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Critical Factors Impacting the Implementation of Environmental Protection Strategies among Malaysia Industries

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ABSTRACT

Environmental protection is a heavily debated topic along with development. Uncontrolled development will sacrifice our environmental and causing issues such as pollution, land slide, flash flood, etc. The objective of this study is to understand drivers of the implementation of environmental protection strategy among industries in Malaysia. Questionnaire was designed and tested with 130 Malaysian organizations. The framework consisted of independent variables such as Client's Requirement, Corporate Social Responsibility, Government Grants and Subsidy versus the dependent variable Environmental Protection Strategy. From the Exploratory Factor Analysis (EFA), it was found out that only client's requirement and corporate social responsibility are relevant towards implementation of environmental protection strategy. One of the very important findings is that government regulation is no longer a mandatory driver for organizations to implement environmental protection strategy. This could be a positive sign that organizations are working the self-regulatory direction than the instrumental enforcement. This is in par with department of environment's latest focus to implement guided self-regulation through environmental mainstreaming tools. Outcome of the study can help the policy makers, regulatory bodies and non-government organizations (NGOs) to shape their direction to form strategies that is most effective.

Keywords: Environmental Protection Strategy, Corporate Social Responsibility, Government Grant and Subsidy, Malaysia
JEL Classification: Q56

1. INTRODUCTION

Mother earth is the most precious resources gifted to human without charge but is often abused. In the context of environmental protection and conservation, individuals play substantial role by minimizing waste or maximizing recycling in their day-to-day life. Even so, the results are not so obvious compared to the impact on implementation of environmental protection strategy by businesses (Gillespie, 2019). The waste generated from industry activities are huge and more hazardous compared to domestic waste generated by individual (Xiang et al., 2021). The negative impacts along with environmental

pollution due to uncontrolled development are sometimes irreversible and lead to disasters like ozone depletion, climate change, and extinction of rare species as well as endangering human health (Rahman et al., 2021).

Environmental protection strategy is series of action plans to maintain or upkeep our natural world from damages and pollution which causes short or long term impact (UNDP, 2021). This is vital especially under industrialization economy as those developments will lead to environmental destruction if it is not properly controlled and monitored (Ukaogo et al., 2020). Hence, sustainable development with minimal impact to the environment

is always more beneficial to mankind as compared to short-term monetary return.

This study examines how various factors interacted within Malaysia's industries in forming their environmental protection strategy. The factors of interest are government grants and subsidy, client's requirement, corporate social responsibility and regulatory reformation.

A report from Blacksmith Institute in year 2013 disclosed that the health impact of industrial pollutants in third world nations could be as serious as world major diseases like malaria and tuberculosis. Amongst all type of industries, chemical related industries had the highest blame. A study focused the impact of toxic waste in developing countries like India, Indonesia and Philippines was carried out to calculate the risk due to various type of chemicals. Table 1 below shown the per capita cancer and non-cancer human health risks by chemical and media for chemicals other than lead (Chatham-Stephens et al., 2013).

The table depicts that air contamination contributed to the highest human health risk per capita for both cancer and non-cancer risk followed by water contamination and soil contamination. This may be due to direct inhalation of the contaminants into human body without any special protection (Chatham-Stephens et al., 2013).

Over the last few decades, with rapid growth in industrialization, agriculture and tourism the Kualalumpur, Malaysia came in ranked 14th place in air quality[1] and pollution city ranking as on May 20, 2022 among all the countries in the world[1]. Malaysia's air is 3.9 times above the World Health Organization (WHO) recommended air quality value[2]. Problems faced currently are forest clearing, water pollutions, erosion of soil and coastal, along with air pollution, water pollution and waste disposal. The typical impacts of these environmental issues are like frequent occurrence of flash floods due to deforestation, poor air quality index due to open burning, etc. As a result, more and more concerns aroused on all potential environmental issues towards the citizens' safety and health.

The main objective of this study is to determine the critical factors like goverments grants and subsidy, client's requirement,

corporate social responsibility, goverments rules and regulation that businesses in Malaysia consider during the formation of environmental protection strategy. This study was conducted on 130 Malaysian organization that do business within Malaysia and outsideMalaysia by exporting goods. From the Exploratory Factor Analysis (EFA), it was found that only Client's Requirement and Corporate Social Responsibility are relevant factors towards implementation of Environmental Protection Strategy. Moreover, Government grants and Subsidy was not a significant predictor of Environmental Protection Strategy. This study findings provide theoretical insights in the field of environmental protection strategy that can advance the literature on proactive strategies in a sustainable way.

The study is organized as follows. Section Two presents Literature Review on different varaibles affecting the Environemntal Protection Strategy in the context of different economy. Section Three presents the methodology of the study. Section Four discusses the results and findings of the study. Section Five presents the implications of the study and finally Section Six presents conclusions.

2. LITERATURE REVIEW

Our environment is facing several crisis that are increasing day by day, and has become crucial issue to be addressed to reduce the negative impact. A number of research, policy regulation and environment protection staratagy, awareness development program has been formulated globally. However, still pollution is responsible for one in six deaths, 3 times more deaths than from Malaria, Tuberculosis and AIDS combined, totaling 9 million death per year (Fuller et al. 2022) globally. Therefore, the importance of further research on sustainable development in the Environmental protection sphere is never overrated.

From the existing literature review it is observed that most of the studies on Environmental Protection strategy are analysed based on the PEST model (Huang et al., 2021; Jain and Sharma, 2021; Liu et al., 2020; Mohammad, 2011; Naderi et al., 2021; Suki, 2013; Punitha and Rasdi, 2013; Sushchenko et al., 2019; Zafar et al, 2019; Zailani et al., 2015; and Zailani, et al., 2015). The PEST model is a macro-environmental framework which gives overview of how various macro-environmental factors affect strategy planning. Macro-environmental factors for basic PEST model consist of Political, Economic, Social and Technological,

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1 Air quality and pollution city ranking, https://www.iqair.com/malaysia accessed on May 20, 2022.
2 Air Quality In Malaysia , https://www.iqair.com/malaysia accessed on May 20, 2022.

Table 1: Per capita cancer and non-cancer human health risks

Chemical (media assessed)	Cancer risk			Non-cancer risk		
	Per µg/m³ in air	Per µg/kg in soil	Per µg/L in water	Per µg/m³ in air	Per µg/kg in soil	Per µg/L in water
Aldrin (W)	NA	NA	$5.35×10^{-4}$	NA	NA	$2.22×10^{-6}$
Asbestos (A)	$2.30×10^{-1a}$	NA	NA	NA	NA	NA
Cadmium (A, S, W)	$1.80×10^{-3}$	NA	NA	$5.00×10^{-8}$	$2.67×10^{-5}$	$1.33×10^{-7}$
Chromium VI (A, S, W)	$8.40×10^{-2}$	$9.71×10^{-5b}$	$2.09×10^{-5}$	NA	NA	NA
DDT (W)	NA	NA	$1.07×10^{-5}$	NA	NA	$1.33×10^{-7}$
Lindane (S, W)	NA	$5.08×10^{-6}$	$3.45×10^{-5}$	NA	$8.85×10^{-8}$	$2.22×10^{-7}$
Mercury, Inorganic (A, S, W)	NA	NA	NA	$5.68×10^{-8}$	$8.85×10^{-8}$	$2.22×10^{-7}$

A: air, DDT: dichlorodiphenyltrichloroethane, NA: Not assessed, S: Soil, W: Water. aFibers/cubic centimeter. bInhaled airborne dust (Source: Chatham-Stephens et al., 2013)

that can be extended to PESTLE adding Legal and Environmental factors.

Political factor includes government strategies and movement like tax policies, laws and regulation, intellectual property protection, government stability and security, government grants, subsidies etc. If business strategy is aligned with the relevant government strategy, the company's growth and expansion will definitely be benefited.

Economical factor coveres economic growth in terms of GDP per capita, purchasing power parity, interest and inflation rate, and trade balance etc. Often businesses form organization strategies trying to fulfill the client's requirement so that more products can be sold as well as earning more profit as increased business transactions linked with economic improvement.

Apart of profit orientation, socially responsible business addresses social issues like demographic distribution, education level, social safety and others. For the socially responsible businesses, one of the consideration factor is how will the new strategy impact the current social culture lifestyle, either positively or negatively. Strategies that are beneficial to the social environment tend to be more receptive and easily adopted. Technological development and innovation promote productivity of an organization. Advancement in information technologies can shorten the communication time, thus enhancing the decision making process.

In an empirical investigation in Mexico Carrete et al. (2014) examined how firms perceived drivers and barriers to move towards green. The qualitative research had gathered information from 34 firms which consists of Multinationals, Mexican firms with international operations, and Mexican firms with local operations. Three main drivers studied were economic factor, legitimation and social responsibility. According to the study's findings, social responsibility for the environment was the primary motivator of green behaviours, followed by economic motivation. In a similar study, by Zailani et al. (2015) 153 automative supply chain industries operating in Malaysia found that environmental regulations, market demand, and firm internal initiatives are the main determinants in adopting green innovation initiatives.

Legal compliance due to government regulations is an instrumental action where people is concerned about consequences (or punishments to be exact) for not doing it instead of normative compliance where they will be self-regulated as they felt the law is just. In several studies (Hecht, 2007; Hezri and Hasan, 2006; Tyler, 2006) it is found that normative principles of sustainable development is of utmost importance as well as the fundamental task of policy implementation. Other studies by the Environmental Protection Department of Hong Kong (2006)[3], Hecht (2007) found Government Regulationsare amore critical determinant factor along with other business strategies.

Moreover, in another study Mohammad (2011) investigated the stage of the environmental laws and policy as well as drivers and barriers in Malaysian context. The study found that factors affecting the implementation of environmental laws and policies are lack of enforcement and short of trained environmental-expertise lawyers. Following that, Mokthsim and Salleh (2014) investigated the concerns, challenges, and opportunities of environmental management strategies, as well as the formation of national policies in Malaysia, in a separate research. He concluded that Malaysia has good efforts in policy development, law and regulations enactment in order to become a sustainable development country.

Several studies (Brecard et al., 2009; Gandenberger et al. 2020; Le, 2021; Shah et al., 2021; Suki, 2013; Timbur 2012) on green or environmental products found that consumers' awareness of green products and brand image positively related to the green products purchasing decision. An environmentally-sensitive person would prefer to make green product buying decision. It was suggested that marketers should disclose and display more information about green products and eco-labels to familiarize and educate consumer with their green products.

In environmental protection strategy the role of corporate social responsibility is rarely overlooked (Huang et al., 2021; Jain and Sharma, 2021; Liu et al., 2020; Seroka-Stolka, 2013; Yuan et al., 2020; Zafar et al., 2019). CSR in term of environment is defined as the responsibility to protect the environment resulted from the company's operations, products and facilities; minimization of waste and emissions; improving the efficiency and productivity and eliminate practices that might negatively affect the future environmentAccording to Sushchenko et al. (2019), improving resource efficiency and environmental consciousness, as well as the development of eco-technologies and environmental management tools, are essential components of a comprehensive environmental protection plan and CSR components are positively related to consumers' buying behavior (Abd Rahim et al., 2011). Stavins and Reinhardt (2010) concluded that promoting sustainable business practices being environmentally responsible will generates remarkable profits in the long run. However, the relationship between CSR activities and profitability may denoted as only some parties will be rewarded with profits from some of the CSR activities after a certain period. Therefore, rather than sacrificing profits, firms may opt to some socially beneficial activities which is limited but also more profitable to meet the financial goal.

Research by Yazid et al. (2015), Yazid et al. (2012), Zailani et al. (2015), studied the role of green marketing in Malaysian context. Puvanasvaran et al. (2012) explored the support of innovation development that leads to green technology sustainability in Malaysia. The study found that Malaysia's industries are in par with development of green technology. When the government implemented the green technology policy, programs and incentive were provided for the innovation in Malaysian industries. According to them, setting up green technology incentive and budget accelerated invention, and creation of greater green technology is beneficial to the nation.

3　Support on Environmental Management Information and ISO14001 Environmental Management Systems for Small and Medium Enterprise (SMEs) in the Electrical/ Electronic and Construction Sectors in Hong Kong" https://www.epd.gov.hk/epd/misc/env_management_sme/presentation/elvis.pdf accessed on May 20, 2022.

Punitha and Rashdi (2013) found that green marketing is not only CSR but also improves competitiveness and mediates development and environmental balance. A recent study by Siddique and Hossain (2018) found that awareness of green products is a crucial issue in consumers green purchasing decision. Therefore, organizatons that aid in green awareness development program are in ahead of selling their green products to the consumers. In another empirical study it was found that consumer's green purchase decision are strongly influenced by their environmental concern, green perceived benefits, their willingness to purchase the green products (Nekahmud and Fekete, 2020).

The empirical studies indicated that there are positive relationships between government regulations, client's requirement, corporate social responsibility, with Environmental Protection Strategies. These relationships are strong in other countries as well as within Malaysia. These variables were verified through the study conducted by Gandenberger et al. (2020), Huang et al. (2021), Jain and Sharma (2021), Liu et al. (2020), Mohammad (2011), Naderi et al. (2021), Sharma (2021), Suki (2013), Punitha and Rasdi (2013), Sushchenko (2019), Zafar et al. (2019), Zailani (2015), and Zailani, et al. (2015).

However, there are limited and indirect relationship and implementation between technology innovation and government grants and subsidy, with of Environmental Protection Strategies in an organization. Ibrahim and Jaafar (2015) discussed how technological factor influence environmental awareness and later affect the environment management practices options. On the other hand, research done by Salim and Padfield (2017) proposed that Malaysian Government should provide extensive support such as special tax exemption for certified companies that adopted Environmental Management System (EMS).

3. METHODS

The independent variables of this study includes Government Regulations, Client's Requirement, Corporate Social Responsibility, Technology Innovation as well as Government Grants and Subsidy. The dependent variable of this study is the Environment Protection Strategy, which acts as the outcome of the independent variables, either positively or negatively.

3.1. Conceptual Framework
Studies conducted in Mexico and Malaysia identify three drivers i.e. legitimation (Environmental Regulation), economic (Market Demand) and social responsibility (Firm Internal Initiatives) (Carrete et al., 2014; Zailani et al., 2015) related to Green Policy. The factors that were used in this study are Government Regulations, Client's Requirement and Corporate Social Responsibility to identify how these factors are related to the Environmental Protection Strategies of a company. The two other factors that were used in this study are Technology Innovation and Government Grant and Subsidy. These two factors were added to identify if these could also be significant factors for companies to implement Environmental Protection Strategy (Figure 1).

This study used five hypotheses as each hypothesis is the logical relationship between independent variables and the dependent variable. The hypotheses were:

- H1: There is a positive relationship between Government Regulations and Environmental Protection Strategy
- H2: There is a positive relationship between Client's Requirement and Environmental Protection Strategy
- H3: There is a positive relationship between Corporate Social Responsibility and Environmental Protection Strategy
- H4: There is a positive relationship between Technology Innovation and Environmental Protection Strategy
- H5: There is a positive relationship between Government Grants and Subsidy and Environmental Protection Strategy.

3.2. Research Design
Descriptive study was used to describe the current implementation of environmental protection strategy in Malaysia. It follows the quantative analysis. The population of the study is the customer database of an environmental consultant company where the business operated in all of the Malaysian Peninsular states. The consultant company consulted 500 organizations. A total of 300 questionnaires were distributed to the 500 organizations who received consultation from the consultation company. However, only 130 organization completed the distributed questionnaire. Simple Random Sampling was adopted in this research to minimize any biasness throughout the process. Each of these organizations was treated with equal chance of being selected. This method is more effective in terms of cost and time to reach out to these organizations throughout Malaysia.

There were two sections in the questionnaire. Part A and Part B respectively focused on the demographic profile and hypothesis testing questions regarding relationship between determinant factors and dependent variable Environmental Protection Strategies. This questionnaire asked about the organizations as a whole rather than the individual point of view. The questionnaries used both nominal and likert scale to measure the responses. The questionnaire designed in Google Form was sent through email and WhatApp application. Besides, manual distribution was carried out as well and the collected data was key in to the same online Google Form. The purpose of the manual distribution is to explain and guide computer illiterate target, ensuring an adequate coverage of target participants. A sample of the questionnaire is attached in the Appendix for further reference.

A pilot test was conducted among a small group of respondents. A total of 21 participants answered the questionnaire. Any constructs that has a Cronbach's Alpha Value <0.7 is not reliable and has to be redesigned. Table 2 shows the Summary of Pilot Test. According to this table, all the six constructs had achieved Cronbach's Alpha Value near to or higher than 0.7. Thus, the survey questions were sent out for further responses collection.

3.3. Research Method
Descriptive Statistics was used for Part A – Demographic Information to describe the basic features of the study. The information was broken down into frequency or percentage for each category and was represented with Pie Chart. On the

other hand, Inferential Statistics were used at Part B through Factor Analysis and One-Way ANOVA. By removing duplicate or strongly linked variables, the Factor Analysis approach was utilised to decrease a significant quantity of data. To see how each demographic group reacts differently to the factor, a one-way ANOVA was employed. Finally, Multiple Linear Regression Analysis was used to determine the association between the independent and dependent variables.

3.4. Data Analysis
SPSS was used to do the data analysis. Before the real questionnaire was circulated, a pilot test was undertaken. The questionnaire was deemed sufficient since the Cronbach's Alpha Value was more than or equal to 0.7. After receiving all of the comments, exploratory factory analysis (EFA) was used to decrease the quantity of data by eliminating duplicated or strongly associated variables.

ANOVA tests were run for all variables vs the demographic profile after the irrelevant factor was eliminated using EFA. The link between four independent factors and the dependent variable was investigated using multiple linear regression analysis. Finally, weak independent variable (s) were eliminated using stepwise regression, and the final correlation was generated, confirming the hypothesis.

4. RESULTS AND DISCUSSION

4.1. Demographic Profile
In this study, responses were collected from 130 participating organizations out of 300 distributed questionnaires, resulted into 43.3% response rate. In analysing the organizatiosn reaction towards implementation of environmental protection strategy, demographic profile studied were company business scope, company target market, company setup period, numbers of full time employees and company annual sales turnover.

The analysis of the demographic profile revealed that there were only 35 organizations (26.9%) considered as large organizations, established more than 10 years ago, employed more than 200 employees and have an annual turn over of more than RM 50 million. A total of 19 organizations (14.6%) were considered as small organizations that were established <5 years ago, employed <10 employees and have an annual sales turnover of less than

Figure 1: Proposed framework of the study

RM 1 million. The remaining 76 organizations (41.5%) were considered as medium size organizations. Table 3 summarizes the demographic profile of the participating organizations

4.2. Exploratory Factor Analysis (EFA)
EFA was used to guarantee that all constructs were appropriately correlated with one another. This test is also used to reorganise any constructs that were previously grouped incorrectly. The EFA was run 3 times to exclude items that did not display the same feature as the Rotated Component Matrix result, such as not being loaded, cross-loaded, or saturated. During all of these trials, it was also critical to ensure that the KMO value was always equal to or greater than 0.7. Table 4 shows the results of the EFA experiments.

A few items were eliminated and a few items were regrouped after the third EFA trial. Item 2 and 3 from Government Regulations and item 2 from Technology Innovation were regrouped as a new independent variable which was renamed as Regulatory Reformation. Figure 2 illustrates the new modified framework.

Table 2: Summary of pilot test

S. No.	Construct	No. of item		Cronbach's alpha value (after recoding)
		Before recoding	After recoding	
1	EPS	5	5	0.905
2	GR	5	3	0.679
3	CR	5	5	0.879
4	CSR	5	5	0.710
5	TI	5	5	0.697
6	GGS	5	4	0.722

EPS: Environmental protection strategy from business, GR: Government regulations, CR: Client's requirement, CSR: Corporate social responsibility, TI: Technology innovation, GGS: Goverments grants and subsidy

Table 3: Demographic profile of participating organizations

S. No.	Variable	Frequency (percentage) n=130
i.	Company business scope	
	Manufacturing	35 (26.9)
	Services	55 (42.3)
	Construction	17 (13.1)
	Others	23 (17.7)
ii.	Company target market	
	Within malaysia only	46 (35.4)
	Export only	8 (6.2)
	Both	76 (58.5)
iii.	Company setup period	
	<1 year	5 (3.8)
	1-5 years	24 (18.5)
	6-10 years	15 (11.5)
	>10 years	86 (66.2)
iv.	Nos. of full time employee	
	<10 Employees	21 (16.2)
	11-75 employees	52 (40)
	76-200 employees	15 (11.5)
	>200 employees	42 (32.3)
	Company annual sales turnover	
	<1 million	19 (14.6)
	1-10 million	36 (27.7)
	11-50 million	40 (30.8)
	>50 million	35 (26.9)
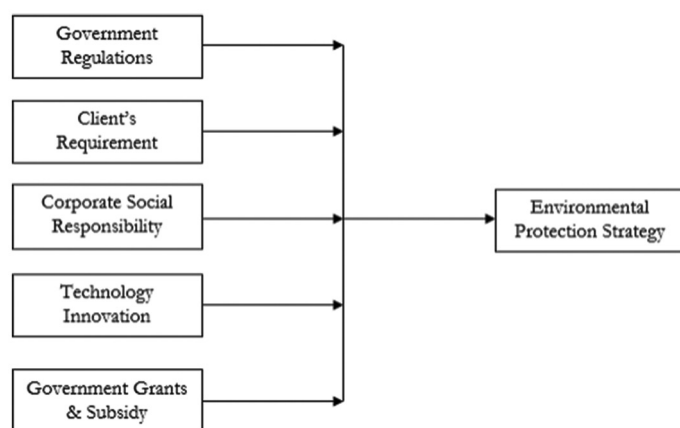
The earlier framework consisted of five independent variables. The five variables were Government Regulations, Client's Requirement, Corporate Social Responsibility, Technology Innovation and Government Subsidy. In the modified framework, variables Government Regulations and Technology Innovation were regrouped into Regulatory Reformation. Following statistical analysis were done based on the modified framework.

4.3. Reliability Test
A reliability test was performed to ensure that the analysis was consistent. The Cronbach's Alpha value is utilised as a consistency indicator. Constructs with a Cronbach's Alpha value of more than 0.7 are deemed consistent. The Summary of Reliability Test for the five constructs is shown in Table 5. Except for Regulation Reformation (RR), each of the five constructs had a Cronbach's Alpha Value of close or more than 0.7. As a result, the survey was deemed trustworthy.

4.4. One-Way ANOVA
Following the elimination of the irrelevant component, an analysis of variance (ANOVA) test was run for all factors vs the demographic profile to see how each demographic group reacted to the factor differently. The demographic profile of the study included business scopes, target market, setup period, numbers of employees and annual sales turnover responded towards the

implementation of environmental protection strategy and other relevant factors.

Table 6 shows the One-Way ANOVA analysis for demographic profile versus environmental protection strategy. All organizations agreed or somehow agreed on the importance of environmental protection strategy (Mean $\leq$ 2). The result of the ANOVA test indicated that all demographic profiles had no different reaction towards the implementation of environmental protection strategy. However, for target market, there is a difference (P < 0.05). Through Post Hoc Test (Dunnett T3), organizations that do business within Malaysia and outside Malaysia by exporting goods, agree on the importance of environmental protection strategy than organizations that active within Malaysia only.

Tables 7 and 8 summarise the results of a One-Way ANOVA analysis undertaken to see how demographic profiles react to factors like customer requirements and regulatory reformation. In general, all types of companies agreed or agreed in some way that these elements will influence decision-making when it comes to implementing environmental protection strategies (Mean 2). In terms of business scopes, target markets, setup time, personnel numbers, and yearly sales turnover, however, there is no substantial difference.

The One-Way ANOVA analysis for demographic profile vs corporate social responsibility is shown in Table 8. In general, all firms agreed or at least agreed that corporate social responsibility is a crucial factor of environmental protection strategy (Mean 2).
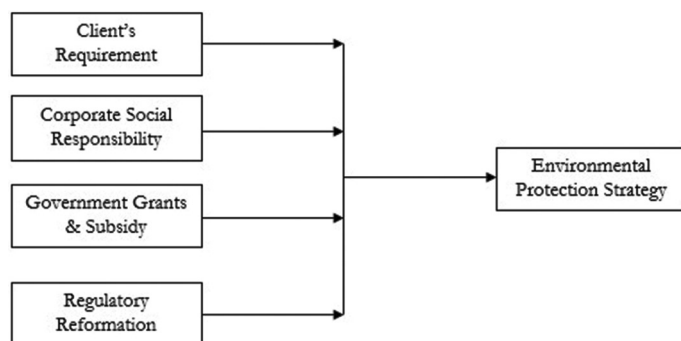
Figure 2: Modified framework

Table 4: EFA trials and outcome

No of Trial	KMO value	Total variance explained	Items eliminated
EFA Trial 1	0.848	34.8%	TI 3, TI 4, TI 5, CR 5 and GGS4
EFA Trial 2	0.847	37.3%	GR 1 and TI 1
EFA Trial 3	0.859	37.8%	GR 2, GR 3 and TI 2

EFA: Exploratory factor analysis

Table 5: Summary of reliability test

S. No.	Construct	No. of items	Cronbach's alpha value
1	EPS	5	0.886
2	CSR	5	0.874
3	CR	4	0.889
4	GGS	3	0.827
5	Regulation reformation	3	0.586

EPS: Environmental protection strategy from business, CR: Client's requirement, CSR: Corporate social responsibility, GGS: Goverments grants and subsidy

Table 6: One-Way ANOVA for Environmental Protection Strategy (EPS)

S. No.	Variable	Mean±S	P-value for test of differencw between groups
i.	Business scope		0.294*
	Manufacturing	1.44±0.56	
	Services	1.57±0.66	
	Construction	1.67±0.67	
	Others	1.77±0.78	
ii.	Target market		0.039**
	Within Malaysia only	1.82±0.78	
	Export only	1.48±0.72	
	Both	1.45±0.53	
iii.	Setup period		0.321**
	<1 year	2.00±1.16	
	1-5 years	1.64±0.79	
	6-10 years	1.75±0.62	
	>10 years	1.51±0.58	
iv.	Nos. of full time employee		0.648*
	<10 employees	1.69±0.79	
	11-75 employees	1.62±0.62	
	76-200 employees	1.59±0.67	
	>200 employees	1.48±0.65	
v.	Annual sales turnover		0.094**
	<1 million	1.81±0.90	
	1-10 million	1.56±0.69	
	11-50 million	1.65±0.54	
	>50 million	1.41±0.57	

*Based on parametric one-way ANOVA procedure, **Based on nonparametric Kruskal-Wallis test, EPS: Environmental protection strategy from business, CR: Client's requirement, CSR: Corporate social responsibility

Table 7: One-way ANOVA for client's requirement (CR)

S. No	Variable	Mean±S	P-value for test of differencw between groups
i.	Business scope		0.929*
	Manufacturing	2.06±0.98	
	Services	1.95±0.82	
	Construction	1.96±0.85	
	Others	2.03±0.80	
ii.	Target market		0.503**
	Within Malaysia only	2.11±0.82	
	Export only	1.88±1.39	
	Both	1.94±0.81	
iii.	Setup period		0.518*
	<1 year	2.15±0.82	
	1-5 years	1.82±0.78	
	6-10 years	2.23±0.98	
	>10 years	1.99±0.86	
iv.	Nos. of full time employee		0.784*
	<10 employees	2.12±0.93	
	11-75 employees	2.03±0.80	
	76-200 employees	1.85±0.61	
	>200 employees	1.95±0.97	
v.	Annual sales turnover		0.239*
	<1 million	2.11±0.76	
	1-10 million	1.83±0.83	
	11-50 million	2.19±0.82	
	>50 million	1.89±0.95	

*Based on parametric One-Way ANOVA procedure

Table 8: One-way ANOVA for corporate social responsibility (CSR)

S. No.	Variable	Mean±SD	P-value for test of differencw between groups
i.	Business scope		0.267*
	Manufacturing	1.49±0.60	
	Services	1.59±0.64	
	Construction	1.72±0.73	
	Others	1.80±0.56	
ii.	Target Market		0.281*
	Within Malaysia only	2.11±0.82	
	Export Only	1.88±1.39	
	Both	1.94±0.81	
iii.	Setup Period		0.115*
	<1 year	2.15±0.82	
	1-5 years	1.82±0.78	
	6-10 years	2.23±0.98	
	>10 years	1.99±0.86	
iv.	Nos. of full time employee		0.069*
	<10 employees	2.12±0.93	
	11-75 employees	2.03±0.80	
	76-200 employees	1.85±0.61	
	>200 employees	1.95±0.97	
v.	Annual sales turnover		0.004**
	<1 million	2.11±0.76	
	1-10 million	1.83±0.83	
	11-50 million	2.19±0.82	
	>50 million	1.89±0.95	

*Based on parametric One-Way ANOVA procedure

According to the findings, no demographic profile showed a distinct reaction to the hypothesis that corporate social responsibility will impact decision making on environmental protection strategy except for annual sales turnover ($P < 0.05$). Through Post Hoc Test (Tukey HSD), organizations that earned more than 50 million annually tends to agree more than organizations that earned <1 million annually that corporate social responsibility is a very important factor in determining environmental protection strategy.

In conclusion, it was noticed that the smaller organizations that started a year ago and had <10 employees, earned <1 million annually. These organizations and focused on Malaysia market only do not believed strongly (Mean >> 1) on the importance of environment protection strategy.

4.5. Descriptive Statistics

To determine the distribution pattern of questionnaire responses, descriptive statistics were used. The standard deviation and standard error are both measurements of dispersion, while the mean, median, and mode are three frequent measures of central tendency. For the purposes of this study, the mean and standard deviation will be employed. The questionnaire was created to collect input using a Likert Scale of 1-5, with 1 indicating agreement and 5 indicating disagreement with the statement. The descriptive statistics for all five constructs are presented in Table 9.

There was agreement on all of the elements for each construct with a mean value between 1 and 2 based on the mean value in Table 10 (agree and somehow agree). For all items, the standard deviation was near to or <1.000. This showed that the replies were somewhat clustered around the mean value. The mean of the items in each construct was calculated and saved with the appropriate name for later analysis.

The correlation matrix of the five components is shown in Table 11. With the exception of GGS, the maximum correlation value for each item with at least one other item in the construct is between 0.3 and 0.9. GGS was omitted from the later analysis since it did not converge with the others. The KMO value in factor analysis (after removing GGS) was 0.768, which is deemed satisfactory. A single factor was found to account for 59.9% of the total variation in the five items. The factor loading was as low as 0.669. As a result of this inter-item correlation study, it was discovered that government grants and subsidies (GGS) are not a meaningful element in interpreting the execution of Malaysia's environmental protection strategy.

4.6. Regression Analysis

Multiple Linear Regression Analysis was performed at the end of the analysis. The association between the three independent variables (Client Requirement, Corporate Social Responsibility, and Regulation Reformation) and Environmental Protection Strategy was discovered by this study. The R-square value will be calculated, which represents the percentage of dependent variables that were explained by all of the independent variables. To provide a clearer view, Stepwise Regression was utilised to exclude weak independent variables (s).

The R-square result for this regression analysis is 0.350, indicating that the three independent variables can explain 35.0% of the variation in Environment Protection Strategy. Because the

Table 9: One-Way ANOVA for Regulatory Reformation (RR)

S. No	Variable	Mean±S	P-value for test of differencw between groups
i.	Business scope		0.601*
	Manufacturing	1.66±0.68	
	Services	1.72±0.68	
	Construction	1.57±0.59	
	Others	1.84±0.64	
ii.	Target market		0.872*
	Within Malaysia only	1.71±0.59	
	Export only	1.58±0.64	
	Both	1.71±0.71	
iii.	Setup period		0.385*
	<1 year	2.07±0.49	
	1-5 years	1.72±0.56	
	6-10 years	1.87±0.64	
	>10 years	1.65±0.69	
iv.	Nos. of full time employee		0.598*
	<10 employees	1.75±0.63	
	11-75 employees	1.76±0.63	
	76-200 employees	1.76±0.76	
	>200 employees	1.95±0.69	
v.	Annual sales turnover		0.590*
	<1 million	1.75±0.62	
	1-10 million	1.67±0.61	
	11-50 million	1.80±0.67	
	>50 million	1.60±0.73	

*Based on parametric One-Way ANOVA procedure

Table 10: Descriptive statistics for EPS, CR, CSR, GGS and RR

Item	Mean	SD
EPS1	1.49	0.718
EPS2	1.70	0.860
EPS3	1.52	0.750
EPS4	1.59	0.869
EPS5	1.61	0.773
CR1	1.98	1.007
CR2	2.12	1.027
CR3	2.04	1.007
CR4	1.85	0.910
CSR1	1.78	0.950
CSR2	1.44	0.610
CSR3	1.61	0.831
CSR4	1.65	0.744
CSR5	1.60	0.700
GGS1	1.56	0.826
GGS2	1.46	0.769
GGS3	1.46	0.769
RR1	1.75	1.064
RR2	1.55	0.716
RR3	1.81	0.864

EPS: Environmental protection strategy from business, CR: Client's requirement, CSR: Corporate social responsibility, GGS: Goverments grants and subsidy

ANOVA table's P < 0.05, at least one of the three variables may be utilised to predict the Environmental Protection Strategy. Table 12 displayed the results from Regression Analysis of Environmental Protection Strategy versus Client's Requirement (CR), Corporate Social Responsibility (CSR) and Regulation Reformation (RR). The results proves that interrelationship of these variables can be written as:

Table 11: Inter-Item Correlation for EPS, CR, CSR, GGS and RR

Correlation	EPS	CR	CSR	GGS	RR
EPS	1.000	0.480	0.545	0.139	0.367
CR	0.480	1.000	0.588	0.169	0.359
CSR	0.545	0.588	1.000	0.192	0.430
GGS	0.139	0.169	0.192	1.000	0.144
RR	0.367	0.359	0.430	0.144	1.000

Table 12: Regression analysis of EPS versus CR, CSR and RR

Independent variables	Unstandadized coefficients		Standadized coefficients	t	Sig	VIF
	B	Std. Error	Beta			
(Constant)	0.412	0.156		2.643	0.009	
CR	0.170	0.069	0.221	2.465	0.015	1.561
CSR	0.373	0.097	0.358	3.856	0.000	1.669
RR	0.133	0.080	0.134	1.662	0.099	1.253

Equation 1

$$PS = 0.412 + 0.170 (CR) + 0.373 (CSR) + 0.133 (RR)$$

It stated unequivocally that all independent factors influenced the Environmental Protection Strategy in an effective way.

Equation 2

$$EPS = 0.531 + 0.420(CSR) + 0.187 (CR)$$

Regulation Reformation has a P > 0.05, indicating that it is not a significant predictor of Environmental Protection Strategy. Client's Requirement and Corporate Social Responsibility, on the other hand, have P = 0.05, making them significant predictors. There is no concern of multicollinearity because the Variance Inflation Factor (VIF) values for all independent variables are <5.

$$EPS = 0.412 + 0.170 (CR) + 0.373 (CSR) + 0.133 (RR)$$

Despite the fact that all three independent variables have a beneficial effect on the environmental protection strategy, regulation reformation was automatically omitted from the stepwise regression analysis since it is not a significant predictor. After removing the variables, the interdependence of the remaining variables may be expressed using the formula below. The R-square value remained unchanged at 0.336. This suggests that the remaining two independent variables may explain 33.6% of the variation in environment protection strategy.

Stepwise regression analysis is shown in Table 13. The P-values for corporate social responsibility and client requirement are both <0.05, indicating that they are all significant predictors. There is no difficulty with multicollinearity because the VIF values for the remaining independent variables are still <5.

5. IMPLICATIONS

From the study, it was identified that only Economical factor (Client's Requirement) and Social factor (Corporate Social

Table 13: Stepwise regression analysis of EPS versus CR and CSR

Independent variables	Unstandadized coefficients		Standadized coefficients	t	Sig	VIF
	B	Standard error	Beta			
(Constant)	0.531	0.140		3.802	0.000	
CR	0.420	0.093	0.403	4.502	0.000	1.529
CSR	0.187	0.069	0.243	2.716	0.008	1.529

Responsibility) are related to Environment factor. It revealed that 33.6% of the variation in Environment Protection Strategy were explained through these two factors. The balance 76.4% of the variation were not explained and requires further research. Other researches may propose other theoretical model which is more appropriate and relevant to explore other potential factors towards implementation Environmental Protection Strategy. This denoted great research potential to findout other factors having significant relationship with implementation of Environment Protection Strategy.

This study found that Government Regulations and Government Grants and Subsidy do not have significant relationship towards implementation of Environmental ProtectionStrategy. This harmonizes with the latest direction on Guided Self Regualtion (GSR) by the Department of Environment (GSR, 2016). Policy makers and regulatory bodies can prepare policies and future regulations towards promoting the environmental related strategy in future. The strategies are useful for the Small and Medium Industries as the cost, resources and manpower are the major barrier.

To maximize cost saving in resources such as time, funding and manpower as well as to effectively tackle environmental related issues it is very important for the Non-Government Organizations (NGO), to know the most significant driven factor of Environmental Protection Strategy. Therefore, this study can help NGO's working on this issue can minimize the waste of resources and focuses the highest impact.

6. CONCLUSION

The study found that government grants and subsidy does not significantly promote the implementation of evironmental protection strategy. The inter-correlation of government grants and subsidy did not converged with others and therefore, it was not considered as a relevant factor.

The other two variables namely client's requirement and sorporate social responsibility exhibited positive relationship with evironmental protection strategy. Furthermore, corporate social responsibility is the most important aspect, outweighing the needs of the client. In the final regression analysis, these two independent variables explain 33.6% of the variation in environmental protection approach, implying that there are 66.4% possible components that have yet to be examined, indicating opportunities for additional research.

This research examined the significant determinants why organizations implement Environmental Protection Strategy. This not only revalidates the relevance of previous study, but it also excludes certain other potential elements like technological progress, government funds, and subsidies, narrowing the field of future research.

The findings of the study is necessary to identify the critical determinant factors that promotes the implementation of environmental protection strategy. It is important to academia, policy makers and regulatory bodies as well as non-government organizations.

The study did, however, have several shortcomings. First, without a fixed sample frame, the questionnaires were dispersed at random to the participants. As a result, demographic criteria such as the nature of the business, the size of the organisation, the years of operation, and yearly turnover were not appropriately varied, resulting in an erroneous outcome. The sample size was small, and the West Malaysian states of Sabah and Sarawak were left out. For a more exact conclusion, the follow-up study will narrow the scope to specific company types and include businesses from Sabah and Sarawak. Moreover, participants who were new, or do not serve managerial level were unable to understand the corporate culture thoroughly in order to give an accurate respond.

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APPENDIX (QUESTIONNAIRE)

Environmental Protection Strategy from Business Perspective in Malaysia

Dear all,

We are conducting this survey to identify the "critical factors impacting the implementation of environmental protection strategies among Malaysia industries". Appreciate if you can take your time to go through and complete answering all questions carefully for the most representative result.

Thank you for your valuable time and support.

Regards

Part A - Demographic (Select The Most Relevant)

Company Business Scope	No of Full Time Employee
Manufacturing	< 10 employees
Services	11 – 75 employees
Construction	76 – 200 employees
Others	> 200 employees
Company Target Market	**Company Annual Sales Turnover**
Within Malaysia only	< 1 million
Export only	1 million – 10 million
Both	11 million – 50 million
	>50 million
Company Setup Period	
<1 year	
1-5 years	
6-10 years	
>10 years	

Part B - Hypothesis Testing (Select The Most Relevant)

Environment protection strategy from business perspective	Strongly disagree	Somehow disagree	Neutral	Somehow agree	Strongly agree
We will make sure all of our business process do not harm the environment					
We develop new products and processes that minimize negative environmental impact					
We are committed to protect the environment apart from daily business operation					
Implementation of environmental related strategy is important to us					
We form our business strategy with minimal impact to the environment					

Government Regulations	Strongly Disagree	Somehow Disagree	Neutral	Somehow Agree	Strongly Agree
Environmental regulation play a significant role on our future growth					
Stricter environmental regulation is a major reason why we protect the natural environment					
Our environmental efforts will help to shape future environmental legislation					

Client's Requirement	Strongly Disagree	Somehow Disagree	Neutral	Somehow Agree	Strongly Agree
Our customers prefer us to be environmentally friendly					
Our customers are demanding environmentally friendly products and services.					
Our market share will be increased by making our current products more environmentally friendly					
Certification of "Green" or "Environmental Friendly" product is important to our export client					
We will implement environmental protection plan if client required us to do it.					

Corporate Social Responsibility (CSR) Strategy	Strongly Disagree	Somehow Disagree	Neutral	Somehow Agree	Strongly Agree
People will see our company as being environmental committed if it is stated inside our CSR strategy					
Positive environmental impact is good for our company image					
Public preferred a company which is dedicated towards environmental protection					
Being environmentally responsible will gain positive impact to company business					
Incorporation of environmental protection plan in our CSR can promote company to more recognition					

Technology Innovation	Strongly disagree	Somehow disagree	Neutral	Somehow agree	Strongly agree
By reducing the negative impact of our activities on the natural environment we can improve the quality of our products and processes					
By regularly investing in research and development of cleaner products and processes we can become the leader in the industry					
We have realized significant cost savings by experimenting with ways to improve the environmental quality of our products and processes					
Implementation of latest technology can help to minimize waste and thus improve protection to environment					
We will consider investing machines/equipment that can generate payback from our waste					

Government grants and subsidy	Strongly disagree	Somehow disagree	Neutral	Somehow agree	Strongly agree
We will improve environmental protection strategy if government grant is available					
Government subsidy will improve willingness to protect environment.					
Government grants and subsidies are a boosting factor towards formation of environmental protection strategy.					
Cost is the major concern for us to implement effective environmental protection plan					