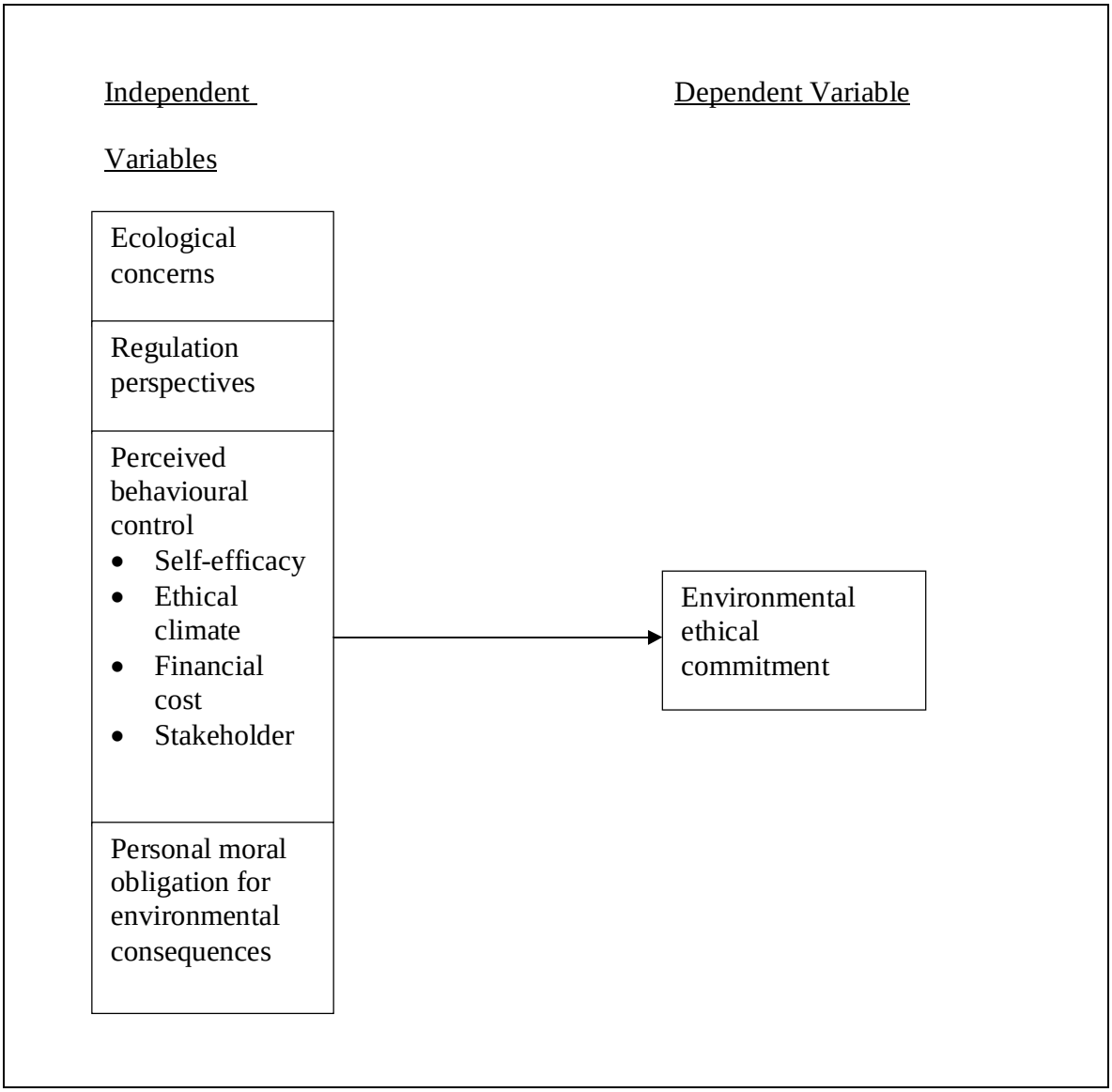
Hunt and Auster (1990) developed five stages of the corporate environmental management programme. The stages were the beginner, the fighter, the concerned citizen, the pragmatist and the proactivist. Examples of proposed approaches were recycling (Ramus and Steger, 2000), change of operation (Bansal and Roth, 2000), use pollution technologies (Christmann, 2000), environmental training (Shrivastava, 1996), have an environmental plan (Henriques and Sadorsky, 1999) and natural environmental seminars for executives (Aragon-Correa, 1998). These enabled the companies to reduce natural environmental impacts, thus, promising the success of the companies in the industry.

Based on the theoretical model, the major tenets of environmental ethical commitment (EEC) and from the literature reviewed, the research framework was developed. The research model was illustrated in Figure 4.02. The independent variables were presented by eight indicators, namely, ecological concern, regulation perspectives, ethical climates, self-efficacy, financial aspect, stakeholder pressure, stakeholder information and personal

moral obligations. The dependent variable, being the research area, was the environmental ethical commitment (EEC).

Figure 4.02

Theoretical Framework of the Study



The dependent variable for this study was environmental ethical commitment (EEC). Henriques and Sadorsky (1999:88) defined a

company's commitment to the natural environment as what a company was actually doing or has done with reference to environmental issues. There have been many descriptions of commitment to the natural environment proposed by many researches; among others are the best practices of environmental leadership by Dechant and Altman (1994), the approaches to the natural environment by Aragon-Correa (1998), the ecological responsive initiatives or motives (Bansal and Roth, 2000), the championing indicators (Andersson and Bateman, 2000) and the responsible care programme (King and Lenox, 2000).

This particular study concentrates on the commitment proposed by Cordano and Frieze (2000), as the commitment proposed was comprehensive and suits most of the Malaysian corporations with the assumption that most corporations in Malaysia are not aware of environmental ethics, and if they are aware, the awareness is still low.

Cordano and Frieze (2000) modified Ajzen's theory of planned behaviour and used structural equation analysis to analyse the pollution reduction preferences of 295 environmental managers. They defined environmental managers as those managers with responsibility for identifying source reduction opportunities and implementing feasible source reduction practices (Cordano and Frieze, 2000:630). All independent variables were found to positively affect the behavioural preferences for source reduction activities but they found that the perceived behavioural control variable

negatively affected the behavioural preferences for source reduction activities.

The preliminary drivers proposed were legislation, stakeholder pressure, economic opportunities and ethical motives (Bansal and Roth, 2000). This particular study accommodated the legislation in terms of regulations, stakeholder pressure and ethical motives together with five other important drivers. Based on Ajzen (1991), the important driver was ecological concerns as the attitude variable, based on Cordano and Frieze (2000), regulations were captured as the subjective norms variable and five perceived behavioural control factors, namely, the ethical climate, stakeholder pressure, stakeholder information, financial cost and self-efficacy. In addition, the personal moral obligation (PMO) will be empirically tested concerning its influence on the corporation's environmental ethical commitment.

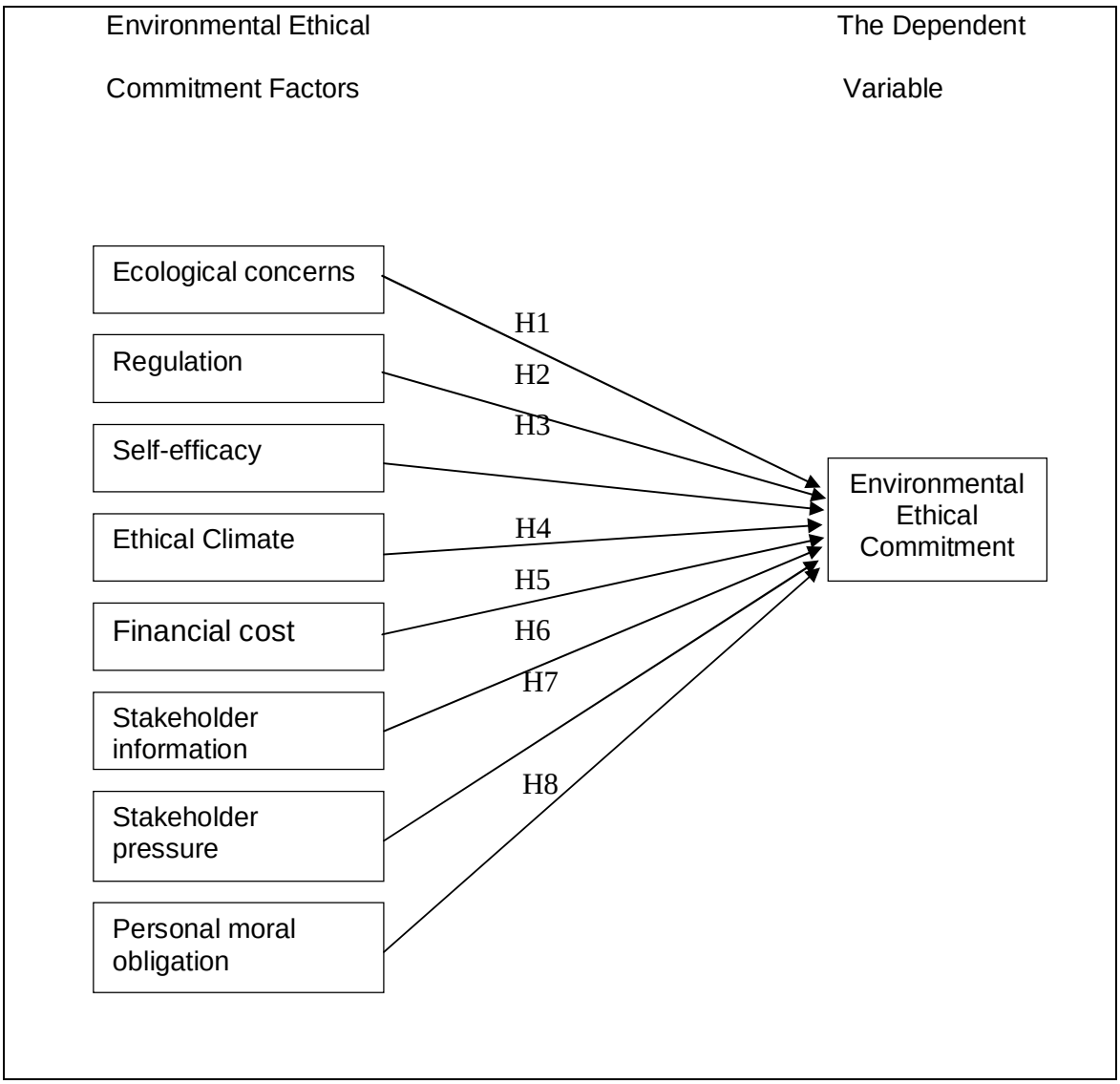
The dependent variable selected in this study was the environmental ethical commitment (EEC) that a company might engage in to improve their environmental performance to reduce natural environmental impacts. Respondents were asked to rate their understanding of the term EEC by asking their response towards several statements proposed by Cordano and Frieze (2000).

Each of these statements according to Cordano and Frieze (2000) indicated the company's commitment to the natural environment. The selection of

these factors was aimed at determining to what extend the companies would have on the firm's environmental ethical commitment. This would facilitate the formulation of a firm's policy and allocation of resources to strengthen the company's competitive advantage within the industry. (Please refer to Figure 4.03 for the Hypotheses Indicators).

Figure 4.03

The Hypotheses Indicators



4.1.2 THE HYPOTHESES

The model of this study will ascertain the relationship between the chosen variables and analyse the following hypotheses:

Hypothesis 1: Manager's environmental ethical commitment will be influenced positively by their ecological concern towards the natural environment.

Hypothesis 2: Manager's environmental ethical commitment will be influenced positively by their perception of regulations imposed by the government.

Hypothesis 3: Manager's environmental ethical commitment will be influenced positively by their levels of efficacy.

Hypothesis 4: Manager's environmental ethical commitment will be influenced positively in relation to their own organizational ethical climates.

Hypothesis 5: Manager's environmental ethical commitment will be influenced positively in relation to their perceptions of financial cost considerations.

Hypothesis 6: Manager's environmental ethical commitment will be influenced positively by their personal moral obligation.

Hypothesis 7: Manager's environmental ethical commitment will be influenced positively by their stakeholders' information.

Hypothesis 8: Manager's environmental ethical commitment will be influenced positively by their stakeholders' pressure.

4.1.3 THE KEY CONCEPTS

The key concepts for this study are the environmental ethics and corporation's commitment towards the natural world. Business activities, especially manufacturing activities, have had an impact on the natural world. This could be a positive or a negative impact. In order to balance these impacts, environmental ethics have been said to be the appropriate "theme" for a corporation to adapt in order to run its business and also compete in the global world. Businesses that have environmental ethics considerations in their business operations are able to have a high environmental image. This consideration enabled the corporations to increase the number of people interested in the activities of the companies, thus, promising success in the world of high competition.

4.1.4 THE DEPENDENT VARIABLE

The dependent variable for this study was environmental ethical commitment (EEC). According to Henriques and Sadorsky (1999) a company's commitment to the natural environment is what a company actually does or has done with reference to environmental issues. There were many descriptions of commitment to the natural environment proposed by many researches; some of them were the best practices of environmental leadership (Dechant and Altman, 1994), the approaches to the natural environment (Aragon-Correa, 1998), the ecological responsive initiatives or motives (Bansal and Roth, 2000), the championing indicators (Andersson and Bateman, 2000) and the responsible care programme (King and Lenox, 2000).

This particular study concentrated on the statement proposed by Cordano and Frieze (2000), as the statement of commitment proposed was comprehensive and most suited to the Malaysian companies with the assumption that most companies in Malaysia are not aware of environmental ethics, and if they are the awareness is still low. The dependent variable chosen for this study was the environmental commitment profile of a company to improve the environmental performance in order to reduce natural environmental impacts.

4.1.5 THE INDEPENDENT VARIABLES

Existing measurement scales were identified through a review of prior research. The measurement scales were adjusted to fit the variables included in this study. The independent variables selected for this study were ecological concerns as the attitude variable, regulations represented the subjective norm variable, self-efficacy as internal perceived behavioural control, ethical climates, financial aspect, stakeholder pressure and stakeholder information as external perceived behavioural control and personal moral obligation. All items used in this study were adopted from the literature. Specifically, the research used seven items to measure EEC. EEC concerning the pollution reduction preference by Cordano and Frieze (2000) was used as a guide in writing EEC items for this study.

The study also used regulation items from Cordano and Frieze (2000) that study environmental stakeholders to provide the content for the items measuring the subjective norm of environmental regulation. The research

measured respondents ecological concerns based on Gill et al. (1986). Ethical climate items were adopted from Jones (1986) and Victor and Cullen (1988) with eight items each. The financial cost items were adopted from Flannery and May (2000) and Christmann (2000) with five items and personal moral obligation was based on Flannery and May (2000), and Kurland (1995a) with 6 items. The inclusion of stakeholders' variables was the researcher's effort to develop the theoretical framework of the study as the study modified the measurement of the items from Henriques and Sadorsky (1999). The researcher's contribution in the thesis was based on the inclusion of stakeholders variables in the theoretical framework developed in this study.

The stakeholders' categories were identified by Henriques and Sadorsky (1999). Henriques and Sadorsky (1999) grouped stakeholders into two categories. The categories were stakeholder information and stakeholder pressure. According to them, business corporations were influenced by their stakeholders based on the information gained and the pressure experienced by them. The sources of stakeholders' information were shareholders, employees, customers, suppliers, the government, community and environmental organizations and other lobby groups. The sources of stakeholder pressure were newspapers, television and radio, customers, competitors, the government, trade associations, environmental organizations, employee information and informal networks.

This study utilized seven indicator items as created by Cordano and Frieze (2000) for the EEC variable or dependent variable. Flannery and May (2000) measured managers' environmental ethical decision intention based on one item while Kurland (1995a) used eight items based on Warshaw and Davis (1985), and Fishbein and Stasson (1990). The attitude variable was measured by Flannery and May (2000) with a 3-item scale to assess the managers' attitude towards the environmental ethical decision making while Cordano and Frieze (2000) used a seven-point Likert-based format. Gill et al. (1986) measured ecological concern as an attitude based on Van Liere and Dunlap (1982) with a combination of 21 items that were later divided into two categories: pollution and natural resource problem with 16 items while regulation and spending approaches comprised five items.

The regulation variable was first attempted by Cordano and Frieze (2000) to represent the subjective norm variable by using a seven-point Likert-based format. The examples of the items by Cordano and Frieze (2000) were derived from the studies of Ajzen (1991), and Taylor and Todd (1995) in recycling behaviour. With suggestions from environmental managers, they designed subjective norm items that focused on environmental regulations from Cordano's (1996) study of environmental stakeholders to provide the content of regulation items. Flannery and May (2000) used two subjective norms items that were derived from Ajzen and Fishbein (1980) to measure environmental regulation.

Cordano and Frieze's (2000) research was done in the U.S.A. by selecting environmental managers because of their responsibility. The research was based on individual factors within the organization. Their sample was gained from the membership of the Air and Waste management Association (AWMA). AWMA was the largest organization of environmental professionals in the United States. The sample of this study on EEC was gained from the Federation of Malaysian Manufacturers (FMM) Directory 2005, which facilitates Malaysian industries to expand their businesses. FMM provides Malaysian manufacturing companies with international contacts, domestic market outreach, continuous information updates, government contact and advice, business leaders' network and industry platform and direct membership benefits such as savings, recognition and linkages and alliances.

According to Cordano and Frieze (2000), environmental managers were represented by functional areas such as environment, health and safety, industrial hygiene, regulatory affairs and waste management. Their job titles include manager, administrator, director, specialist, coordinator, leader and superintendent. Specific job titles include environmental managers, environmental engineers and environmental affairs managers. Although the focus of EEC study was the environmental managers, the questionnaires were mailed to the top management of the targeted respondents. Based on the response, this study indicated that the respondents' specific titles were a combination of environmental and typical managerial designations such as senior executive environment, senior executives, director, executive director,

general manager, managing director, EHS manager, company search (Legal) and safety officer.

Kurland (1995a) measured subjective norm items based on past research. Respondents were asked to indicate their perceptions of significant others' behaviour and the degree to which they were influenced by it. The assessment of subjective norms in general was much influenced by Bagozzi et al. (1992) in coupon usage, Randall and Gibson (1991) in ethical decision making in the medical profession and Schifter and Ajzen (1985) in losing weight.

Based on Fishbein and Stasson (1990), Kurland (1995) developed items to measure perceived behavioural construct with three interpretations. Cordano and Frieze (2000) used a modified version of Ajzen (1991) and Taylor and Todd (1995) to measure perceived behavioural control. The perceived behavioural control in this study was the self-efficacy construct. For internal perceived behavioural control the self-efficacy variable was measured by Flannery and May (2000) with the items developed by Jones (1986). Jones (1986) followed Bandura (1977, 1978) to measure self-efficacy and used eight items scored on a 7-point Likert-type scale ranging from strongly agree to strongly disagree.

Another perceived behavioural construct categorized as an external factor was the ethical climate construct. Ethical climate was measured by Flannery and May (2000) by using averaged seven items developed by Victor and

Cullen (1988). The seven items used by Victor and Cullen were earlier designed by Schneider (1983) as Ethical Climate Questionnaires (ECQ) with nine theoretical ethical climate types – self-interest, friendship, personal morality, company profit, team interest, company rules and procedure, efficiency, social responsibility and laws and professional code.

Using a principle components solution with varimax rotation, Victor and Cullen (1988) managed to describe the theoretical types of climate with five factors. The factors include caring, law and code, rules, instrumental and independence. This study on EEC utilized the components of law and code and rules climate types to measure the ethical climate variable with eight items. The inclusion of the financial cost variable was the effort of Flannery and May (2000). Flannery and May (2000) measured two-items for financial cost with the perception that cost would have influenced the decisions intentions of the respondents. Christmann (2000) also focused on financial cost and used an adjusted measurement of three-item scales to fit the variables in the research to capture the effect of a business unit's environmental strategy on cost advantage rather than a standard measure of financial performance.

Personal moral obligation (PMO) was measured by Flannery and May (2000) with three items on respondents' feelings of PMO towards three different entities that ware based on Kurland (1995a). PMO was also measured by Kurland (1995a) with three interpretations of this construct as delineated by Fishbein and Stasson (1990) and incorporated by many studies

such as Ajzen and Madden (1986) in predicting goal-directed behaviour and Fishbein and Stasson (1990) in training session attendance prediction. The items in the scale were based on past research such as Gorsuch and Ortberg (1983), and Randall and Gibson (1991), and the items created by Kurland (1995a) herself.

The stakeholders' variables were categorized by Henriques and Sadorsky (1999) and this EEC research modified the items into 6-Likert scale items to measure stakeholders' information and stakeholder' pressure as the researcher's effort to highlight the importance of stakeholders influence on Malaysian manufacturing companies' to be environmentally ethically committed. The stakeholder' information variables were represented by nine items while stakeholder' pressure variables were represented by eight items.

Flannery and May (2000) researched the environmental ethical decision making of water pollution issues in the U.S. metal finishing industry. The reason being was because the metal-finishing industry has its own environmental issues and concerns. According to the Environmental Protection Agency (EPA) (2000), the metal-finishing industry provided the desired surface properties by the processes of clearing, etching and plating metallic and non-metallic surfaces.

This research on EEC concentrated on the manufacturing industry in Malaysia. Under Malaysia's Industrial Coordination Act, 1975, "industrial activity" is defined as making, catering, blending, orgamenting, finishing or

otherwise treating or adapting any article or substances with view to use, sale transport delivery or disposal and include the assembly or ports and ship repairing but not include any activity normally associated with retail or whole sale trade" (Laws of Malaysia, 2006). In Malaysia, the manufacturing industry plays a major role in contributing to the percentage of gross exports, as compared to other industries. It not only brings tremendous wealth to the nation but these human activities cause stress to the Malaysian environment (Said et al., 2003).

Aragon-Correa (1998) studied proactive strategies and firm approach to the natural environment in a sample of 105 companies in Spain. He focused on corporate approaches to the natural environment and their relationships to business strategy (Aragon-Correa, 1998:556). He also factor analysed 14 items of natural environment-related practices. The items analysed were identified through a literature review and consultation with the experts. The factor analysis resulted in three types of natural environment-related practices, namely, the information and education approach, traditional/regulated correction approach and modern/voluntary prevention approach (Aragon-Correa, 1998).

The information and education approach included natural environmental seminars for executives, natural environmental training for companies' employees, periodic natural environmental audits and participation in government-subsidized environmental programmes, traditional regulated correction included pollution damage insurance, filters and controls on

emissions and discharges. The third approach, modern/voluntary approach included natural environmental aspects in administrative work, total quality programme with natural environmental aspects and natural environmental analysis of product life cycle. Aragon-Correa (1998) found that traditional and modern approaches were employed by companies with the most proactive strategies.

Henriques and Sadorsky (1996) studied the determinants of environmentally responsive companies. They emphasized that companies tend to have an environmental plan when they are positively pressured by customers, shareholders, regulatory, neighbourhood, and the community but negatively influenced by other lobby group pressure sources and a firm's sales-to-asset ratio. The companies were more likely to have a plan when environmental issues were viewed as important for the next five years. They also found that individual sources of pressure included the government regulations followed by the cost of environmental controls. In 1999, Henriques and Sadorsky (1999) studied the relationship between environmental commitment and managerial perceptions of stakeholder importance and they categorized 17 stakeholders' items into two categories.

The environmental pressure category included shareholders, employees, customers, suppliers, the government, community and environmental organizations and other lobby groups. Environmental information included newspapers, television and radio, customers, competitors, the government, trade associations, environmental organizations and employee information

and informal networks. The results indicated that customer pressure and customer information, and employee pressure and employee information were both highly correlated (Henriques and Sadorsky, 1999).

Interestingly, Henriques and Sadorsky (1999) classified a total of 400 companies into four environmental profiles of reactive, defensive, accommodative and proactive as proposed by Wartick and Cochran (1985) and Caroll (1979). They found that proactive companies and less responsible companies tend to differ in terms of their stakeholders' perceptions. This particular research on EEC modified stakeholders variables was based on Henriques and Sadorsky (1999) in which the respondents were asked to rate the importance of stakeholder pressure and stakeholder information in a continuum of 1 strongly disagree and 6 strongly agree.

Andersson and Bateman (2000) researched changing environmental issues in successful corporate programmes and innovation among environmental champions or individuals in the company. They conducted a field study using survey and interview data in several stages. First they identified 496 potential environmental champions in U.S. business organizations. In their first attempt to examine the process of championing environmental issues, Andersson and Bateman (2000) conducted semi-structured interviews. They measured scanning behaviour with seven items; framing dimension opportunity threat was measured with 15 items. The dimension of urgency was measured with nine items. They measured local/global impact with four items and champions' use of drama and emotion using two items. The

champions' use of metaphors was measured with a single ended question. They also measured influence behaviours with three subscales of five, six and seven items.

Andersson and Bateman (2000) also provided managers with information to help the strategists recognize and take action on environmental issues. Consequently, the managers were expected to encourage employees with passion or a technical interest in environmental issues by guiding them on how to champion the environmental issues. It was found that champions were needed to be alert to signals on environmental issues, find the right time and do homework in order to create a vision on environmental programme and innovation (Andersson and Bateman, 2000).

Egri and Herman (2000) researched values, leadership styles and contexts of environmental leaders and their organizations in Canada and the United States. They obtained 73 responses through interviews and questionnaires from non-profit and for-profit organizations to determine the existence in work values of for-profit and non-profit leaders. They measured environmental values with 30 items using a seven-point Likert-type scale of 1 strongly disagree and 7 strongly agree. They concluded that non-profit environmental leaders hold stronger environmental ecocentric values than for-profit organizations, environmental leaders performed more leadership behaviours and they needed leadership skills and ability in responding to ever-changing environmental issues.

Sharma (2000) researched managerial interpretations and organizational context as predictors of corporate choice of the environmental strategy among 99 companies in the Canadian oil and gas industry. Sharma (2000) measured managerial interpretations of environmental issues with three self-report items, issue legitimation as an integral aspect of corporate identity construct was measured with two self-report items, discretionary slack was measured by two self-report items, two items were also used to measure integration of environmental criteria into employee performance evaluation systems and the inclusion of organization size as the control variable.

According to Sharma (2000), it was concluded that corporate environmental strategy was an emerging area and the adoption technology and systems were reduced if managers interpreted environmental issues as opportunities than threats. It was also found that strategic leaders were needed to legitimate issues as an integral part of corporate identity. Sharma (2000), and Andersson and Bateman (2000) concluded that time was an important element to be considered by the employees in order to solve environmental problems.

Ramus and Steger (2000) studied the roles of supervisory support behaviour and environmental policy in employee ecoinitiatives in leading-edge European companies. The focus of their study was to research self-identified actions in order to improve company environmental performance. It was found that employees who perceived strong signals implemented creative ideas compared to employees who did not perceive the signals. The results

indicate that supervisors environmental support encouraged employee ecoinitiatives compared to employees who did not receive specific environmental management support and effective communication of their published environmental policies and supervisor environmental support behaviour (Ramus and Steger, 2000).

Dechant and Altman (1994) studied compliance and competitive advantage of environmental leadership. They described that the best practices of companies that comply with environmental leadership achieved competitive advantage with Band-Aid solutions and quick fix approaches. They emphasized that companies were pressured to be green because they wanted to stay ahead of regulations, stakeholders' activism and competitive pressure.

According to Dechant and Altman (1994), the best practices of the company include an environment element of a mission statement and corporate values, an environmental initiatives management framework, green/product design, environmentally focused stakeholders' partnership, and internal and external education initiatives. The obstacles to comply and achieve competitive advantage were to manage change and human resources. Another obstacle was the difficulty for chemical companies to create self-regulation without explicit sanctions in the chemical industry's responsible care programme (King and Lenox, 2000).

The instrument used in this study was converted to a six-point Likert type scale, with 6 being Strongly Agree and 1 Strongly Disagree. The instrument required the respondents to specify their degree of perceived importance with each statement. The number of statements for each dependent and independent variable where respondents would indicate their responses using a six-point Likert type scale were as follows (Please refer to Table 4.01) with a total of 74 items.

In so far as the independent variables were concerned, the respondents were asked to indicate their ecological concerns, ethical climates, and self-efficacy, financial cost, personal moral obligation, stakeholder and regulations aspects which influences their corporation's environmental ethical commitment or their corporation's approach to the natural environment. This would be done by circling the appropriate responses. For example, for the ecological concern (attitude) items, respondents would circle their answer to denote the pollution and natural resources that may affect their companies. The ethical climate factor would ask respondents to answer the general climate in their companies in terms of how it really was and not what they prefer it to be. It comprised Victor and Cullen's (1988) Ethical Climate Questionnaires. The Ethical Climate Questionnaires types included law and code.

Table 4.01

Sources of Questions

Variable(s)/Items	**No. of items**	**Year**	**Sources**
EEC	7	2000	Cordano and Frieze (2000)
Ecological Concern	16	1986	Gill et al. (1986)
Regulations	7	2000	Cordano and Frieze (2000)
Ethical Climates	8	1988	Victor and Cullen (1988)
Self-Efficacy	8	1986	Jones (1986)
Financial Aspect	5	2000	Flannery and May (2000) Christmann (2000)
Personal Moral Obligation	6	1995	Flannery and May (2000) Kurland (1995a)
Stakeholders Pressure	8	1999	Henriques and Sadorsky (1999)
Stakeholders Information	9	1999	Henriques and Sadorsky (1999)

4.1.6 THE UNIT OF ANALYSIS

The appropriate unit of analysis to investigate the concept was the manufacturing companies in Malaysia. The population of interest in this study was the manufacturing corporations. This was because each industry had its own unique environmental issues and concerns. The operation of manufacturing industry was said to produce hazardous waste and if it is not taken into consideration it could jeopardize the health and welfare of living species and damage their habitats. The activities of manufacturing companies could affect people and animals and the environment would be

considered to be undesirable by societal norms and rules (Flannery and May, 2000).

4.1.7 THE RESEARCH SAMPLE

The sampling process of the study consisted of two sequential steps. These steps are as follows:

STEP 1

The first step in the sampling process was to define the population of the study. The sampling frame to be utilized in this study would be the list of manufacturing companies enlisted in Malaysia. These companies were manufacturing companies that fell under several types of manufacturing companies and comprised 150 companies. Private manufacturing companies were selected and the environmental managers were the elements of this study. The data collection of this desriptive study was from the managers of manufacturing companies, as the environmental managers are responsible for deciding on environmental issues that the corporations may encounter.

In Malaysia, the presence of environmental managers in Malaysian manufacturing companies was attributable to the Environmental Quality (industrial effluent) Regulations, 2009 as it is compulsory for the manufacturing companies to have someone known as a “competent person” to supervise the operation of an industrial effluent treatment system. This designated person should be certified by the Director General to supervise the operation of an industrial effluent treatment system and the competent

person should ensure the smooth running of the industrial treat system operation at all times (Environmental Quality Act, 1974). Based on this study, the environmental managers, as described by the regulation, include several environmental and typical managerial designations such as Senior Executive Environment, Environmental Health and Safety (EHS) Manager, Company Search (Legal) and Safety Officer.

Therefore, the population was defined as all the listed companies in the FMM Directory 2005, Malaysian Industries, 36th Edition. The population of respondents was gained from the FMM homepage, which comprised 2,154 manufacturing companies located throughout Malaysia, and with systematic sampling based on alphabetical order a total of 326 companies were selected as the sample. Every 5th company listed was selected as the sample. Finally the questionnaires were sent to 326 selected manufacturing companies and, finally, usable questionnaires were received from 150 manufacturing companies in Malaysia.

The names of the managers and their addresses were gained from the Directory of Public Companies in Malaysia under the Credit Risk Monitor (CRMZ), which offered a typical commercial credit report for 1,000 related and non-related manufacturing companies in Malaysia for free. The names and addresses of the selected companies were checked and compared with the individual companies' home page on the Internet and the FMM Directory 2005, Malaysian Industries, 36th Edition as well as the Stock Performance Guide, Malaysia 2005 Edition.

STEP 2

The second step was to define the research participants. As such the chosen industry must be categorized as a manufacturing industry that runs the process of making, catering, blending, ornamenting, finishing or otherwise treating or adapting any article or substance with a view to use, sale, transport, deliver or dispose and includes the assembly or ports and ship repairing [that normally counted to approximately 95 per cent of the total volume of industrial wastewater discharge and had high waste in chemical oxygen demand (COD), biochemical oxygen demand (BOD), suspended solid, oil and grease (Lubis, 1998)], but does not include any activity normally associated with retail or wholesale trade under Malaysia's Industrial Coordination Act (1975) (Laws of Malaysia, 2006).

The DOE reported that the most serious offenders in terms of hazardous waste generation in the total load, based on this criterion, were the metal finishing sub-sectors in the machinery, engineering and electronics sub-sectors. Improper handling of hazardous waste polluted air, water and soil. Existing databases suggested that nine major industrial polluters were mostly concentrated in Selangor, Penang, Johor, Perak and Kuala Lumpur. They were: 1) metal finishing, 2) electrical and electronics, 3) textiles, 4) food processing, 5) chemicals, 6) palm oil, 7) rubber, 8) wood-based, and 9) iron and steel manufacturing units (Lubis, 1998).

4.1.8 THE SAMPLING FRAME

The sampling frame of the study focused on the manufacturing companies in Malaysia and only concerned the companies based on the listing of the FMM Directory 2005, Malaysian Industries, 36th Edition. These companies (150) represent various fields or characteristics in Malaysia. These companies were selected because these sophisticated industries generated larger amounts of toxic and hazardous waste per unit output compared to SMIs that accounted for larger (60 per cent) amounts of the total firms and often used dirty technology in Malaysia. Hazardous chemicals have been used intensively by Japanese and U.S. multinationals, which dominate the electronics industry.

The DOE reported that 420,000 metric tons of scheduled wastes were generated by industries in 1994 with over 70 per cent consisting of acids, heavy metals, dross, slag and clinker, and mineral sludge, and another 30 per cent comprising asbestos, heavy metal sludge, oil and hydrocarbons (Lubis, 1998).

These heavy metal concentrations exceeded the standard set, mostly on the west coast of peninsular Malaysia, where industries are concentrated, particularly, in the states of Penang, Perak and Johor. The public health of Malaysia was threatened by the current management of hazardous waste practices in Malaysia, which could lead to major health problems such as leukaemia and infant death cases that once occurred in Bukit Merah, Perak due to this hazardous waste exposure (Lubis, 1998). This study attempts to

highlight that the element of environmental ethics is crucial as engagement in environmental issues plays an important role for companies to achieve superior corporate environmental performance (Dechant and Altman, 1994).

4.2 DATA COLLECTION

The second part of this chapter focuses on the data collection method issues. Thispart explains the sources of data and the location of the study, the development of the questionnaires and the final questionnaires, the procedures of data collection, the pilot test and also the problems that the study encountered during the gathering of primary data.

4.2.1 SOURCES OF DATA AND LOCATION OF STUDY

The data for this study were collected from the managers responsible for the company-level decision-making in the manufacturing companies in Malaysia. This is because, according to Flannery and May (2000) it was very possible for such a plant to not operate its waste treatment systems at all times. They also argued that this will result in potential harm to both human beings and the natural environment. Furthermore, managers in the manufacturing industry are responsible for making decisions about the management and treatment of manufacturing activities that relate to environmental issues.

The environmental managers are the focus of the study because of their formal organizational responsibilities (Cordano and Frieze, 2000). Cordano and Frieze (2000) identified environmental responsibilities by functional

labels such as environment, health and safety, industrial hygiene, regulatory affairs, environmental affairs and waste management and their titles included manager, administrator, engineer, director, specialist and superintendent.

The manufacturing industry was chosen because the industry has its own unique environmental issues and concerns and many potential environmental issues are intricately tied to industrial activity, and have widespread consequences for organizations and communities (Shrivastava, 1995a). Shrivastava (1995a) argued that although industrial development has brought immeasurable wealth and prosperity, it has also caused unintended ecological degradation resulting in many environmental problems, including industrial accidents, air pollution, toxic waste and solid waste disposal, top soil erosion, deforestation, ozone layer depletion, wetland destruction, population growth, declining biodiversity and marine or freshwater pollution (Andersson and Bateman, 2000).

In short, the industry is getting richer but the natural environment is getting poorer. The environmental disasters have been caused by many facets of manufacturing operations such as the design of products, selection and extraction of raw materials, operation of the manufacturing process, delivery of the product and service, and availability of reuse or recycling for spent products, all of which have ramifications for the level and rate of environmental degradation (Klassen, 2000).

4.2.2 DEVELOPMENT OF THE QUESTIONNAIRES

In developing the instrument, this study was guided by literature on business and environmental ethical issues. The environmental attitudes applied in this study have an insight from Gill et al. (1986) who focused on identifying the social measures of ecological concerns, subjective norms focused on environmental regulations proposed by Cordano and Frieze (2000), perceived behavioural control comprised internal factors that included self-efficacy and external controls, which comprised four factors including the ethical climate, financial cost concern, stakeholder pressure and stakeholder information.

The self-efficacy variable was adopted from Jones (1986), the ethical climate variable was from Victor and Cullen (1988) and the stakeholder pressure and information variables were from Henriques and Sadorsky (1999). In addition, guidance was obtained from a study conducted by Ajzen's (1991) Theory of Planned Behaviour (TPB) to include another factor – personal moral obligation (PMO).

4.2.3 THE QUESTIONNAIRES

There were 74 questions in total that were represented in four sections. The questionnaires comprised questions that were developed based on the dependent variable for this study, which was the environmental ethical commitment and was measured by asking respondents to describe their environmental commitment, which consisted of seven statements. Following Cordano and Frieze (2000), the subjective norms adapted regulations that

contained questions about regulations that may affect the corporations. Perceived behavioural control has the external category of ethical climate, which contains questions about the general climate in the corporations. The respondents were required to answer the corporation's general climate in terms of law and code. Following Flannery and May (2000), and Christmann (2000), the questions about the financial aspect and the personal moral obligation (PMO) were based on Kurland (1995a), which were related to the respondents' companies.

The respondents were asked to rate the importance of the sources of information and pressure of various stakeholders to their corporation insofar as the environmental issues are concerned. Section A needed the respondents to tick all the Likert form questions. Section B needed respondents to rank the importance of each source of stakeholder information and pressure on their companies. Section C contained one question on how the company rate environmental issues related to the company and Section D represented questions on the corporations' personal and business background.

The questionnaires were constructed in English because the organizations in Malaysia predominantly utilize English in both their verbal and written communication. For example, the respondents were asked to indicate on a 6-point Likert Scale how accurately each of the items described the pressure and information derived from their stakeholders. The 6-point scale had the following verbal anchor: 1 for strongly disagree and 6 for strongly agree.

The instructions to the respondents read: “Please indicate by circling one number of each of the following statements using 1 to 6, with anchorage of strongly disagree and strongly agree”.

4.2.4 PROCEDURES OF DATA COLLECTION

The main research instrument, a postal questionnaire, was constructed following the recommendations of Ajzen (1991). The questionnaires were distributed to the respondents at the sampled companies. Included in the mailed package were a cover letter, a brief description of the purpose of the research, instructions emphasizing the confidentiality of the information, a postage paid return envelope and the survey. The questionnaires were printed on standard A4 size paper; the questions were modified for ease of understanding, readability, effective and interesting, with a persuasive letter attached.

4.2.5 THE PILOT TEST

The next step was to administer the pre-test questionnaires to several manufacturing companies. A pilot test was conducted to amend questions that were ambiguous or misleading (Tilt, 1994). It was proposed to have a pre-testing of the questionnaire (the scenario and questionnaire items) with a sample of five manufacturing companies in Malaysia, as suggested by Flannery and May (2000). A pilot test was conducted to detect weaknesses in the design and instrumentation and provide proxy data for selection of a probability sample (Cooper and Schindler, 1998). The questionnaire was developed for a national pre-test and sent out in October 2009 to 12 selected

manufacturing companies by mail, with several follow-ups through telephone calls and several meetings.

The meetings were conducted based on the corporations requirement as the managers were normally very busy at the beginning and end of the month as they had to prepare reports, attend meetings and present those reports. However, many challenges were faced by this study as the respondents commented that the questionnaires used long wording and technical terms. They requested that the questionnaires be simplified. During the interview for the pilot test, the researcher had to listen to comments on severe river pollution (the pollution state of Malaysia), slow action from the authority and the issue of bribery. Due to security reasons, the comments remained strictly anonymous and the information gained was not to be presented.

4.2.6 THE PROBLEMS OF GATHERING THE LITERATURE

The first problem with the literature was scarcity, as there was not much available data about environmental ethics as the concept was termed to be new and empirical tools were just beginning to be developed. The limited amount of literature available was due to the fact that business ethics, especially environmental ethics was a recent phenomenon, which had not been examined before in the Malaysian context. Thus, the lack of literature or perhaps no literature on environmental ethics in Malaysia had created the need for exploration in that area to highlight corporation's environmental approaches to environmental ethics.

4.3 ANALYTICAL PROCEDURES AND TECHNIQUES

The responses from the questionnaires would be directly coded into the SPSS Version 15.0 data view. This would help to minimize errors stemming from the transfer of data if separate coding sheets were used. In addition it saved time and enabled the accuracy of the coded data to be checked easily. The statistical computer program known as SPSS Version 15.0 (Statistical Package for Social Science) was used to analyse the data. The following SPSS sub-programs were used:

FREQUENCIES and DESCRIPTIVE were used to describe the respondents.

FREQUENCIES were used to describe the elements of attitude, subjective norms, perceived behavioural control and also the personal obligations of the managers'.

RELIABILITY was used to analyse the internal consistency of the items operationalized for each independent variable.

CROSS-TABULATION was used to determine the relationship between the independent variables elements.

PEARSON RANK ORDER CORRELATION COEFFICIENT was utilized to establish the association between the independent variables elements.

MULTIPLE REGRESSION was used to assess the impact of independent variables on EEC, a multiple regression was performed with EEC as a dependent variable and

eight independent variables, namely, the ecological concern, regulation, ethical climate, self-efficacy, financial aspect, PMO, stakeholder pressure and stakeholder information.